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1. Introduction

Technical Chair:

John Quinn
Ernst & Young LLP

1.1 PURPOSE

This document contains the specifications for Version 2.3.1 of the Health Level Seven (HL7) Standard for electronic data exchange in all healthcare environments, with special emphasis on inpatient acute care facilities (i.e., hospitals). It summarizes the work of a committee of healthcare providers (i.e., users), vendors and consultants established in March 1987 on the occasion of a conference hosted by Dr. Sam Schultz at the Hospital of the University of Pennsylvania. Its participants, who represent users as well as vendors, share a common goal of simplifying the implementation of interfaces between computer applications from different, and often competing, vendors. This committee, which subsequently became known as the HL7 Working Group, endeavors to standardize the format and protocol for the exchange of certain key sets of data among healthcare computer application systems. Meetings are held approximately every four months in scattered locations throughout the United States. HL7 sanctioned national groups also exist in many other countries outside of the United States including Australia, Germany, Japan, the Netherlands, New Zealand and Canada.

This document is being presented to interested parties. It is a status report that is periodically published to solicit the involvement of the broadest possible group of participants as this protocol is being put into use. Comments are solicited on all aspects of the Standard.

This effort is expected to yield a balloted standard that is open to **all** who develop healthcare data processing systems. As the Standard has been put into production, experience has been gained and is reflected in this latest revision.

There have been two parallel efforts since the publication of Version 2.2). First, Version 2.3 represents an evolutionary change over Version 2.2 that was published in December 1994. Version 2.3 is the result of more than two years work, and thousands of hours of volunteer effort by active HL7 members since the publication of Version 2.2. Its primary goals include maintaining backward compatibility with Version 2.2, correcting errors discovered after the publication of 2.2, and extending the Standard within the format and context of Version 2.2.

HL7 is operating under formal bylaws and balloting procedures. These procedures are modeled on the balloting procedures of other relevant healthcare industry computer messaging standards organizations (e.g., ASTM) and are designed to conform to the requirements of the American National Standards Institute (ANSI). HL7 is participating in ANSI's Healthcare Informatics Standards Board (HISB). In June 1994, HL7 became an ANSI Accredited Standards Developing Organization. Version 2.2 of HL7 was accepted by ANSI as an accredited standard in 1996 and HL7 Version 2.3 received ANSI approval in May of 1997. Version 2.3.1 is being submitted to ANSI for similar consideration.

HL7, as an organization, has experienced significant growth over the last several years. Currently, HL7's membership consists of approximately 1600 members in all membership categories and regularly attracts 350-400 members and non-members to each of its three yearly meetings. As of mid-1996, HL7 had documented several hundred healthcare provider organizations that have implemented computer interfaces based on the HL7 Standard. It is possible for a healthcare provider institution to use HL7 without actually being an HL7 member through a member vendor or through outright purchase of the Standard without joining HL7.

1.2 BACKGROUND

The term “Level 7” refers to the highest level of the Open System Interconnection (OSI) model of the International Organization for Standardization (ISO). This is not to say that HL7 conforms to ISO defined elements of the OSI’s seventh level. Also, HL7 does not specify a set of ISO approved specifications to occupy layers 1 to 6 under HL7’s abstract message specifications. HL7 does, however, correspond to the conceptual definition of an application-to-application interface placed in the seventh layer of the OSI model.

In the OSI conceptual model, the functions of both communications software and hardware are separated into seven layers, or levels. The HL7 Standard is primarily focused on the issues that occur within the seventh, or application, level. These are the definitions of the data to be exchanged, the timing of the exchanges, and the communication of certain application-specific errors between the applications. However, of necessity, protocols that refer to the lower layers of the OSI model are sometimes mentioned to help implementors understand the context of the Standard. They are also sometimes specified to assist implementors in establishing working HL7-based systems.

The HL7 Working Group is composed of volunteers who give their time on a personal basis or under sponsorship of their employers. Membership in the HL7 Working Group has been, and continues to be, open to anyone wishing to contribute to the development and refinement of Level 7 Interface Standard for network technology in healthcare.

The Standard currently addresses the interfaces among various systems that send or receive patient admissions/registration, discharge or transfer (ADT) data, queries, resource and patient scheduling, orders, results, clinical observations, billing, master file update information, medical records, scheduling, patient referral, and patient care. **It does not try to assume a particular architecture with respect to the placement of data within applications but is designed to support a central patient care system as well as a more distributed environment where data resides in departmental systems. Instead, HL7 serves as a way for inherently disparate applications and data architectures operating in a heterogeneous system environment to communicate with each other.**

If we consider the multitude of healthcare information systems applications as well as the variety of environments in which healthcare is delivered, it is evident that there are many more interfaces which could benefit from standardization. The interfaces chosen were considered to be of high priority by the members participating in the standards writing process. HL7’s intent is to prepare a complete standard for these interfaces, built on a generic framework that is sufficiently robust to support many other interfaces. This Standard has been put into production and is being used as a basis for extending the existing interface definitions and also adding other definitions.

It is expected that one result of publishing this specification will be the recruitment of more Working Group members with special interest in some newer and not yet fully specified areas. Some of the areas that have already been identified are:

- a) decision support
- b) additional specific ancillary departments
- c) information needs associated with healthcare delivery systems outside of the acute care setting

The above notwithstanding, the Working Group members feel that the interfaces addressed here are sufficient to provide significant benefit to the healthcare community.

This document is structured as follows. The balance of this chapter contains a rationale for developing the Standard, the goals of the Standard, and issues that have been considered by the Working Group pertaining to scope and operational approach. It is hoped that this will help the readers understand the basis for decisions that have been made in developing the Standard. Subsequent chapters specify, respectively:

- a) overall structure for all interfaces including a generalized query interface
- b) patient administration (admission, discharge, transfer and registration)
- c) order entry
- d) patient accounting (billing) systems
- e) clinical observation data, such as laboratory results, that are sent as identifiable data elements (rather than display oriented text)
- f) a generalized interface for synchronizing common reference files (master files)
- g) medical information management
- h) patient and resource scheduling
- i) patient referral messages for referring a patient between two institutions
- j) patient care messages that support communication of problem-oriented records, and to provide functionality for the implementation of clinical pathways in computer information systems

1.3 NEED FOR A STANDARD

The organization and delivery of healthcare services is an information-intensive effort. It is generally accepted that the efficacy of healthcare operations is greatly affected by the extent of automation of information management functions. Many believe that healthcare delivery agencies that have not automated their information systems are not able to compete effectively in the healthcare market of the 1990's.

In the past two decades, healthcare institutions, and hospitals in particular, have begun to automate aspects of their information management. Initially, such efforts have been geared towards reducing paper processing, improving cash flow, and improving management decision making. In later years a distinct focus on streamlining and improving clinical and ancillary services has evolved, including bedside (in hospitals and other inpatient environments) and "patient-side" systems (in ambulatory settings). Within the last few years, interest has developed in integrating all information related to the delivery of healthcare to a patient over his or her lifetime (i.e., an electronic medical record). It has also been envisioned that all or part of this electronic medical record should be able to be communicated electronically anywhere as needed.

It is not uncommon today for the average hospital to have installed computer systems for admission, discharge, and transfer; clinical laboratories; radiology; billing and accounts receivable, to cite a few. Often these applications have been developed by different vendors or in-house groups, with each product having highly specific information formats. As hospitals have gradually expanded information management operations, a concomitant need to share critical data among the systems has emerged. Comprehensive systems that aim at performing most, if not all, healthcare information management are in production by selected vendors. These systems may be designed in a centralized or a distributed architecture. Nevertheless, to the extent that such systems are truly complete, their use would mitigate the need for an external data interchange standard such as HL7.

There are, however, many pressures on an institution to develop or acquire individual departmental applications on a modular basis. One source of such pressure is the special departmental needs that may not be addressed well (or perhaps at all) by a comprehensive vendor (i.e., so called "best-of-breed"). Another is the need to evolve the overall systems environment of a hospital through a series of incremental, departmental decisions rather than in a single, revolutionary acquisition. These pressures could be met by an environment containing a comprehensive system supplemented by departmental systems, or one consisting entirely of separate and discrete systems.

Network technology has emerged as a viable and cost-effective approach to the integration of functionally and technically diverse computer applications in healthcare environments. However, these applications have developed

due to market structure rather than through a logical systems approach; they are therefore often ad hoc and idiosyncratic. At the very least, they do not possess a common data architecture and their combined data storage actually constitutes a highly distributed and severely de-normalized database. Extensive site-specific programming and program maintenance are often necessary for interfacing these applications in a network environment. This occurs at considerable expense to the user/purchaser and vendor while often keeping vendor staff from other initiatives such as new product development. The need for extensive site-specific interface work could be greatly reduced if a standard for network interfaces for healthcare environments were available and accepted by vendors and users alike.

Finally, the lack of data and process standards between both vendor systems and the many healthcare provider organizations present a significant barrier to application interfaces. In some cases, HL7 becomes an effective template to facilitate negotiations between vendors and users but cannot, by itself, serve as an “off-the-shelf” complete interface.

In summary, it is important that both vendors and users not be faced with the problem of supporting incompatible transaction/communications structures. Instead, a framework must be developed for minimizing incompatibility and maximizing the exchange of information between systems. It is proposed that HL7 can act as a superstructure in this environment to facilitate a common specification and specifications methodology. It is indeed both practical and economical to develop, and commit to, standard interfaces for computer applications in healthcare institutions.

1.4 GOALS OF THE STANDARD

The specifications of this Standard were developed in accordance with **a priori** specified goals. Future extensions of the Standard should also support these goals.

HL7's purpose is to facilitate communication in healthcare settings. The **primary goal** is to provide standards for the exchange of data among healthcare computer applications that eliminate or substantially reduce the custom interface programming and program maintenance that may otherwise be required. This primary goal can be delineated as a set of goals:

- a) the Standard should support exchanges among systems implemented in the widest variety of technical environments. Its implementation should be practical in a wide variety of programming languages and operating systems. It should also support communications in a wide variety of communications environments, ranging from a full, OSI-compliant, 7-level network “stack” to less complete environments including primitive point-to-point RS-232C interconnections and transfer of data by batch media such as floppy disk and tape.
- b) immediate transfer of single transactions should be supported along with file transfers of multiple transactions.
- c) the greatest possible degree of standardization should be achieved, consistent with site variations in the usage and format of certain data elements. The Standard should accommodate necessary site-specific variations. This will include, at least, site-specific tables, code definitions and possibly site-specific message segments (i.e., HL7 Z-segments).
- d) the Standard must support evolutionary growth as new requirements are recognized. This includes support of the process of introducing extensions and new releases into existing operational environments.
- e) the Standard should be built upon the experience of existing production protocols and accepted industry-wide standard protocols. It should not, however, favor the proprietary interests of specific companies to the detriment of other users of the Standard. At the same time, HL7 seeks to preserve the unique attributes that an individual vendor can bring to the marketplace.

- f) while it is both useful and pertinent to focus on information systems within hospitals, the long-term goal should be to define formats and protocols for computer applications in all healthcare environments.
- g) the very nature of the diverse business processes that exist within the healthcare delivery system prevents the development of either a universal process or data model to support a definition of HL7's target environments. In addition, HL7 does not make a priori assumptions about the architecture of healthcare information systems nor does it attempt to resolve architectural differences between healthcare information systems. **For at least these reasons, HL7 cannot be a true “plug and play” interface standard.** These differences at HL7 sites will most likely require site negotiated agreements.
- h) a primary interest of the HL7 Working Group has been to employ the Standard as soon as possible. Having achieved this, HL7 has also developed an infrastructure that supports a consensus balloting process and has been recognized by the American National Standards Institute (ANSI) as an Accredited Standards Organization (ASO).
- i) cooperation with other related healthcare standards efforts (e.g., ACR/NEMA DICOM, ASC X12, ASTM, IEEE/MEDIX, NCPDP, etc.) has become a priority activity of HL7. HL7 has participated in the ANSI HISPP (Health Information Systems Planning Panel) process since its inception in 1992.

1.5 HISTORY OF HL7 DEVELOPMENT

The HL7 Working Group has met approximately every three to four months since March 1987 to develop and review this specification. The group is structured into committees to address each of the functional interfaces under development, with additional committees to address the overall control structure and various administrative aspects of the group. These committees have the responsibility to author and maintain the chapters in the HL7 Interface Standard. In addition, from time to time various special interest groups are formed within HL7 to develop ideas and sponsor particular perspectives that are not covered by any single existing committee. If a special interest group's activities warrant and a new chapter is considered necessary, they may petition the HL7 Technical Committee Chair and the Executive Committee to form a Technical Committee.

In the initial three meetings, a Version 1.0 draft Standard was prepared covering the overall structure of the interfaces, ADT, order entry, and display-oriented queries. Although the patient accounting system was recognized as very important, the time frame did not allow it to be addressed in the first draft. This draft was presented to a Plenary meeting of the overall group in Tyson's Corner, VA, on October 8, 1987.

Version 2.0 was prepared subsequent to Plenary I in Tyson's Corner and presented at Plenary II in Tucson in September 1988. Since Plenary II, editing and revisions for Version 2.1, 2.2, 2.3 and then 2.3.1 have been ongoing and the Working Group has grown to nearly 400 individuals, far exceeding its original size of 12 and the following has been accomplished:

- a) specifications for the various functional areas have been refined and expanded.
- b) formal liaison was developed with several other standards efforts: the ANSI HISPP (Healthcare Information Standards Planning Panel) for the coordination of healthcare standards efforts that has since been replaced by the ANSI HISB (Healthcare Information Standards Board), the ASC X12N group for external EDI Standards, the ASTM E31.11 group for Clinical Data Exchange Standards, the ACR/NEMA DICOM group for standards relating to imaging and other aspects of Radiology Information Systems, and the IEEE P1157 group for medical data interchange (MEDIX).
- c) the generic control structure was modified, on the basis of comments, to be adaptable to a wider variety of communications environments and to facilitate cooperation with other standards groups.

- d) a chapter on the interface to a patient accounting system has been added.
- e) a chapter on the reporting of ancillary results, clinical trials, product experience and waveform data has been prepared, harmonized with the ASTM 1238-91 Standard and with the direct, active participation of members of the ASTM E31.11 committee.
- f) a chapter with a set of transactions to support the synchronization of master files between related information systems has been added.
- g) a chapter on the interface to applications that support medical record functions including transcription management, chart location and tracking, deficiency analysis, consents and release of information.
- h) a chapter on messages to support the communication of various events related to the scheduling of appointments for services or for the use of resources has been added.
- i) a chapter defining the message set used in patient referral communications between mutually exclusive healthcare entities has been added.
- j) a computerized data dictionary of all data elements and other message components has been created. Appendix A contains cross references and other information generated from this electronic data dictionary.
- k) inconsistencies and mistakes which were discovered in the previous Versions 2.0, 2.1, 2.2 and 2.3 of the Standard have been addressed and documented in Version 2.3.1.
- l) extensive additions have occurred in the Order/Entry and Clinical Observations chapters to include data element oriented results, pharmacy orders and administrations interface.
- m) message acknowledgments have been extended to include a separate enhanced mode that defines the “accept acknowledgment.” While this mode of acknowledgment has always been allowed, it is now obvious how HL7 supports any environment when intermediaries exist in the network with implicit time delays (such as store and forward services, “Interface Engines” that perform fan out services, etc.). Immediate acknowledgments are available to release the sending system from the need to resend the message.
- n) distinctions have been documented between the HL7 abstract message definition which is purely a level 7 (application level) definition vs. the HL7 encoding rules for converting an abstract message into a string of characters that comprises an actual message. These encoding rules are actually a suggested potential alternative where a fully defined level 6 (presentation level) definition does not exist (e.g., ISO’s ASN.1 Basic Encoding Rules (BER)).

1.6 OVERVIEW

This section contains a description of the conceptual basis of the HL7 Standard, the approach to accommodating intra-site variations and evolutionary changes, and the way it has been structured in order to accommodate varying current and future communications environments.

1.6.1 HL7 encoding rules

Message formats prescribed in the HL7 encoding rules consist of data fields that are of variable length and separated by a field separator character. Rules describe how the various data types are encoded within a field and when an individual field may be repeated. The data fields are combined into logical groupings called segments. Segments are separated by segment separator characters. Each segment begins with a three-character literal value that identifies it within a message. Segments may be defined as required or optional and may be permitted to repeat. Individual data fields are found in the message by their position within their associated segments.

All data is represented as displayable characters from a selected character set. The ASCII displayable character set (hexadecimal values between 20 and 7E, inclusive) is the default character set unless modified in the MSH header segment. The field separator is required to be chosen from the ASCII displayable character set. All the other special separators and other special characters are also displayable characters, except that the segment separator is the ASCII Carriage Return character.

(1) There is nothing intrinsic to HL7 Version 2.3.1 or ASTM 1238 that restricts the legal data set to the printable ASCII characters. The former restriction was imposed to accommodate the limitations of many existing communication systems. Some existing systems would misinterpret some eight-bit characters as flow control characters instead of data. Others would strip off the eighth bit.

(2) The European community (EC) has a need for printable characters (for example, the German oe, the French accent grave) that are not within the above-defined restricted data set. The personal computer market accommodates these alphabetic characters by assigning them to codes between 128 and 256, but it does this in many different ways. ISO 8859 is a 256-character set that does include all of the needed European letters and is a candidate for the European standards group. Where the Europeans define an eight-bit character set specification, HL7 will accept this data set in environments that require it, and can use it without complications.

(3) Multi-character Codes:

(a) UNICODE - When communicants use UNICODE, and all characters are represented by the same number of bytes, all delimiters will be single characters of the specified bytes length, and the Standard applies just as it does for single-byte length, except that the length of the characters may be greater than one byte.

(b) JIS X 0202 - ISO 2022 provides an escape sequence for switching among different character sets and among single-byte and multi-byte character representations. Japan has adopted ISO 2022 and its escape sequences as JIS X 0202 in order to mix Kanji and ASCII characters in the same message. Both the single- and multiple-byte characters use only the low order 7 bits in JIS Kanji code with JIS X 0202 in order to ensure transparency over all standard communication systems. When HL7 messages are sent as JIS X 0202, all HL7 delimiters must be sent as single-byte ASCII characters, and the escape sequence from ASCII to Kanji and back again must occur within delimiters. In most cases the use of Kanji will be restricted to text fields.

There are other parts of the JIS X series that support Katakana (JIS X 0201/ISO IR 13), Romaji (JIS X 0201/ISO IR 14) and Kanji (JIS X 0208/ISO IR 87) and JIS X 0212/ISO IR 159) that can be used in HL7 messages in the same manner as JIS X 0202.

(c) In the case that a single country uses conflicting rules for representing multi-byte characters, it is up to the communicants to ensure that they are using the same set of rules.

The encoding rules distinguish between data fields that have the null value and those that are not present. The former are represented by two adjacent quotation marks, the latter by no data at all (i.e., two consecutive separator characters.) The distinction between null values and those that are not present is important when a record is being updated. In the former case the field in the database should be set to null; in the latter case it should retain its prior value. The encoding rules specify that if a receiving application cannot deal with a data field not being present, it should treat the data field as present but null.

The encoding rules specify that a receiving application should ignore fields that are present in the message but were not expected rather than treat such a circumstance as an error. For more information on fields and encoding rules, see Section 2.6, “Fields,” and 2.10, “Message Construction Rules.”

1.6.2 Local variations

The HL7 Standard is intended to standardize data interchanges, not the underlying applications systems. This means that there will be a wide variety in the manner in which the Standard is applied in different institutions.

The requirement to support diversity within the Standard is addressed in these ways:

- a) The only data fields that are required in the abstract messages are those necessary to support the logic of the relationships among the messages or their basic purpose. Many other fields are specified but made optional.
- b) There are provisions within the specifications to add messages or portions of messages that are local to an institution. The conventions used for this are intended to prevent conflict with future versions of the specification.

1.6.3 Evolutionary changes to the standards

All standards must evolve as the applications they support change and as a result of experience using them. In recognition of this, the Standard includes a protocol version ID in all messages.

New transactions or data elements will be added to operational HL7 environments as a result of changes in the Standard or due to changes in the local implementation as permitted within the Standard. It is important that these changes be implementable at a site without requiring all communicating applications to upgrade simultaneously. The special provisions in the Encoding Rules for dealing with fields that are not present or unexpected are very important here. Because of them, new fields can be added first to the sending or source system; the receiving system will ignore the new fields until it has been updated to use them. Often, these rules also facilitate changing the receiving system first. Until the sending system is changed, the receiving system will find the new data field ‘not present’ and deal with this according to its rules for data not present.

Similarly, the HL7 Encoding Rules support changes in data field sizes. Fields are found within the message by examining separators, rather than by an offset. Changing the size of a field does not change the procedure used to detect subsequent fields.

1.6.4 Applicability to file transfers (batch processing)

Although the HL7 Standard is defined in terms of the client-server (remote operation) model, its standards are equally applicable to file transfers. One or more messages may be encoded according to the Encoding Rules, grouped in a file and transferred using external media, FTAM, FTP, Kermit, or any other file

transfer protocol. Responses may be grouped in a file and similarly transmitted. Chapter 2 provides the general mechanisms for the batch transmittal of HL7 messages.

1.6.5 Relationship to other protocols

A great deal of consideration has been given to the relationship between the HL7 Standard protocol and other protocols. There are three questions:

- a) what is the relationship between the HL7 protocol and “lower layer,” service protocols? In strict accordance with the ISO OSI model, HL7 should not replicate features of these protocols. This can even be construed to require HL7 to avoid replicating certain ISO layer 7 functionality contained in the Service Elements.

However, it is the goal of the HL7 group to support healthcare communications in a wide variety of communications environments, including many that are not as complete as ISO will be one day.

- b) what is the relationship between the HL7 Standard protocol and other applications protocols? Protocols of interest include the ASC X12 Standards for Electronic Document Interchange, the ASTM 1238-88 Standards for laboratory data reporting, the ACR/NEMA DICOM Standards for imaging and other aspects of Radiology Information Systems, and the IEEE P1157 Standards for Medical Data Interchange (MEDIX).
- c) what is the relationship between the HL7 Standard and various proprietary healthcare protocols in use today?

1.6.5.1 Lower layer protocols

The HL7 Encoding Rules are substantially different from the ASN.1 Basic Encoding Rules (BER) documented in CCITT X.409 and X.209 and ISO 8825 or those employed in LU6.2 or RPC. This is because:

- a) by definition, the HL7 encoding rules will be applied where the environment does not include software to do encoding. Without such software, the burden on applications programmers to develop messaging software that conforms to those encoding rules is onerous.
- b) the encoding rules of these protocols depend on the assumption that lower level protocols provide transparency (i.e., all character codes can be transmitted without being changed by and of the lower levels). This assumption is often not met in the communications environments that must serve HL7 for the interim. The techniques that might be used to implement transparency in the Lower Level Protocol are difficult to implement in some present-day applications environments.

The notation chosen to document the message formats in the HL7 Standard is not the Abstract Syntax Notation1 (ASN.1) Basic Encoding Rules (BER) defined by ISO.

Contrary to other high level communications environments, there is no notion of association separate from the sending of the message from client to server and the response. This seems appropriate to the client-server model.

Whenever HL7 is applied in a networking environment, addressing will be an issue. This is equally true when it is applied on ISO Standards networks or proprietary networks. Although the Standard does not specify how this addressing will occur, it does provide certain data fields that will be of value in determining addresses. The fields *MSH-5-receiving application*, *MSH-6-receiving facility*, and *MSH-11-processing ID*, are located in the header of all HL7 messages. *MSH-6-receiving facility* is intended for environments where multiple occurrences of the same application are being run on the same computer system or on the same network on behalf of different institutions or other organizational entities. *MSH-11-*

processing ID is used where various versions of essentially the same application may reside on the same computer for different purposes. See *HL7 table 0103 - Processing ID* for recommended values.

HL7 does not standardize all values for *MSH-5- receiving application* and *MSH-6-receiving facility* at this time because there are so many variations in place in existing systems and because different kinds of environments (e.g., different countries) may have different required code sets. However, we strongly encourage the use of the HL7 suggested code sets where they are defined and we recognize that movement toward more standardized codes is essential for seamless communications.

1.6.5.2 Other applications protocols

The Working Group has given considerable attention to the relationship of the HL7 protocol and other protocols. A considerable liaison effort is underway. This is described below:

- a) ACR/NEMA DICOM. The HL7 Working Group maintains an on-going liaison with the ACR/NEMA DICOM working group. HL7 and ACR/NEMA DICOM are both members of ANSI's HISB.
- b) ASC X12 Standards for Electronic Document Interchange. ASC X12 is a family of standards that provides both general and specific descriptions for data interchange within a number of industries. The HL7 Encoding Rules are modeled on the X12 standards, although there are differences. The HL7 Standard needs to accommodate online exchange of individual transactions on LANs. This difference, and certain applications issues, is responsible for the variance from X12. X12 has recently decided to follow the UN/EDIFACT encoding rules for all X12 standards produced in 1995 or later. X12N transactions that facilitate the transfer of healthcare claims and remittance information as well as benefit coordination, enrollment and verification are enjoying dramatically increased use. HL7 has elected to assume that all new business transactions between institutions regarding the interchange of claims, benefits, or other financial information are the responsibility of ASC X12N, the insurance subcommittee of X12.

In February of 1994, HL7 and X12 signed an agreement to "improve coordination efforts and have identified that technical issues must be harmonized. Both groups agree to migrate to the appropriate level of resolution of potentially overlapping work by utilizing user and standards communities' and anticipated healthcare reform requirements."

- c) ASTM 1238.94 Laboratory Data Reporting. An active liaison effort between the ASTM committee and the Working group has resulted in minor changes in the ASTM specification to enhance compatibility, changes in the HL7 control specifications to enhance compatibility, and the development of the entire Ancillary Data Reporting chapter, developed jointly by the committees and built on the ASTM Standards. This liaison has extended to the point where both groups now have the permission to freely use the contents of each others standards efforts "in whole" within their own published standards.

Some distinctions are more in the terminology chosen than the actual message content. For example, the ASTM "sub-field delimiter" is generally used to separate repetitions of homogenous values. It is called a "repetition separator" in HL7. HL7 and ASTM are both members of ANSI's HISB.

- d) IEEE P1157 ("MEDIX"). The MEDIX committee has defined an application-level protocol similar in scope to HL7 but built strictly on the ISO protocol stack, up to and including the Remote Operation Service Element (ROSE). HL7 varies from this approach by the decision not to depend on ROSE nor use the ASN.1 BER syntax notation. Despite the difference in approaches, the HL7 Working Group has regular liaison with the MEDIX committee. The Working Group has devised a format for the HL7 Standard that is relatively independent of the

encoding rules chosen and easily translated into the ASN.1 notation. The transactions defined in this manner should be directly transferable to the MEDIX effort, and transaction messages encoded using the HL7 scheme should be translatable to transactions encoded using the BER. This should facilitate the creation of gateways between the HL7 and future environments.

In addition, HL7 and MEDIX have agreed on a course for convergence. This will occur within the HL7 abstract message definitions. MEDIX has further agreed to use the HL7 abstract message definitions as defined in Version 2.1 as a starting point for the MEDIX message definitions.

HL7, IEEE, and X12 are ANSI approved standards developers.

1.7 THE SCOPE OF HL7

It is useful to understand both what HL7 is and what it is not. This chapter, up to this point, represents some effort to give the reader an overall understanding of HL7 by looking at purpose, history, and some of its overall features and architecture. It is also of value to understand the “edges” or limitation of HL7. While HL7 can, and routinely does, provide a considerable service in everyday use today, there are certainly many areas of healthcare system integration that HL7 does not address or addresses with what may prove to be an inadequate or incomplete solution.

Many of these topic areas are being worked on today by HL7 and will, hopefully, appear in latter versions of this balloted Standard. Some others of these topics may never be addressed by HL7 because they are being addressed by some other standards body. Still other areas may never be addressed by HL7 due to a lack of interest, or at least available energy by its members.

In any case, it is certainly useful for the analyst to understand what these boundaries are and to then either choose to solve them in some other way or to merely ignore them if they are deemed not sufficiently important. The following features listed in this section may well be best served by the participating applications themselves. However, it is possible to conceive of an architecture that expects these features to be present in the messaging standard itself. These potential deficiencies are included to give the reader a complete view.

1.7.1 A complete solution

HL7 is not, in itself, a complete systems integration solution. The issue directly addresses the so-called goal for “plug-and-play.” There are several barriers in today’s healthcare delivery environment that make it difficult, if not impossible, for HL7 to create a complete “plug-and-play” solution. Two of these barriers include: a) the lack of process conformity within healthcare delivery environments and b) the resulting requirement for “negotiation” between users and vendors.

There is little, if any, process conformity within healthcare delivery environments. As a consequence, healthcare information solutions vendors are required to create very flexible systems with a very wide range of data and process flow options. HL7 attempts to address the superset of all known process (i.e., trigger) and data (i.e., segment and field) requirements. In doing this, it has attempted to be “all things to systems and users.”

In fact, there is no one user nor any system that users would elect to use that would use all that HL7 attempts to offer. This “excess” of features typically requires some level of “negotiation” to take place between a user and his/her vendors to come up with the set of triggers and data items necessary to affect the solution for the user. In effect, this creates a unique use of the Standard at that site. The current version of HL7 has no intrinsic way to tailor a pre-determinable view of the Standard for each possible use. Future versions of HL7 will likely address this shortcoming.

A true integrated healthcare information systems solution addresses an integrated database, or at least what appears to be a virtual integrated database. In fact, however, as a practical matter, information solutions still need to be installed and operated in environments where no other, or only a subset of other, systems are available. In any case, all systems today are designed and implemented to process using their own local copies of data.

HL7, to this date, has not attempted to prescribe the architecture, functionality, data elements or data organization of healthcare applications. Rather, HL7 has attempted to accommodate all application requirements that have been brought to its attention by volunteers willing and able to address them.

Future versions of HL7 may choose to alter HL7's historic approach to these issues. Recent efforts by HL7 and other ANSI Standards Developers to produce Data Meta Models have created a framework that both standards and applications developers can use as a common basis for defining and using both data and data organizations. Widespread acceptance of these concepts may allow HL7 and other Standards Groups to be more prescriptive in their approach with a smaller set of choices that must be made when interfaces are implemented.

For now, however, users should be aware that HL7 provides a common framework for implementing interfaces between disparate vendors. In all cases, if an existing application interface is not available, HL7 reduces (but does not eliminate) the time and cost required to implement an application interface between two or more healthcare information systems. If a user chooses to implement a set of homogeneous solutions from a single vendor, HL7 is typically not necessary nor even applicable.

1.7.2 Protection of healthcare information

HL7 Version 2.3.1 is largely silent about the issues of privacy authentication and confidentiality of data that pass through HL7 messages. HL7 makes no assumption about the ultimate use of data but rather assumes that both source and destination applications provide for these requirements. In addition, HL7 does not, at this time, specifically specify what, if any, encryption method should be used when transporting HL7-based messages between two or more systems. At this time, HL7 users should familiarize themselves with legal and professional requirements for these topics.

1.7.3 Department of Defense (DOD) requirements for systems security and robustness

HL7 Version 2.3.1 does not attempt to support DOD Security Divisions (A, B, C, D) and Classes (1, 2, 3). If a user requires these features, they will have to define their own structures to support these classifications and insure a uniform implementation across multiple systems in an enterprise.

1.7.4 Enforcement of organizational security and access control policies

HL7 Version 2.3.1, itself, does not provide for the enforcement of a provider organization's security and access control policies. There are no messages specifically defined, at this time, that affect the movement of data based on an organization's security and access control policies in conjunction with message content information that identifies the users of the message data and the organization's policies for that user's authorization to access that data. Systems implementors may want to reference relevant ASTM standards and IOM recommendations on this topic.

1.7.5 Security classifications (markings) and users authentication and identification

HL7 Version 2.3.1 does not, at this time, attempt to address DOD requirement for marking or access control labels that are associated with data objects. This particular method might be one way of supporting both IOM and JCAHO recommendations for providing different levels of data confidentiality and authentication of both producers and consumers of confidential data.

1.7.6 Roles and relationships

HL7 Version 2.3.1 does not, in itself, attempt to define or even support the implicit and explicitly relationships between persons such as patients, physicians, providers, etc. It is possible that current data modeling efforts by HL7 and other standards developers will, in the future, result in HL7 assuming this responsibility.

1.7.7 Accountability, audit trails and assigned responsibility

HL7 Version 2.3.1 does not attempt to define typical transaction processing features such as audit trails. A feature such as an audit trail may well be needed to successfully implement both a robust and security auditable environment. This feature could also support verifying that a given action is performed by individuals who are also responsible. A user may decide that these features are necessary in their integrated environment.

1.7.8 Central, unified hardware, software controls for security and trusted continuous protection

HL7 Version 2.3.1 does not attempt to support hardware and software security controls, nor does it provide means to insure continuous protection of data from unauthorized changes. Such a feature may be useful in limiting access to certain types of data to devices and/or users, based on device type or location. Certain DOD requirements and IOM recommendations may required users to implement these on their own and/or rely on specific applications vendors to support this requirement.

1.7.9 Uniform data definition and data architecture

HL7 Version 2.3.1 does not include an explicit data model or composite data dictionary. However, extensive work has taken place within the HL7 Working Group to produce a data model for Versions 2.2 and 2.3. While these models have not been formally balloted, they are available on the HL7 web server. Future versions of HL7 may also include a balloted data model and composite data dictionary.

1.7.10 Controlled disclosure, notification of disclosed information as protected and tracking exceptions of protected health information

HL7 Version 2.3.1 is silent on supporting the controlled disclosure of protected health information where HL7 is the vehicle of the disclosure across multiple systems in a healthcare delivery system. It is also silent on messages that notify a user that requested information is protected and messages to track allowed exceptions that may take place at the discretion of potentially, but not certified, authorized users (e.g., a physician in the emergency room).

1.7.11 Tracking of corrections, amendments or refusals to correct or amend protected health information

HL7 Version 2.3.1 does not provide messages to support the tracking of corrections, amendments or refusals to correct or amend protected health information. These messages would support the process to verify, challenge and ultimately correct inaccuracies discovered in protected health information. Users needing such messages may need to define custom messages to support this requirement.

1.7.12 Disclosure of disidentified health information

HL7 Version 2.3.1 does not have specific messages to disclose “disidentified” health information. Disidentified data is data that does not reveal the identity of the person or care provider(s) (either organizations or individual licensed practitioners or both). While it may be possible to support this need with existing HL7 messages, it would create an unexpected message with missing required patient identification.

1.7.13 Ensuring and tracking data source authentication and non-alterability

While HL7 Version 2.3.1 does support an electronic signature for chart completion transactions, it does not, in general, support an electronic signature that is also tied to relevant applications to insure the authentication of the source or arbitrary health data and a prohibition against the alteration of data that has been electronically signed.

1.7.14 Tracking input validation

HL7 Version 2.3.1 does not provide messages for tracking the validation (or lack of validation) of data from its source (human or machine).

1.7.15 The longitudinal health record

HL7 Version 2.3.1, itself, is silent on the actual logical and physical construction of the patient longitudinal health record. While it is certainly possible to build the currently-identified major components of such a record using existing HL7 messages, there is no formal attempt on the part of HL7 to define just what the exact message sequence and content should be to describe this record. Other organizations such as ASTM, CPRI and the IOM have published on this subject. It is not the intent of HL7, at this time, to formally define message sequences and structures to directly create the longitudinal health record across multiple information systems within (or outside of) a healthcare delivery system.

1.7.16 Integration of the health record

HL7 Version 2.3.1 is silent on messages to support the integration of a patient’s health record across multiple delivery entities (or outside of) a healthcare delivery system. This would also include messages to insure central control and integrity of information that was “merged” between multiple delivery entities.

1.7.17 Data, clock synchrony

While HL7 Version 2.3.1 makes significant use of time and date stamped data, it does not support a set of transactions to insure that synchronization of the electronic clocks with the various computer systems of the enterprise’s heterogeneous computing environment.

1.7.18 Intersystem database record locking and transaction processing

HL7 Version 2.3.1 makes no attempt to provide messages that could support the coordination of database activities across multiple information systems in a heterogeneous computing environment. Users who want to operate their multiple systems as a distributed database environment must provide their own message support or rely on a database vendor's facilities (e.g., Oracle, Sybase, etc.).

1.7.19 Operations, process and other “local” support

As stated in Section 1.7.2, “Protection of healthcare information,” above, process and operations variations are a primary barrier to HL7 providing a complete solution. Serious attempts are being made to give HL7 the ability to support operations and process variability in a future revision. At this time, however, (Version 2.3.1), operations and process variability is a major reason why HL7 is implemented in a slightly different form at each and every site. This includes issues such as business and clinical practice rules, clinical and operation processes, staging and continuity of process steps, protocols, resource/utilization requirements, quality assurance requirements, cost management, comprehensive master file and code tables, etc.

1.7.20 Interface engines

The so-called Interface Engine has grown into a popular implementation and operation tool for HL7 and other message-based interfaces over the last several years. Interface engines, per se, however, are not an a priori consideration in the design of HL7. HL7 makes no assumption about the existence of an Interface Engine at a particular HL7 site. Hence, there also are no defined HL7 messages to directly communicate with and control the operations of Interface Engines. This might be of particular use when the Interface Engine assumes an applications architecture role as a dynamic filter and arbitrator of information based on dynamic rules defined by delivery systems.

1.7.21 Rules engines

As a close practical application of an Interface Engine in the topology of healthcare interfaces, rules engines are becoming increasingly popular. HL7 does not have, at this time, specific messages to define and control the rules that might be dynamically associated with an Interface Engine. This might include, but is not limited to: Create and modify patient therapeutic or diagnostic protocols; Activate clinical or operational processes (e.g., conditional orders, critical paths, etc.); Cancel or hold active clinical processes; Notify appropriate users of a state or condition.

1.7.22 Infrastructure based applications

A number of applications and information delivery methods exist within the healthcare delivery environment that can be closely identified with the “infrastructure” that ties together disparate systems. These applications include, but are not limited to:

- Robust and Integrated Scheduling
- Point of Service Support
- Prompts Alerts and Reminders
- Concurrent Data Surveillance, Metrics and Analysis
- Concurrent Decision Support
- Outcome Tracking

Tracking of Patient (i.e., customer) Expectation and Satisfaction Problem Lists

These, and probably others, could be well served by the use of healthcare data during and very close to the action of transferring information between healthcare information systems. HL7, at this time, has very little or no message functionality that directly supports these uses of healthcare data.

1.7.23 Support for secondary clinical records

HL7 Version 2.3.1 does not provide specific messages to support partial replication (i.e., extraction and subsequent merger) of a patient's demographic and clinical records. This process has been identified by the IOM, JCAHO and others as an emerging requirement for the maintenance and practical use of an electronic health record system. HL7 may provide more explicit support for this concept in the future as organizations such as ASTM and CPRI develop specific definitions and requirements for this functional activity and healthcare vendors start to include this type of functionality within their individual clinical record solutions offerings.

1.8 REFERENCE DOCUMENTS

1.8.1 ANSI standards¹

ANSI X3.30	1985 Representation for calendar date and ordinal date
ANSI X3.4	1986 Coded character sets - American National Standard code for information interchange (7-bit ASCII)
ANSI X3.43	1986 Information systems representation of local time of day for information interchange
ANSI X3.50	1986 Representations for U.S. customary, SI, and other units to be used in systems with limited character sets
ANSI X3.51	1986 Representations of universal time, local time differentials, and United States time zone references for information interchange

1.8.2 ISO standards²

ISO 5218	1977 Information Interchange-Representation of Human Sexes
ISO 1000	1981 SI Units and Recommendations for the use of their multiples and of certain

¹ Available from American National Standards Institute, 11 West 42nd Street, New York, NY 10036

² Available from ISO 1 Rue de Varembe, Case Postale 56, CH 1211, Geneva, Switzerland

	other units
ISO 2955	1983 Information processing-Representation of SI and other units in systems with limited character sets
ISO 8072	1986 Network Standards
ISO 8601	1988 Data elements and interchange formats - information interchange (representation of dates and times)
ISO 8859	1988 Information Processing- 8-bit single-byte coded graphic character sets
ISO 8859/1	1988 Information Processing-Latin Alphabet No. 1
ISO 8859/2	1988 Information Processing-Latin Alphabet No. 2
ISO 8859/3	1988 Information Processing-Latin Alphabet No. 3
ISO 8859/4	1988 Information Processing-Latin Alphabet No. 4
ISO 8859/5	1988 Information Processing-Latin/Cyrillic Alphabet
ISO 8859/6	1988 Information Processing-Latin/Arabic Alphabet
ISO 8859/7	1988 Information Processing-Latin/Greek Alphabet
ISO 8859/8	1988 Information Processing-Latin/Hebrew Alphabet
ISO 8859/9	1988 Information Processing-Latin Alphabet No. 5
JAS2020	A subset of ISO2020 used for most Kanji transmissions
JIS X 0202	ISO 2022 with escape sequences for Kanji

1.8.3 Codes and terminology sources

ACR	Index for Radiological Diagnosis, Revised 3rd Edition
CPT4	Current Procedural Terminology ³
CAS	USAN 1990 and the USP dictionary of drug names ⁴
EUCLIDES	European standard for clinical laboratory data exchange ⁵

³ Available from American Medical Association, P O Box 10946, Chicago, IL 60610

⁴ William M. Heller, Ph.D., Executive Editor. Available from United States Pharmacopeial Convention, Inc., 12601 Twinbrook Parkway, Rockville, MD 20852.

Chapter 1: Introduction

Home Health	Home Healthcare Classification System (Virginia Saba, EdD, RN, Georgetown U. School of Nursing, Washington DC)
HIBCC	Standard for electronic business data interchange
ICCS	Commission on Professional and Hospital Activities
ICD-9	International Classification of Diseases, 9th Revision
ICD9-CM	International Classification of Diseases, Clinical Modification Manual of Clinical Microbiology ⁶
NANDA	North American Nursing Diagnosis Association, Philadelphia PA
NDC	National drug codes ⁷
NIC	Nursing Interventions Classification, Iowa Intervention Project. U. of Iowa
NLM	Unified Medical Language ⁸
Omaha System	Omaha Visiting Nurse Association, Omaha NE
Read	Clinical Classification of Medicine ⁹
SNOMED III	Systemized Nomenclature of Medicine ¹⁰
WHO	Drug Codes ¹¹
UMDNS	Universal Medical Device Nomenclature System ¹²
FDA K10	Device Codes Device and analyte process codes ¹³

⁵ Available from G. De Moor, M.D., Dept. of Medical Informatics 5K3, State University Hospital Gent, De Pintelaan 185, B 9000 GENT, BELGIUM

⁶ Available from American Society for Microbiology, 1913 Eye St., NW, Washington, D.C. 20006.

⁷ Available from the National Drug Code Directory, FDA, Rockville, MD, and other sources

⁸ Available from National Library of Medicine, 8600 Rockville Pike, Bethesda, MD 20894

⁹ Available from James D. Read, MB, ChB, DRCOG, MRCP, General Medical Practitioner, Park View Surgery, 26-28 Leicester Rd., Loughborough, Leicestershire LE11 2AG.

¹⁰ Available from American College of Pathology, Skokie, IL

¹¹ Available from INTDIS, P O Box 26, S-751 03 Uppsala, Sweden

¹² Available from ECRI, 5200 Butler Pike, Plymouth Meeting, PA 19462

¹³ Available from Dept. of Health & Human Services, FDA, Rockville, MD 20857

LOINC

Laboratory Object Identifier and Numerical Code

1.8.4 Other applicable documents

ASTM E31.12 Draft Dec 1990 - A Standard Specification for Representing Clinical Laboratory Test and Analyte Names *Draft*¹⁴

ASTM E1467-91 Standard Specification for Transferring Digital Neurophysiological Data Between Independent Computer Systems¹⁵

ASTM E1394 A Standard Specification for Transferring Information Between Clinical Instruments and Computer Systems¹⁶

ASTM E1381 Standard Specification for the Low-level Protocol to Transfer Messages between Clinical Instruments and Computer Systems¹⁷

McDonald CJ, Hammond WE: Standard formats for electronic transfer of clinical data. *Annals of Internal Medicine* 1989; 110(5):333-335.

International Union of Pure and Applied Chemistry/International Federation of Clinical Chemistry. The Silver Book: Compendium of terminology and nomenclature of properties in clinical laboratory sciences. Oxford: Blackwell Scientific Publishers, 1995.

LOINC Committee. Logical Observation Identifier Names and Codes. Indianapolis: Regenstrief Institute and LOINC Committee, 1995. c/o Kathy Hutchins, 1001 West 10th Street RG-5, Indianapolis, IN 46202. 317-630-7433. Available via FTP/Gopher (dumccss.mc.duke.edu/standards/HL7/termcode/loincclab/) and the World Wide Web (<http://dumccss.mc.duke.edu/standards/HL7/termcode/loincclab/>)

Forrey AF, McDonald CJ, DeMoor G, Huff SM, Leavelle D, Leleand D et al. Logical Observation Identifier Names and Codes (LOINC) database, A public use set of codes and names for electronic reporting of clinical laboratory test results. *Clin Chem* 1996; 42:81-90.

UB-92 National Uniform Billing Data Element Specifications as developed by the National Uniform Billing Committee, November 5, 1997. National Uniform Billing Data Element Specifications as adopted by the Florida State Health Claims Review Committee, 2nd Revision, December 19, 1993.

UB-82 Recommended Billing Instructions.

¹⁴ Available from Arden Forrey, Ph.D., 4916 Purdue Ave., NE, Seattle, WA 98105

¹⁵ Available from American Society for Testing and Materials (ASTM) 1916 Race St., Philadelphia, PA 19103-1187.

¹⁶ Available from American Society for Testing and Materials (ASTM) 1916 Race St., Philadelphia, PA 19103-1187

¹⁷ Available from American Society for Testing and Materials (ASTM) 1916 Race St., Philadelphia, PA 19103-1187

1.9 TECHNICAL EDITORS

The Standard, in its entirety, was edited for technical content by:

Karen Van Hentenryck

Health Level Seven

Ann Arbor, MI

email: Karenvan@hl7.org

1.10 SUGGESTIONS AND COMMENTS

The HL7 Working Group welcomes comments and suggestions for improving the Standard. The Working Group is also open to new membership. Both feedback on the Standard and interest in membership should be sent to:

Karen Van Hentenryck

HL7 Associate Executive Director

Health Level Seven

3300 Washtenaw Avenue, Suite 227

Ann Arbor, MI 48104-4250

Phone: (734) 677-7777

Fax: (734) 677-6622

email: hq@hl7.org

George W. Beeler, PhD

Chair, HL7 Board of Directors

The Mayo Foundation

200 First Street SW

Rochester, MN 55905

Phone: (507) 284-9129

Fax: (507) 284-0796

email: beeler@mayho.edu

John Quinn

Technical Chair

HL7 Working Group

Ernst & Young

1660 W. Second St. Suite 1200

Cleveland, OH 44113-1454

(216) 737-1242

email: john.quinn@ey.com

2.

Control/Query

Chapter Chairs/Editors: Mark Shafarman
Oacis Healthcare Systems, Inc.

Larry Reis
Wizdom Systems

Mark Tucker
Regenstrief Institute

2.1 INTRODUCTION

The Control/Query chapter of this Standard defines the generic rules that apply to all messages. Subsequent sections define functionally specific messages to be exchanged among certain applications. The specific aspects of message definition that are addressed herein are:

- a) the form to be used in functional chapters for describing messages. This includes their purpose, their contents, and the interrelationships among them. This form is called an abstract message definition because it is purely a level 7 (application) definition.
- b) the HL7 encoding rules for converting an abstract message into a string of characters that comprises an actual message
- c) the programming procedures required to exchange messages using the HL7 specifications
- d) the anticipated relationship with lower level protocols
- e) certain message segments that are components of all messages
- f) a single message, the acknowledgment message, that may be used unchanged in multiple applications

2.2 CONCEPTUAL APPROACH

2.2.1 Trigger events

The Standard is written from the assumption that an event in the real world of healthcare creates the need for data to flow among systems. The real-world event is called the **trigger event**. For example, the trigger event **a patient is admitted** may cause the need for data about that patient to be sent to a number of other systems. The trigger event, **an observation (e.g., a CBC result) for a patient is available**, may cause the need for that observation to be sent to a number of other systems. When the transfer of information is initiated by the application system that deals with the triggering event, the transaction is termed an **unsolicited update**.

Note:	No assumption is made about the design or architecture of the application system creating the unsolicited update. The scope of HL7 is restricted to the specification of messages between application systems and the events triggering them.
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HL7 allows the use of trigger events at several different levels of data granularity and inter-relationships. For example, most Patient Administration (ADT) trigger events concern single objects (such as an admit event, which creates a message that contains data about a single person and/or account). Other ADT trigger events are concerned with relationships between more than one object (e.g., the merge events, which specify patient or account merges). Some ADT trigger events pertain to a collection of objects that may have no significant inter-relationships (e.g., a record-oriented location-based query, whose response contains data about a collection of inpatients who are related only temporarily by local geography).

2.2.2 Acknowledgments: original mode

When the unsolicited update is sent from one system to another, this acknowledgment mode specifies that it be acknowledged at the application level. The reasoning is that it is not sufficient to know that the underlying communications system guaranteed delivery of the message. It is also necessary to know that the receiving application processed the data successfully at a logical application level.

The acknowledgment may contain data of interest to the system that initiated the exchange. For example, if a patient care system has processed the trigger event **a lab test is ordered for a patient**, it may send an unsolicited update to a lab application identifying the patient, the test ordered, and various other information about the order. The ancillary system will acknowledge the order when it has processed it successfully. For some pairings of patient care and ancillary department systems the acknowledgment may also include the ancillary identification number that was assigned. (HL7 does not require Order Entry and Results Reporting applications to interface in this manner, but it supports those that do.)

The HL7 Standard makes no assumptions about the ownership of data. It also makes no requirements of its own on the subsequent action of the recipient of data, nor does it make any assumption about the design or architecture of the receiving application system. The scope of HL7 is restricted to the specification of messages between application systems, and the events triggering them. HL7 does not explicitly support, but can be used with, systems that support store and forward and data broadcast facilities (see the HL7 Implementation Support Guide).

The HL7 Standard makes no functional interpretation of the requirement that a system commit the data in a message to its database before acknowledging it. All that is required is that the receiving system accept responsibility for the data, providing the same integrity test that it would apply to data from any source. To continue the prior example, the ancillary system may acknowledge the order after placing it in an input queue, expecting to fully process the order into its database at a future time. The only assumption is that the input queue is maintained at the same level of integrity as the database.

2.2.3 Acknowledgments: enhanced mode

The HL7 acknowledgment paradigm has been extended to distinguish both accept and application acknowledgments, as well the conditions under which each is required. With a positive accept acknowledgment, the receiving system commits the message to safe storage in a manner that releases the sending system from the need to resend the message. After the message has been processed by the receiving system, an application acknowledgment may be used to return the resultant status to the sending system.

2.2.4 Queries

A different data exchange occurs when one system sends a query to another. For example, in a cardiac catheterization application, there may be a trigger event **a procedure is scheduled** for a patient who is not already registered in the cardiac catheterization application's database. The application may send a request message containing the patient's ID number to the Patient Administration (ADT) system and receive a response containing the necessary data to permit processing of the order. This requesting transaction is a **query**, as distinguished from the unsolicited update discussed above. The information that flows between the systems is contained in the response. The response itself is not acknowledged with a third message.

In all cases, the HL7 Standard consists of a simple exchange of messages between a pair of applications: the unsolicited update and its acknowledgment or the query and its response. The underlying operational model is that of a **client** and a **server**. An application interfaces with another application using an event code that identifies the transaction. The other application responds with a message that includes data or an error indication. The initiating application may receive a reject status from the other application or from lower level software indicating that its message was not received correctly.

HL7 queries can be formulated using one of several methods:

- 1) HL7 “query filters,” defined via the QRD and QRF segments. These are supported as in previous releases of HL7, and are referred to as “original mode” queries.
- 2) Embedded Query Language select statements, which enable the querying system to format the request as a free-form¹ query statement, using the query language of choice (e.g., SQL).
- 3) Virtual Table Request, which is similar in function to the Embedded Query Language message, but more rigorously formatted with delimiters.
- 4) Stored Procedure Requests, which invoke units of program code on the responding system that are built to satisfy a specific query (e.g., predefined queries, SQL stored procedures).
Since the predefined queries supported by HL7 are limited in number and precisely defined, each has a corresponding stored procedure name and parameter list associated with it. Refer to the functional chapters for the lists of supported queries.
- 5) Event Replay Queries, which are requests for data formatted as event messages.

HL7 includes SQL select statements as an alternate means of encoding query selection criteria. This alternative is offered as a convenience to implementors, and in no way implies that server systems must support generic SQL or be based on relational database technology.

These queries are defined in the appropriate chapters of this specification.

2.3 COMMUNICATIONS ENVIRONMENT

The HL7 Standard defines the messages as they are exchanged among application entities and the procedures used to exchange them. As such, it conceptually operates at the seventh level of the ISO model for Open System Interconnection (OSI). It is primarily concerned with the data content and interrelationship of messages and with communicating certain application-level error conditions.

Since the OSI protocols are not universally implemented, the HL7 Working Group is interested in providing standards that will be useful in the interim. It is also recognized that there is now, and will continue to be, interest in communicating health data among systems operating in communications environments that provide a high level of functionality, but use protocols other than ISO OSI. The universe of environments of interest to HL7 includes, but is not restricted to:

- a) ad hoc environments that do not provide even basic transport reliability. Such environments consist of point-to-point RS-232 links, modems, and even LANs, if their connection to host computers is made via RS-232 communications links. Until OSI high level standards become truly prevalent, many healthcare interfaces will be implemented over such links. In such an environment, the HL7 Lower Level Protocols (LLP) may be used between systems to enhance the capabilities of the communications environment. The HL7 Lower Level Protocols are defined in the HL7 Implementation Guide, which is not an official part of the Standard.

¹ Although referred to as “free-form,” the functional chapters of this specification define this field for commonly used queries.

- b) environments that support a robust transport level, but do not meet the high level requirements. This includes environments such as TCP/IP, DECNET, and SNA.
- c) ISO and proprietary networks that implement up to presentation and other high level services. IBM's SNA LU6.2 and SUN Microsystems's NFS are examples of complete proprietary networks.
- d) two or more applications running on the same physical and/or logical machine that are not tightly integrated. In these environments, the messaging capabilities may be provided by inter-process communications services (e.g., Pipes in a UNIX System).

The HL7 Standard assumes that the communications environment will provide the following capabilities:

- a) error free transmission. Applications can assume that they correctly received all of the transmitted bytes in the correct order that they were sent. This implies that error checking is done at a lower level. However, sending applications may not assume that the message was actually received without receiving an acknowledgment message.
- b) character conversion. If the two machines exchanging data use different representations of the same character set, the communications environment will convert the data from one representation to the other.
- c) message length. HL7 sets no limits on the maximum size of HL7 messages. The Standard assumes that the communications environment can transport messages of any length that might be necessary. In practice, sites may agree to place some upper bound on the size of messages and may use the message continuation protocol, described later in this chapter, for messages that exceed the upper limit.

Note: Just as HL7 makes no assumptions about the design or architecture of the application systems sending and receiving HL7 messages, it makes no assumptions about the communications environment beyond those listed above. In particular, aside from the above assumptions, the communications environment, including its architecture, design and implementation, is outside the scope of HL7.

2.4 HL7 MESSAGES

This section and Sections 2.5, "SEGMENTS," through 2.9, "USE OF ESCAPE SEQUENCES IN TEXT FIELDS," define the components of messages and provide the methodology for defining abstract messages that are used in later chapters. A **message** is the atomic unit of data transferred between systems. It is comprised of a group of segments in a defined sequence. Each message has a **message type** that defines its purpose. For example the ADT Message type is used to transmit portions of a patient's Patient Administration (ADT) data from one system to another. A three-character code contained within each message identifies its type. These are listed in the Message Type list, Appendix A.

The real-world event that initiates an exchange of messages is called a trigger event. (See Section 2.2.1, "Trigger events," for a more detailed description of trigger events.) Appendix A contains the codes that represent all defined trigger events. These codes represent values such as **A patient is admitted** or **An order event occurred**. There is a one-to-many relationship between message types and trigger event codes. The same trigger event code may not be associated with more than one message type; however a message type may be associated with more than one trigger event.

All message types and trigger event codes beginning with the letter "Z" are reserved for locally-defined messages. No such codes will be defined within the HL7 Standard.

This section defines the components of messages and provides the methodology for defining abstract messages that are used in later chapters.

2.5 SEGMENTS

A **segment** is a logical grouping of **data fields**. Segments of a message may be required or optional. They may occur only once in a message or they may be allowed to repeat. Each segment is given a name. For example, the ADT message may contain the following segments: Message Header (MSH), Event Type (EVN), Patient ID (PID), and Patient Visit (PV1).

Each segment is identified by a unique three-character code known as the Segment ID. Although the actual segments are defined in various chapters, the ID codes assigned to the various segments are listed in Appendix A.

All segment ID codes beginning with the letter **Z** are reserved for locally-defined messages. No such codes will be defined within the HL7 Standard.

2.6 FIELDS

A field is a string of characters. HL7 does not care how systems actually store data within an application. When fields are transmitted, they are sent as character strings. Except where noted, HL7 data fields may take on the null value. Sending the null value, which is transmitted as two double quote marks (""), is different from omitting an optional data field. The difference appears when the contents of a message will be used to update a record in a database rather than create a new one. If no value is sent, (i.e., it is omitted) the old value should remain unchanged. If the null value is sent, the old value should be changed to null. (For further details, see Section 2.10, "MESSAGE CONSTRUCTION RULES," - step 2d.)

The various chapters of the Standard contain segment attribute tables. These tables list and describe the data fields in the segment and characteristics of their usage. A comprehensive data dictionary of all HL7 fields is provided in Appendix A. In defining a segment, the following information is specified about each field:

2.6.1 Position (sequence within the segment)

Ordinal position of the data field within the segment. This number is used to refer to the data field in the text comments that follow the segment definition table. In the segment attribute tables this information is provided in the column labeled **SEQ**.

2.6.2 Maximum length

Maximum number of characters that one occurrence of the data field may occupy. The maximum length is not of conceptual importance in the abstract message or the HL7 coding rules. The length of a field is normative. However, in general practice it is often negotiated on a site-specific basis. It is calculated to include the component and subcomponent separators that are defined below. Because the maximum length is that of a single occurrence, the repetition separator is not included in calculating the maximum length (See Section 2.6.5, "Repetition"). In the segment attribute tables this information is in a column labeled **LEN**.

2.6.3 Data type

Restrictions on the contents of the data field. There are a number of data types defined by HL7. These are explained in Section 2.8, "DATA TYPES." In the segment attribute tables this information is provided in the column labeled **DT**.

2.6.4 Optionality

Whether the field is required, optional, or conditional in a segment. The designations are:

- R - required
- O - optional
- C - conditional on the trigger event or on some other field(s). The field definitions following the segment attribute table should specify the algorithm that defines the conditionality for this field.
- X - not used with this trigger event
- B - left in for backward compatibility with previous versions of HL7. The field definitions following the segment attribute table should denote the optionality of the field for prior versions.

Note: For Versions 2.3 and higher: the optionality of fields should be explicitly documented in the segment field definitions that follow each segment definition table; if the optionality of fields within a segment changes depending on the trigger event, that optionality should also be explicitly documented.

For fields defined by HL7 data types containing multiple components or subcomponents, the optionality of a given component or subcomponent must be specified in the detailed field definitions that follow the formal segment attribute tables. (See also Sections 2.7, "MESSAGE DELIMITERS," 2.8, "DATA TYPES," and 2.10, "MESSAGE CONSTRUCTION RULES").

In the segment attribute tables this information is provided in the column labeled **OPT**.

2.6.5 Repetition

Whether the field may repeat. The designations are:

- N - no repetition
- Y - the field may repeat an indefinite or site-determined number of times
- (integer) - the field may repeat up to the number of times specified by the integer

Each occurrence may contain the number of characters specified by the field's maximum length. (See Section 2.6.2, "Maximum length.") In the segment attribute tables this information is provided in the column labeled **RP/#**.

2.6.6 Table

HL7 defines a table of values for this component. An entry in the table number column means that the table name and the element name are equivalent.

The manner in which HL7 defines the valid values for tables will vary. Certain fields, like Patient Location, will have values that vary from institution to institution. Such tables are designated user- or site-defined. Even though these tables are not defined in the Standard, they are given a user-defined table number to facilitate implementations. The IS data type is often used to encode values for these tables. Note that some of these tables (e.g., location) may reference common master files.

Others, like Event Type (*HL7 table 0003*), are a part of the HL7 Standard because they affect the interpretation of the messages that contain them. They are limited to the values established by the HL7 Standard. The ID data type is most often used to encode values for HL7 tables. When an HL7 table exists it is strongly recommended that it be used. The values are listed in Appendix A. These HL7 tables also appear

in the text in a standard box format (e.g., the *HL7 table 0003 - Event type*). Additions may be included on a site-specific basis.

Still other fields contain values that are encoded by reference to other standards documents. For example, the encoding for Lab procedures is defined by ASTM E1238-94. The CE data type is used to encode values for these fields.

There are some user-defined tables that contain values that might be standardized across institutions but for which no applicable official standard exists. For these a set of **suggested** values may be listed in Appendix A. These suggested values appear in the text in a standard non-box format (e.g., *HL7 table 0062 - Event reason* in Section 3.3.1.4, “Event reason code”). It is expected that these values will be used where applicable within an institution and serve as a basis for extensions as required. The appropriate functional committee within HL7 solicits suggestions for additional values from institutions that are applying the Standard.

Table numbers 9000 and above are reserved for externally-defined tables published by HL7. Such tables arise from applications where the concepts and possibly the codes are established by external agencies due to regulatory requirements or agreements between HL7 and other Standards Developing Organizations. They are published by HL7 on behalf of other organizations. Their contents are not subject to approval by HL7 ballot. Such tables will be published with HL7 Standards. However, they may be updated more frequently than HL7 Standards. HL7 will provide free downloads of the most recent versions of these tables via the Internet without requiring membership in HL7.

Various HL7 data types (AD, CD, CE, CF, CK, CM, CN, CNE, CP, CQ, CWE, CX, DLN, ED, EI, FC, ID, IS, JCC, MO, HD, PL, PPN, PT, QSC, RI, RP, SCV, TQ, VH, XAD, XCN, XON, XPN, and XTN) are used to convey tabular values, or have a component containing tabular values. In the segment attribute tables this information is provided in the column labeled **TBL#**. The only exceptions are the CE and CF data types, which contain the table identifier as part of the data type definition.

2.6.7 ID number

Small integer that uniquely identifies the data item throughout the Standard. In the segment definition this information is provided in the column labeled **ITEM #**.

2.6.8 Name

Descriptive name for the data item. In the segment attribute tables this information is provided in the column labeled **ELEMENT NAME**.

When the same name is used in more than one segment, it must have the same data type and semantic meaning in each segment as well as the same ID number. To deal with any ambiguities arising from this convention, whenever a field is referenced herein, the segment name and position must always be included.

2.7 MESSAGE DELIMITERS

In constructing a message, certain special characters are used. They are the segment terminator, the field separator, the component separator, subcomponent separator, repetition separator, and escape character. The segment terminator is always a carriage return (in ASCII, a hex 0D). The other delimiters are defined in the MSH segment, with the field delimiter in the 4th character position, and the other delimiters occurring as in the field called Encoding Characters, which is the first field after the segment ID. The delimiter values used in the MSH segment are the delimiter values used throughout the entire message. In the absence of other considerations, HL7 recommends the suggested values found in *Figure 2-1 delimiter values*.

Chapter 2: Control / Query

At any given site, the subset of the possible delimiters may be limited by negotiations between applications. This implies that the receiving applications will use the agreed upon delimiters, as they appear in the Message Header segment (MSH), to parse the message.

Figure 2-1. Delimiter values

Delimiter	Suggested Value	Encoding Character Position	Usage
Segment Terminator	<cr> (hex 0D)	-	Terminates a segment record. This value cannot be changed by implementors.
Field Separator		-	Separates two adjacent data fields within a segment. It also separates the segment ID from the first data field in each segment.
Component Separator	^	1	Separates adjacent components of data fields where allowed.
Subcomponent Separator	&	4	Separates adjacent subcomponents of data fields where allowed. If there are no subcomponents, this character may be omitted.
Repetition Separator	~	2	Separates multiple occurrences of a field where allowed.
Escape Character	\	3	Escape character for use with any field represented by an ST, TX or FT data type, or for use with the data (fourth) component of the ED data type. If no escape characters are used in a message, this character may be omitted. However, it must be present if subcomponents are used in the message.

2.8 DATA TYPES

The data types in this section are listed in alphabetical order.

Note: For data types which contain multiple components or subcomponents, the examples given in this section do not specify the optionality of the component or subcomponents. This must be specified in the field definitions that follow the formal segment attribute tables to a maximum length of 64K.

Except for the TS data type and the maximum or minimum lengths for several other data types (CE, PN, TX, FT), the field length of HL7 attributes is specified in the segment attribute tables, and any specific length of the components or subcomponents of those attributes must be specified in the field definitions that follow the formal segment attribute tables. In general, HL7 does not specify the lengths of components and/or subcomponents.

(The data type examples in this Standard are given using the standard HL7 encoding rules, with the delimiter values from *Figure 2-1* of Section 2.7, “MESSAGE DELIMITERS.” Although only one set of encoding rules is defined as a standard in HL7 Version 2.3, other encoding rules are possible (but since they are non-standard, they may only be used by a site-specific agreement).

In certain data type definitions, square brackets, “[“ and”]”, are used to specify optional parts of a data type (or of a data type component or subcomponent).

Figure 2-2. HL7 data types

Data Type Category/ Data type	Data Type Name	HL7 Section Reference	Notes/Format
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Data Type Category/ Data type	Data Type Name	HL7 Section Reference	Notes/Format
Alphanumeric			
ST	String	2.8.40	
TX	Text data	2.8.45	
FT	Formatted text	2.8.19	
Numerical			
CQ	Composite quantity with units	2.8.10	<quantity (NM)> ^ <units (CE)>
MO	Money	2.8.25	<quantity (NM)> ^ <denomination (ID)>
NM	Numeric	2.8.27	
SI	Sequence ID	2.8.38	
SN	Structured numeric	2.8.39	<comparator (ST)> ^ <num1 (NM)> ^ <separator/suffix (ST)> ^ <num2 (NM)>
Identifier			
ID	Coded values for HL7 tables	2.8.21	
IS	Coded value for user-defined tables	2.8.22	
VID	Version identifier	2.8.47	<version ID (ID)> ^ <internationalization code (CE)> ^ <international version ID (CE)>
HD	Hierarchic designator	2.8.20	<namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>
EI	Entity identifier	2.8.17	<entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>
RP	Reference pointer	2.8.36	<pointer (ST) > ^ < application ID (HD)> ^ <type of data (ID)> ^ <subtype (ID)>
PL	Person location	2.8.28	<point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ < location status (IS)> ^ <person location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <location description (ST)>
PT	Processing type	2.8.31	<processing ID (ID)> ^ <processing mode (ID)>
Date/Time			
DT	Date	2.8.15	YYYY[MM[DD]]
TM	Time	2.8.41	HH[MM[SS[.S[S[S[S]]]]]][/-ZZZZ]
TS	Time stamp	2.8.44	YYYY[MM[DD][HHMM[SS[.S[S[S[S]]]]]]]/-ZZZZ ^ <degree of precision>
Code Values			
CE	Coded element	2.8.3	<identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>
CNE	Coded with no exceptions	2.8.8	<identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)> ^ <coding system

Chapter 2: Control / Query

Data Type Category/ Data type	Data Type Name	HL7 Section Reference	Notes/Format
			version ID (ST)> ^ alternate coding system version ID (ST)> ^ <original text (ST) >
CWE	Coded with exceptions	2.8.11	<identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)> ^ <coding system version ID (ST)> ^ alternate coding system version ID (ST)> ^ <original text (ST) >
CF	Coded element with formatted values	2.8.4	<identifier (ID)> ^ <formatted text (FT)> ^ <name of coding system (ST)> ^ <alternate identifier (ID)> ^ <alternate formatted text (FT)> ^ <name of alternate coding system (ST)>
CK	Composite ID with check digit	2.8.5	<ID number (NM)> ^ <check digit (NM)> ^ <code identifying the check digit scheme employed (ID)> ^ < assigning authority (HD)>
CN	Composite ID number and name	2.8.7	<ID number (ST)> ^ <family name (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)>
CX	Extended composite ID with check digit	2.8.12	<ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ < assigning authority (HD)> ^ <identifier type code (IS)> ^ < assigning facility (HD)
XCN	Extended composite ID number and name	2.8.49	In Version 2.3, use instead of the CN data type. <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>
Generic			
CM	Composite	2.8.6	No new CM's are allowed after HL7 Version 2.2. Hence there are no new CM's in Version 2.3.
Demographics			
AD	Address	2.8.1	<street address (ST)> ^ < other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code (ST)> ^ <country (ID)> ^ <address type (ID)> ^ <other geographic designation (ST)>
PN	Person name	2.8.29	<family name (ST)>& <last name prefix (ST)> ^ <given name (ST) ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)>
TN	Telephone number	2.8.42	[NN] [(999)]999-9999[X99999][B99999][C any text]
XAD	Extended address	2.8.48	In Version 2.3, replaces the AD data type. <street address (ST)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code (ST)> ^ <country (ID)> ^ < address type (ID)> ^ <other geographic designation (ST)> ^ <county/parish code (IS)> ^ <census tract (IS)> ^ <address representation code (ID)>
XPN	Extended person name	2.8.51	In Version 2.3, replaces the PN data type. <family name (ST)> & <last name prefix (ST)> ^ <given name (ST) ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g.,

Data Type Category/ Data type	Data Type Name	HL7 Section Reference	Notes/Format
			DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <name type code (ID)> ^ <name representation code (ID)>
XON	Extended composite name and ID number for organizations	2.8.50	<organization name (ST)> ^ <organization name type code (IS)> ^ <ID number (NM)> ^ <check digit (NM)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility ID (HD)> ^ <name representation code (ID)>
XTN	Extended telecommunications number	2.8.52	In Version 2.3, replaces the TN data type. [NNN] [(999)]999-9999 [X99999] [B99999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>
Specialty/Chapter Specific			
Waveform			
CD	Channel definition	2.8.2	For waveform data only, see Chapter 7, Section 7.15.3. <channel identifier (*)> ^ <channel number (NM)> & <channel name (ST)> ^ <electrode names (*)> ^ <channel sensitivity/units (*)> ^ <calibration parameters (*)> ^ <sampling frequency (NM)> ^ <minimum/maximum data values (*)>
MA	Multiplexed array	2.8.24	For waveform data only, see Chapter 7, Section 7.15.2. <sample 1 from channel 1 (NM)> ^ <sample 1 from channel 2 (NM)> ^ <sample 1 from channel 3 (NM)> ...~<sample 2 from channel 1 (NM)> ^ <sample 2 from channel 2 (NM)> ^ <sample 2 from channel 3 (NM)> ...~
NA	Numeric array	2.8.26	For waveform data only, see Chapter 7, Section 7.15.1. <value1 (NM)> ^ <value2 (NM)> ^ <value3 (NM)> ^ <value4 (NM)> ^ ...
ED	Encapsulated data	2.8.16	Supports ASCII MIME-encoding of binary data. <source application (HD)> ^ <type of data (ID)> ^ <data subtype (ID)> ^ <encoding (ID)> ^ <data (ST)>
Price Data			
CP	Composite price	2.8.9	In Version 2.3, replaces the MO data type. <price (MO)> ^ <price type (ID)> ^ <from value (NM)> ^ <to value (NM)> ^ <range units (CE)> ^ <range type (ID)>
Patient Administration /Financial Information			
FC	Financial class	2.8.18	<financial class (IS)> ^ <effective date (TS)>
Extended Queries			
QSC	Query selection criteria	2.8.33	<segment field name (ST)> ^ <relational operator (ID)> ^ <value (ST)> ^ <relational conjunction (ID)>
QIP	Query input parameter list	2.8.32	<segment field name (ST)> ^ <value1 (ST) & value2 (ST) & value3 (ST) ...>
RCD	Row column definition	2.8.34	<segment field name (ST)> ^ <HL7 data type (ST)> ^ <maximum column width (NM)>

Data Type Category/ Data type	Data Type Name	HL7 Section Reference	Notes/Format
Master Files			
DLN	Driver's license number	2.8.13	<license number (ST)> ^ <issuing state, province, country (IS)> ^ <expiration date (DT)>
JCC	Job code/class	2.8.23	<job code (IS)> ^ <job class (IS)>
VH	Visiting hours	2.8.46	<start day range (ID)> ^ <end day range (ID)> ^ <start hour range (TM)> ^ <end hour range (TM)>
Medical Rec- ords/Information Management			
PPN	Performing person time stamp	2.8.29	<ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <date/time action performed (TS)> ^ <name representation code (ID)>
Time Series:			
DR	Date/time range	2.8.14	Scheduling Chapter Only: <range start date/time (TS)> ^ <range end date/time (TS)>
RI	Repeat interval	2.8.35	Scheduling Chapter Only: <repeat pattern (IS)> ^ <explicit time interval (ST)>
SCV	Scheduling class value pair	2.8.37	Scheduling Chapter Only: <parameter class (IS)> ^ <parameter value (ST)>
TQ	Timing/quantity	2.8.43	For timing/quantity specifications for orders, see Chapter 4, Section 4.4. <quantity (CQ)> ^ <interval (*)> ^ <duration (*)> ^ <start date/time (TS)> ^ <end date/time (TS)> ^ <priority (ST)> ^ <condition (ST)> ^ <text (TX)> ^ <conjunction (ID)> ^ <order sequencing (*)> ^ <occurrence duration (CE)> ^ <total occurrences (NM)>

* for subcomponents of these elements please refer to the definition in the text.

2.8.1 AD - address

Components: <street address (ST)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province
(ST)> ^ <zip or postal code (ST)> ^ <country (ID)> ^ <address type (ID)> ^ <other
geographic designation (ST)>

Example:

| 10 ASH LN^#3^LIMA^0H^48132|

2.8.1.1 Street address (ST)

The street or mailing address of a person or institution. When referencing an institution, this first component is used to specify the institution name. When used in connection with a person, this component specifies the first line of the address.

2.8.1.2 Other designation (ST)

Second line of address. In general, it qualifies address. Examples: Suite 555 or Fourth Floor. When referencing an institution, this component specifies the street address.

2.8.1.3 City (ST)

2.8.1.4 State or province (ST)

State or province should be represented by the official postal service codes for that country.

2.8.1.5 Zip or postal code (ST)

Zip or postal codes should be represented by the official codes for that country. In the US, the zip code takes the form 99999[-9999], while the Canadian postal code takes the form A9A-9A9.

2.8.1.6 Country (ID)

Defines the country of the address. ISO 3166 provides a list of country codes that may be used.² This ISO table has three separate forms of the country code: HL7 specifies that the 3-character (alphabetic) form be used for the country code.

2.8.1.7 Address type (ID)

Type is optional and defined by *HL7 table 0190 - Address type*.

Table 0190 - Address type

Value	Description
C	Current Or Temporary
P	Permanent
M	Mailing
B	Firm/Business
O	Office
H	Home
N	Birth (nee) (birth address, not otherwise specified)
BDL	Birth delivery location (address where birth occurred)
BR	Residence at birth (home address at time of birth)
F	Country Of Origin
L	Legal Address
RH	Registry home. Refers to the information system, typically managed by a public health agency, that stores patient information such as immunization histories or cancer data, regardless of where the patient

² Available from ISO 1 Rue de Varembe, Case Postale 56, CH 1211, Geneva, Switzerland.

Value	Description
	obtains services.
BA	Bad address

2.8.1.8 Other geographic designation (ST)

Other geographic designation includes county, bioregion, SMSA, etc.

2.8.2 CD - channel definition

Components: <channel identifier (*)> ^ <channel number (NM)> & <channel name (ST)> ^ <electrode names (CM)> ^ <channel sensitivity/units (CM)> ^ <calibration parameters (CM)> ^ <sampling frequency (NM)> ^ <minimum/maximum data values (CM)>

This data type is used for labeling of digital waveform data. See Chapter 7, Section 7.15.3, “CD - channel definition,” for a complete description of this data type.

2.8.3 CE - coded element

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

This data type transmits codes and the text associated with the code. To allow all six components of a CE data type to be valued, the maximum length of this data type must be at least 60 (see Section 2.6.2, “Maximum length”). Example:

| F-11380^CREATININE^I9^2148-5^CREATININE^LN|

2.8.3.1 Identifier (ST)

Sequence of characters (the code) that uniquely identifies the item being referenced by the <text>. Different coding schemes will have different elements here.

2.8.3.2 Text (ST)

Name or description of the item in question. E.g., myocardial infarction or X-ray impression. Its data type is string (ST).

2.8.3.3 Name of coding system (ST)

Each coding system is assigned a unique identifier. This component will serve to identify the coding scheme being used in the identifier component. The combination of the **identifier** and **name of coding system** components will be a unique code for a data item. Each system has a unique identifier. ASTM E1238-94, Diagnostic, procedure, observation, drug ID, and health outcomes coding systems are identified in the tables in Section 7.1.4, “Coding schemes.” Others may be added as needed. When an HL7 table is used for a CE data type, the *name of coding system* component is defined as **HL7nnnn** where *nnnn* is the HL7 table number.

2.8.3.4 Alternate components

These three components are defined analogously to the above for the alternate or local coding system. If the Alternate Text component is absent, and the Alternate Identifier is present, the Alternate Text will be taken to be the same as the Text component. If the Alternate Coding System component is absent, it will be taken to mean the locally-defined system.

Note: The presence of two sets of equivalent codes in this data type is semantically different from a repetition of a CE-type field. With repetition, several distinct codes (with distinct meanings) may be transmitted.
--

For HL7-defined tables which have not been adopted from some existing standard, the third component, "name of coding system," is constructed by appending the table number to the string "HL7." Thus, the field RXR-2-site, is a CE data type which refers to HL7 table number 0163. Its "name of coding system" component is "HL70163".

Figures 7-2 and 7-3 list many diagnostic, procedure, observation, drug, and health outcomes coding systems. Guidelines for their use are presented in Chapter 7, Section 7.1, "Introduction and Overview."

2.8.4 CF - coded element with formatted values

This data type transmits codes and the formatted text associated with the code. This data type can be used to transmit for the first time the formatted text for the **canned text** portion of a report, for example, a standard radiologic description for a normal chest X-ray. The receiving system can store this information and in subsequent messages only the identifier need be sent. Another potential use of this data type is transmitting master file records that contain formatted text. This data type has six components as follows:

Components: <identifier (ID)> ^ <formatted text (FT)> ^ <name of coding system (ST)> ^ <alternate identifier (ID)> ^ <alternate formatted text (FT)> ^ <name of alternate coding system (ST)>

The components, primary and alternate, are defined exactly as in the CE data type with the exception of the second and fifth components, which are of the formatted text data type. Example:

OBX||CF|71020^CXR^CPMC||79989^H\Description: \N\ \.sp\ \ti+4\Heart is not enlarged.
There is no evidence of pneumonia, effusion, pneumothorax or any mass-
es. \.sp+3\ \H\Impressi on: \N\ \.sp\ \.ti+4\Negative chest.^CPMC

2.8.5 CK - composite ID with check digit

Components: <ID number (NM)> ^ <check digit (NM)> ^ <code identifying the check digit scheme employed (ID)> ^ < assigning authority (HD)>

This data type is used for certain fields that commonly contain check digits, e.g., *BLG-3-account ID*. If a site is not using check digits for a particular CK field, the second and third components are not valued. Example:

|128952^6^M11^ADT01|

2.8.5.1 ID number (NM)

2.8.5.2 Check digit (NM)

The check digit in this data type is not an add-on produced by the message processor. It is the check digit that is part of the identifying number used in the sending application. If the sending application does not include a self-generated check digit in the identifying number, this component should be valued null.

2.8.5.3 Code identifying the check digit scheme employed (ID)

The check digit scheme codes are defined in *HL7 table 0061 - Check digit scheme*.

Table 0061 - Check digit scheme

Value	Description
M10	Mod 10 algorithm
M11	Mod 11 algorithm
ISO	ISO 7064: 1983
NPI	Check digit algorithm in the US National Provider Identifier

The algorithm for calculating a Mod10 check digit is as follows:

Assume you have an identifier = 12345. Take the odd digit positions, counting from the right, i.e., 531, multiply this number by 2 to get 1062. Take the even digit positions, starting from the right (i.e., 42), prepend these to the 1062 to get 421062. Add all of these six digits together to get 15. Subtract this number from the next highest multiple of 10, i.e., 20 - 15 to get 5. The Mod10 check digit is 5. The Mod10 check digit for 401 is 0; for 9999, it's 4; for 99999999, it's 8.

The algorithm for calculating a Mod11 check digit is as follows:

Terms

- d = digit of number starting from units digit, followed by 10's position, followed by 100's position, etc.
- w = weight of digit position starting with the units position, followed by 10's position, followed by 100's position etc. Values for w = 2, 3, 4, 5, 6, 7, 2, 3, 4, 5, 6, 7, etc. (repeats for each group of 6 digits)
- c = check digit

Calculation

- (Step 1) m = sum of (d * w) for positions 1, 2, etc. starting with units digit
for d = digit value starting with units position to highest order
for w = weight value from 2 to 7 for every six positions starting with units digit
- (Step 2) c1 = m mod 11
- (Step 3) if c1 = 0 then reset c1 = 1
- (Step 4) = (11 - c1) mod 10

Example:

if the number is 1234567, then the mod 11 check digit = 4

The calculations are:

$$\begin{aligned} M &= (7*2) + (6*3) + (5*4) + (4*5) + (3*6) + (2*7) + (1*2) \\ &= 14 + 18 + 20 + 20 + 18 + 14 + 2 \\ &= 106 \\ c1 &= 106 \bmod 11 \\ &= 7 \\ c &= (11 - c1) \bmod 10 \\ &= 4 \bmod 10 \\ &= 4 \end{aligned}$$

Other variants of these check digit algorithms exist and may be used by local bilateral site agreement.

2.8.5.4 Assigning authority (HD)

The assigning authority is a unique identifier of the system (or organization or agency or department) that creates the data. It is a HD data type. Assigning authorities are unique across a given HL7 implementation.

User-defined table 0363 – Assigning authority is used as the HL7 identifier for the user-defined table of values for the first sub-component, namespace ID.

Note: When the HD data type is used in a given segment as a component of a field of another data type, user-defined table 0300 - Namespace ID (referenced by the first sub-component of the HD component) may be redefined (given a different user-defined table number and name) by the technical committee responsible for that segment.

By site agreement, implementors may continue to use user-defined table 0300 – Namespace ID for the first sub-component.

2.8.6 CM - composite

A field that is a combination of other meaningful data fields. Each portion is called a **component**. The specific components of CM fields are defined within the field descriptions. Certain other composites have been separately identified and are described below. *The CM data type is maintained strictly for backward compatibility and may not be used for the definition of new fields.* Wherever a component of an HL7 field is itself an HL7 data type which contains components, its delimiters are demoted by one. Thus a component designated as a CE data type should be encoded as <identifier & text & name of coding system> (see Section 2.8.3, “CE - coded element”). Note that since HL7 delimiters are not recursive, an HL7 data type containing components cannot be a subcomponent. When this level of detail is needed, each component of the HL7 data type can be encoded as a separate subcomponent. For an example of this, see the encoding of the filler order number in the order sequencing component of the Timing/Quantity data type.

2.8.7 CN - composite ID number and name

Components: <ID number (ST)> ^ <family name (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)>

This data type is used when identifying a person both as a coded value and with a text name. For specific fields, individual sites may elect to omit the ID or the name. Example:

```
| 12372^RIGGINS^JOHN^" " " " " " ^MD^ADT1 |
| 12372^^^^^^^ADT1 |
|^RIGGINS^JOHN^" " " " " " ^MD|
```

2.8.7.1 ID number (ST)

Coded ID according to a user-defined table, defined by the 8th component. If the first component is present, either the source table or the assigning authority must be valued.

2.8.7.2 Family name (ST)

2.8.7.3 Given name (ST)

2.8.7.4 Middle initial or name (ST)

2.8.7.5 Suffix (ST)

Used to specify a name suffix (e.g., Jr. or III).

2.8.7.6 Prefix (ST)

Used to specify a name prefix (e.g., Dr.).

2.8.7.7 Degree (IS)

Used to specify an educational degree (e.g., MD). Refer to *user-defined table 0360 – Degree* for suggested values.

2.8.7.8 Source table (IS)

User-defined table 0297 - CN ID source is used as the HL7 identifier for the user-defined table of values for this component. Used to delineate the first component.

2.8.7.9 Assigning authority (HD)

The assigning authority is a unique identifier of the system (organization or agency or department) that creates the data. It is a HD data type. *User-defined table 0363 – Assigning authority* is used as the HL7 identifier for the user-defined table of values for the first sub-component of the HD data type, *namespace ID*.

Note:	When the HD data type is used in a given segment as a component of a field of another data type, user-defined table 0300 - Namespace ID, (referenced by the first sub-component of the HD component) may be redefined (given a different user-defined table number and name) by the technical committee responsible for that segment.
	By site agreement, implementors may continue to use user-defined table 0300 – Namespace ID for the first sub-component.

2.8.8 CNE – coded with no exceptions

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)> ^ <coding system version ID (ST)> ^ alternate coding system version ID (ST)> ^ <original text (ST) >

2.8.8.1 Identifier (ST)

Sequence of characters (the code) that uniquely identifies the item being referenced by the <text>. Different coding schemes will have different elements here.

2.8.8.2 Text (ST)

Name or description of the item in question. E.g., myocardial infarction or X-ray impression. Its data type is string (ST). This is the corresponding text assigned by the coding system to the identifier.

2.8.8.3 Name of coding system (ST)

Each coding system is assigned a unique name (coding system identifier). This component will serve to identify the coding scheme being used in the identifier component. The combination of the **identifier**, **name of coding system**, and **coding system version ID** components will be a unique code for a data item. Each system has a unique identifier. ASTM E1238-94, Diagnostic, procedure, observation, drug ID, and health outcomes coding systems are identified in the tables in Section 7.1.4, “Coding schemes.” Others may be added as needed. When an HL7 table is used for a CE data type, the *name of coding system* component is defined as **HL7nnnn** where *nnnn* is the HL7 table number.

2.8.8.4 Alternate identifier (ST)

For explanation, see text after 2.8.8.6.

2.8.8.5 Alternate text (ST)

For explanation, see text after 2.8.8.6.

2.8.8.6 Name of alternate coding system (ST)

Note on the Alternate components (4, 5, 6) (for components 1, 2, 3)

These three components are defined analogously to the above for the alternate or local coding system. If the *alternate text* component is absent, and the alternate identifier is present, the *alternate text* will be taken to be the same as the *text* component. If the *alternate coding system* component is absent, it will be taken to mean the locally-defined system.

2.8.8.7 Coding system version ID (ST)

This is the version ID for the coding system identified by component 1-3. It belongs conceptually to components 1-3 and appears here only for reasons of backward compatibility.

2.8.8.8 Alternate coding system version ID (ST)

This is the version ID for the coding system identified by components 4-6. It belongs conceptually to the group of Alternate components (see note 2.8.3.4) and appears here only for reasons of backward compatibility.

2.8.8.9 Original text

The original text that was available to an automated process or a human before a specific code was assigned. This component is optional.

2.8.8.10 Usage notes:

Components 1-3 and 7: The *identifier* is required and must be a valid code. *Coding system* must either be present and have a value from the set of allowed coding systems or if not present it will be interpreted to have the same meaning as if it had been valued with the code meaning "HL7 coding system." The set of allowed coding systems for HL7 messages will be maintained as one of the value sets of the HL7 vocabulary tables. If the coding system is any system other than "HL7 coding system," *version ID* must be valued with an actual version ID. If the coding system is "HL7 coding system," *version ID* may have an actual value or it may be absent. If *version ID* is absent, it will be interpreted to have the same value as the HL7 version number in the message header. Text description of code is optional but its use should be encouraged since it makes messages easier to review for accuracy, especially during interface testing and debugging.

Component 9: This is the original text that was available to an automated process or a human before a specific code was assigned. This component is optional.

Components 3-6 and 8: These components are optional. They are used to represent the local or user seen code as described. If present, components 3-6 and 8 obey the same rules of use and interpretation as described for components 1-3 and 7. If both are present, the identifiers in component 4 and component 1 should have exactly the same meaning, i.e., they should be exact synonyms.

CNE usage note: The CNE data type should be used when a required or mandatory coded field is needed.

<p>Note: For HL7-defined tables that have not been adopted from some existing standard, the third component, name of coding system, is constructed by appending the table number to the string "HL7." Thus, the field RXR-2-site, is a CE data type that refers to HL7 table number 0163. Its name of coding system component is "HL70163."</p>
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Figures 7-2 and 7-3 list many diagnostic, procedure, observation, drug and health outcomes coding systems. Guidelines for their use are presented in Chapter 7, Section 7.1, "Introduction and Overview."

Examples

1. **If** the Value Type field (sequence 2) of the OBX segment was defined to be of type CNE, and the desired *value type* was a number, the shortest representation of the *value type* field would be identical to the current ID field syntax:

```
OBX|1|NM|718-7^Hemogl obi n^LN||13.4|GM/DL|14-18|N||S|F<cr>
```

A more verbose representation of the same OBX segment that included *text* would be:

```
OBX|1|NM^Numeri c|718-7^Hemogl obi n^LN||13.4|GM/DL|14-18|N||S|F<cr>
```

An even more verbose representation of the same OBX segment that included *text* and *coding system* would be:

```
OBX|1|NM^Numeri c^HL70125|718-7^Hemogl obi n^LN||13.4|GM/DL|14-18|N||S|F<cr>
```

To retain the information about the code used in the original system that created the data, alternative coding scheme data could be included:

```
OBX|1|NM^Numeri c^HL70125^NUM^Number^99LAB|718-7^Hemogl obi n^LN||13.4|GM/DL|14-18|N||S|F<cr>
```

If in addition to the above, one wanted to capture the version of vocabulary being used, and the HL7 version was “2.3.1”, and the 99LAB coding scheme version was “1.1”, the field would appear as:

```
OBX|1|NM^Numeri c^HL70125^NUM^Number^99LAB^2.3.1^1.1|718-7^Hemogl obi n^LN||13.4|GM/DL|14-18|N||S|F<cr>
```

Furthermore, if one wanted to include the “user seen” text of the value format, and the user had seen “Decimal” as the field type on a data entry screen, the field would appear as:

```
OBX|1|NM^Numeri c^HL70125^NUM^Number^99LAB^2.3.1^1.1^Decimal|718-7^Hemogl obi n^LN||13.4|GM/DL|14-18|N||S|F<cr>
```

Finally, a user could use the abbreviated form for the primary identifier, and use the long form for the alternative identifier.

```
OBX|1|NM^^^NUM^Number^99LAB^^1.1^Decimal|718-7^Hemogl obi n^LN||13.4|GM/DL|14-18|N||S|F<cr>
```

2. **If** the *value type* field had been defined as a CNE field, and if the desired *value type* was not in the value set, **a valid OBX instance could not be created**. For example, if a laboratory system had an internal value type of “Decimal Range”, since there is no corresponding *value type* available in HL7 table 0125, no valid OBX instance could be created. The following instance would be incorrect. In all valid instances of CNE fields, the identifier field **must** have a valid value from the specified table.

Incorrect (no valid identifier)

```
OBX|1|^^^DR^Deci mal Range^99LAB^^1.1^Deci mal Range|718-7^Hemogl obi n^LN||13.4|GM/DL|14-18|N||S|F<cr>
```

3. If the *coding scheme* is anything other than an HL7 table identifier, the coding scheme must be a valid scheme from the coding schemes specified in Chapter 7. For example, **if** the *Observation Identifier* field (sequence 3) of the OBX segment was typed as a CNE field, and LOINC version 1.0k was being used as the source of values for *Observation Identifier*, then the following OBX instance would be valid:

```
OBX|1|NM|718-7^Hemogl obi n^LN^^^^1.0k||13.4|GM/DL|14-18|N||S|F<cr>
```

However, the following OBX instance would be incorrect, since the coding scheme designation “LOCAL” is not in the list of valid coding scheme identifiers, nor does it conform to the rules described in Chapter 7 for creating valid “local” coding scheme identifiers.

Incorrect (invalid coding scheme)

```
OBX|1|NM|9587-2^Hemogl obi n^LOCAL^^^^1.0k||13.4|GM/DL|14-18|N||S|F<cr>
```


A valid OBX instance using a local coding scheme “99LAB” would be allowed, since “99LAB” conforms to the rules for identifying local coding schemes as described in Chapter 7. The valid OBX instance would be represented as follows:

```
OBX|1|NM|9587-2^Hemogl obi n^99LAB^^^6.5||13.4|GM/DL|14-18|N||S|F<cr>
```

Finally, if the coding scheme is anything other than an HL7 table identifier, a version number must be present. The following OBX instance is incorrect because it is missing a valid version number even though the coding scheme LN (LOINC) is valid:

Incorrect (missing version number)

```
OBX|1|NM|718-7^Hemogl obi n^LN||13.4|GM/DL|14-18|N||S|F<cr>
```

2.8.9 CP - composite price

Components: <price (MO)> ^ <price type (ID)> ^ <from value (NM)> ^ <to value (NM)> ^ <range units (CE)> ^ <range type (ID)>

Note: This data type is often used to define a repeating field within a given segment.

Example:

```
|100.00&USD^UP^0^9^mi n^P~50.00&USD^UP^10^59^mi n^P~10.00&USD^UP^60^999^P~50.00&USD^AP~200.00&USD^PF~80.00&USD^DC|
```

2.8.9.1 Price (MO)

Subcomponents of price: <quantity> & <denomination>

The only required component; usually containing a decimal point. Note that each component of the MO data type (Section 2.8.25, “MO - money”) is a subcomponent here.

2.8.9.2 Price type (ID)

A coded value, data type ID. Refer to *HL7 table 0205 - Price type* for valid values.

Table 0205 - Price type

Value	Description
AP	administrative price or handling fee
PF	professional fee for performing provider
UP	unit price, may be based on length of procedure or service
TF	technology fee for use of equipment
DC	direct unit cost
IC	indirect unit cost
TP	total price

2.8.9.3 From value (NM)

Each is a NM data type; together they specify the “range.” The range can be defined as either time or quantity. For example, the range can indicate that the first 10 minutes of the procedure has one price. Another repetition of the data type can use the range to specify that the following 10 to 60 minutes of the procedure is charged at another price per; a final repetition can specify that the final 60 to N minutes of the procedure at a third price.

Note that, if the <price type> component is TP, both <from value> and <to value> may be null.

2.8.9.4 To value (NM)

See <from value> above.

2.8.9.5 Range units (CE)

Subcomponents of range units: <identifier (ID)> & <text (ST)> & <name of coding system (ST)> &
<alternate identifier (ID)> & <alternate text (ST)> & <name of alternate coding system (ST)>

A coded value, data type CE, defined by the standard table of units for either time or quantity (see for example, the tables in Section 7.1.4, "Coding schemes"). This describes the units associated with the range, e.g., seconds, minutes, hours, days, quantity (e.g., count); it is required if <from value> and <to value> are present.

2.8.9.6 Range type (ID)

Refers to *HL7 table 0298 - CP range type* for valid values.

Table 0298 - CP range type

Value	Description
P	Pro-rate. Apply this price to this interval, pro-rated by whatever portion of the interval has occurred/been consumed
F	Flat-rate. Apply the entire price to this interval, do not pro-rate the price if the full interval has not occurred/been consumed

2.8.10 CQ - composite quantity with units

Components: <quantity (NM)> ^ <units (CE)>

In future versions, CQ fields should be avoided because the same data can usually be sent as two separate fields, one with the value and one with the units as a CE data type. Examples:

|123.7^kg| kilograms is an ISO unit

|150^lb&&ANSI+| weight in pounds is a customary US unit defined within ANSI+.

2.8.10.1 Quantity (NM)

2.8.10.2 Units (CE)

The units in which the quantity is expressed. Field-by-field, default units may be defined within the specifications. When the observation is measured in the default units, the units need not be transmitted. If the measure is recorded in units different from the default, the measurement units must be transmitted as the second component. If the units are ISO+ units, then units should be recorded as lowercase abbreviations as specified in Chapter 7. If the units are ANSI or local, the units and the source table must be recorded as specified in Chapter 7. But in these cases the component separator should be replaced by the subcomponent delimiter

Subcomponents for units: <identifier (ID)> & <text (ST)> & <name of coding system (ST)> & <alternate identifier (ID)> & <alternate text (ST)> & <name of alternate coding system (ST)>

2.8.11 CWE – coded with exceptions

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)> ^ <coding system version ID (ST)> ^ alternate coding system version ID (ST)> ^ <original text (ST)>

2.8.11.1 Identifier (ST)

Sequence of characters (the code) that uniquely identifies the item being referenced by the <text>. Different coding schemes will have different elements here.

2.8.11.2 Text (ST)

Name or description of the item in question. E.g., myocardial infarction or X-ray impression. Its data type is string (ST).

2.8.11.3 Name of coding system (ST)

Each coding system is assigned a unique name (coding system identifier). This component will serve to identify the coding scheme being used in the identifier component. The combination of the <identifier>, <name of coding system>, and <coding system version ID> components will be a unique code for a data item. ASTM E1238-94, Diagnostic, procedure, observation, drug ID, and health outcomes coding systems are identified in the tables in Section 7.1.4, "Coding schemes." Others may be added as needed. When an

HL7 table is used for a CE data type, the <name of coding system> component is defined as **HL7nnnn** where **nnnn** is the HL7 table number.

2.8.11.4 Alternate identifier (ST)

For explanation, see text after 2.8.11.6

2.8.11.5 Alternate text (ST)

For explanation, see text after 2.8.11.6

2.8.11.6 Name of alternate coding system (ST)

Alternate components (4, 5, 6) (for components 1, 2, 3)

These three components are defined analogously to the above for the alternate or local coding system. If the <alternate text> component is absent, and the <alternate identifier> is present, the <alternate text> will be taken to be the same as the <text> component. If the <alternate coding system> component is absent, it will be taken to mean the locally-defined system.

2.8.11.7 Coding system version ID (ST)

This is the version ID for the coding system identified by components 1-3. It belongs conceptually to the group of component 1-3 and appears here only for reasons of backward compatibility.

2.8.11.8 Alternate coding system version ID (ST)

This is the version ID for the coding system identified by components 4-6. It belongs conceptually to the group of alternate components (see note 2.8.11.6) and appears here only for reasons of backward compatibility.

2.8.11.9 Original text (ST)

The original text that was available to an automated process or a human before a specific code was assigned

2.8.11.10 Usage notes:

This is a field that is generally sent using a code, but where the code may be omitted in exceptional instances or by site agreement. Exceptional instances arise when the coding system being used does not have a code to describe the concept in the text.

Components 1-3 & 7 are used in one of three ways:

- 1) **Coded:** The identifier contains a valid code from a coding system. The coding system must either be present and have a value from the set of allowed coding systems, or if not present, it will be interpreted to have the same meaning as if it had been valued with the code meaning "HL7 coding system." The set of allowed coding systems for HL7 messages will be maintained as one of the value sets of the HL7 vocabulary tables. If the coding system is any system other than "HL7 coding system", version ID must be valued with an actual version ID. If the coding system is "HL7 coding system", version ID may have an actual value or it may be absent. If version ID is absent, it will be interpreted to have the same value as the HL7 version number in the message header. Text description is optional, but its use should be encouraged to aid in readability of the message during testing and debugging.

Example 1a: OBX segment where the observation identifier is a LOINC code and the observation value is being sent as a CWE value, and the value is taken from SNOMED International.

```
OBX|1|CWE|883-9^ABO Group^LN|1|F-D1250^Type 0^SNMB^^^^3.4|||N||F<cr>
```

Example 1b: OBX segment where the observation identifier is a LOINC code and the observation value is being sent as an CWE value, and the value is taken from a (currently hypothetical) HL7 table.

```
OBX|1|CWE|883-9^ABO Group^LN|1|0^Type 0^HL74875^^^^2.3.1|||N||F<cr>
```

- 2) **Uncoded:** Text is valued, the identifier has no value, and coding system and version ID follow the same rules as discussed for option 1.

Example 2: OBX segment where the observation identifier is a LOINC code and the observation value is being sent as an CWE value, and the value is sent as text because the correct clinical value, “Wesnerian” was not found in the set of allowed values.

```
OBX|1|CWE|883-9^ABO Group^LN|1|^Wesnerian^SNMB^^^^3.4|||A||F<cr>
```

- 3) **Data missing:** The name of the coding system is “HL7 CE Status,” version ID is either a real version, or if not present it has the same meaning as the version in the message header, and the identifier takes its value from one of the allowed CE field statuses. The codes for the allowed CE field statuses are shown below and will be maintained in a table as part of the HL7 vocabulary. Text description of code is optional.

Example 3: OBX segment where the observation identifier is a LOINC code and the observation value is being sent as an LCE value, and no value can be sent because the test was not done.

```
OBX|1|CWE|883-9^ABO Group^LN|1|NAV^Not Available^HL70353^^^^2.3.1|||N||F<cr>
```

Component 9:

This is the original text that was available to an automated process or a human before a specific code was assigned. This field is optional.

Components 3-6 & 8:

Components 3-6 & 8 are optional. They are used to represent the local or user seen code. If present, components 3-6 & 8 obey the same rules of use and interpretation as described for components 1-3 & 7 (of the CWE data type). If both are present, the identifiers in component 4 and component 1 should have exactly the same meaning; i.e. they should be exact synonyms.

Example 4: OBX segment where the observation identifier is a LOINC code and the observation value is being sent as an CWE value, and the value is taken from SNOMED International. The user seen fields are being used to represent a local coding system (99LAB) used in the sending system.

```
OBX|1|CWE|883-9^ABO Group^LN|1|F-D1250^Type 0^SNMB^0^0 Type Blood^99LAB^3.4^|||||F<cr>
```

Summary of CWE usage notes with table of status values for various states without values:

The CWE data type should be used for coded fields that are optional or where it is permissible to send text for items that are not yet a part of the approved value set. In the normal situation, the identifier is valued with the code from the value set. If the value of the field is known, but is not part of the value set, then the value is sent as text, and the identifier has no value. If the field has an unknown status, then third form of the field is used (see **Data missing** above), and the appropriate status for the field is selected from the table of allowed statuses. When no code exists, use values from *HL7 table 0353 – CWE statuses*

Table 0353 - CWE statuses

Code	Description
U	Unknown
UASK	Asked but Unknown
NAV	Not available
NA	Not applicable
NASK	Not asked

Where a text modifier might accompany a code, the “field” in the HL7 message would be of data type CWE and would be allowed to repeat. The first instance of the field would be used, as per option 1; i.e. the identifier would have a valid code. The second instance of the repeating field would be used, as per option 2, that is, the text description would take the value of the free text modifier.

2.8.12 CX - extended composite ID with check digit

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ < assigning authority (HD)> ^ <identifier type code (IS)> ^ < assigning facility (HD)

Example:

|1234567^4^M11^ADT01^MR^University Hospital|

2.8.12.1 ID (ST)

Defined as in the CK data type (see Section 2.8.5, “CK - composite ID with check digit”) except that a ST data type is allowed instead of a NM data type.

2.8.12.2 Check digit (ST)

Defined as in the CK data type (see Section 2.8.5, “CK - composite ID with check digit”) except that an ST data type is allowed instead of an NM data type. The check digit in this data type is not an add-on produced by the message processor. It is the check digit that is part of the identifying number used in the sending application. If the sending application does not include a self-generated check digit in the identifying number, this component should be valued null.

2.8.12.3 Code identifying the check digit scheme employed (ID)

Defined as in the CK data type (see Section 2.8.5, “CK - composite ID with check digit”). Refer to *HL7 table 0061- Check digit scheme* for valid values.

Note: The check digit and code identifying check digit scheme are null if ID is alphanumeric.
--

2.8.12.4 Assigning authority (HD)

The assigning authority is a unique name of the system (or organization or agency or department) that creates the data. It is a HD data type. *User-defined table 0363 – Assigning authority* is used as the HL7 identifier for the user-defined table of values for the first sub-component of the HD component, <namespace ID>.

Note: When the HD data type is used in a given segment as a component of a field of another data type, *user-defined table 0300 - Namespace ID* (referenced by the first sub-component of the HD component) may be re-defined (given a different user-defined table number and name) by the technical committee responsible for that segment.

By site agreement, implementors may continue to use *user-defined table 0300 - Namespace ID* for the first sub-component.

2.8.12.5 Identifier type code (IS)

A code corresponding to the type of identifier. In some cases, this code may be used as a qualifier to the “Assigning authority” component. Refer to *user-defined table 0203 - Identifier type* for suggested values.

User-defined table 0203 - Identifier type

Value	Description
AM	American Express
AN	Account number
BR	Birth registry number
DI	Diner's Club card
DL	Driver's license number
DN	Doctor number
DS	Discover Card
EI	Employee number
EN	Employer number
FI	Facility ID
GI	Guarantor internal identifier
GN	Guarantor external identifier
LN	License number
LR	Local Registry ID
MS	MasterCard
MA	Medicaid number
MC	Medicare number
MR	Medical record number
NE	National employer identifier
NI	National unique individual identifier
NH	National Health Plan Identifier
NNxxx	National Person Identifier where the xxx is the ISO table 3166 3-character (alphabetic) country code
NPI	National provider identifier
PI	Patient internal identifier
PN	Person number
PRN	Provider number
PT	Patient external identifier
RRI	Regional registry ID

Value	Description
RR	Railroad Retirement number
SL	State license
SR	State registry ID
SS	Social Security number
U	Unspecified
UPIN	Medicare/HCFA's Universal Physician Identification numbers
VS	VISA
VN	Visit number
WC	WIC identifier
XX	Organization identifier

2.8.12.6 Assigning facility (HD)

Subcomponents: <namespace ID (IS)> & < universal ID (ST)> & <universal ID type (ID)>

Definition: The place or location identifier where the identifier was first assigned to the patient. This component is not an inherent part of the identifier but rather part of the history of the identifier: as part of this data type, its existence is a convenience for certain intercommunicating systems.

Note: When the HD data type is used in a given segment as a component of a field of another data type, user-defined table 0300 - Namespace ID (referenced by the first sub-component of the HD component), may be re-defined (given a different user-defined table number and name) by the technical committee responsible for that segment.

2.8.13 DLN - driver's license number

Components: <license number (ST)> ^ <issuing state, province, country (IS)> ^ <expiration date (DT)>

Definition: This field contains the driver's license information. For state or province refer to official postal codes for that country; for country refer to ISO 3166 for codes.

2.8.13.1 Driver's license number (as ST data type)

This field contains the driver's license number.

2.8.13.2 Issuing state, province, country (IS)

Issuing authority for driver's license. For state or province refer to official postal codes for that country; for country refer to ISO 3166 for codes. (The ISO 3166 table has three separate forms of the country code: HL7 specifies that the 3-character (alphabetic) form be used for the country code.) *User-defined table 0333 - Driver's license issuing authority* is used as the HL7 identifier for the user-defined table of values for this component.

2.8.13.3 Expiration date (DT)

Expiration date (DT) for driver's license.

2.8.14 DR - date/time range

Components: <range start date/time (TS)> ^ <range end date/time (TS)>

2.8.14.1 Range start date/time (TS)

Definition: The first component contains the earliest date/time (time stamp) in the specified range.

2.8.14.2 Range end date/time (TS)

The second component contains the latest date/time in the specified range. Note that the TS (time stamp) data type allows the specification of precision.

2.8.15 DT - date

Format: YYYY[MM[DD]]

In prior versions of HL7, this data type was always specified to be in the format YYYYMMDD. In the current and future versions, the precision of a date may be expressed by limiting the number of digits used with the format specification YYYY[MM[DD]]. Thus, YYYY is used to specify a precision of “year,” YYYYMM specifies a precision of “month,” and YYYYMMDD specifies a precision of “day.”

By site-specific agreement, YYYYMMDD may be used where backward compatibility must be maintained.

Examples:

|19880704|
|199503|

2.8.16 ED - encapsulated data

Components: <source application (HD) > ^ <type of data (ID)> ^ <data subtype (ID)> ^ <encoding (ID)> ^ <data (ST)>

This data type transmits encapsulated data from a source system to a destination system. It contains the identity of the source system, the type of data, the encoding method of the data, and the data itself. This data type is similar to the RP (reference pointer) data type of Section 2.8.36, “RP - reference pointer,” except that instead of pointing to the data on another system, it contains the data which is to be sent to that system.

2.8.16.1 Source application (HD)

A unique name that identifies the system which was the source of the data. Identical format and restrictions as in reference pointer (see Section 2.8.36.2, “Application ID (HD)”).

Subcomponents: <namespace ID (IS)> & < universal ID (ST)> & <universal ID type (ID)>

2.8.16.2 Type of data (ID)

Identical to “type of data” component in the reference pointer (RP) data type. (See Section 2.8.36.4, “2.8.36.4”).

Refer to *HL7 table 0191 – Type of referenced data* for valid values.

2.8.16.3 Data subtype (ID)

Identical to “subtype” component in the reference pointer (RP) data type. (See Section 2.8.36.4, “Subtype (ID)”).

Refer to *HL7 table 0291 - Subtype of referenced data* for valid values.

2.8.16.4 Encoding (ID)

The type of encoding, if present, used to represent successive octets of binary data as displayable ASCII characters. Refer to *HL7 table 0299 - Encoding* for valid values.

Table 0299 - Encoding

Value	Description
A	no encoding - data are displayable ASCII characters.
Hex	hexadecimal encoding - consecutive pairs of hexadecimal digits represent consecutive single octets.
Base64	encoding as defined by MIME (Multipurpose Internet Mail Extensions) standard RFC 1521. Four consecutive ASCII characters represent three consecutive octets of binary data. Base64 utilizes a 65-character subset of US-ASCII, consisting of both the upper and lower case alphabetic characters, digits "0" through "9," "+," "/", and "=".

Base64 is defined as follows (adapted from MIME Internet standard RFC 1521, which has precedence over this description). Proceeding from left to right across a 24-bit input group (three octets), each 6-bit group is used as an index into an array of 64 printable characters. The character referenced by the index is placed in the encoded string. These characters are shown in *HL7 table 0290 - MIME base64 encoding characters*, and are selected so as to be universally representable.

Special processing is performed if fewer than 24 bits are available in an input group at the end of data. A full encoding quantum is always completed at the end of data. When fewer than 24 input bits are available in an input group, zero bits are added (on the right) to form an integral number of 6-bit groups.

Output character positions which are not required to represent actual input data are set to the character "=". Since all canonically encoded output is an integral number of octets, only the following cases can arise: (1) the final quantum of input is an integral multiple of 24 bits; here, the final unit of encoded output will be an integral multiple of 4 characters with no "=" padding, (2) the final quantum of input is exactly 8 bits; here, the final unit of encoded output will be two characters followed by two "="padding characters, or (3) the final quantum of input is exactly 16 bits; here, the final unit of encoded output will be three characters followed by one "=" padding character.

Table 0290 - MIME base64 encoding characters

Value	Code	Value	Code	Value	Code	Value	Code
0	A	17	R	34	I	51	51 z
1	B	18	S	35	j	52	52 0
2	C	19	T	36	k	53	53 1
3	D	20	U	37	l	54	54 2
4	E	21	V	38	m	55	55 3
5	F	22	W	39	n	56	56 4
6	G	23	X	40	o	57	57 5
7	H	24	Y	41	p	58	58 6
8	I	25	Z	42	q	59	59 7
9	J	26	a	43	r	60	60 8
10	K	27	b	44	s	61	61 9
11	L	28	c	45	t	62	62 +
12	M	29	d	46	u	63	63 /

Value	Code	Value	Code	Value	Code	Value	Code
13	N	30	e	47	v		
14	O	31	f	48	w	(pad)	=
15	P	32	g	49	x		
16	Q	33	h	50	y		

The interpretation of the encoded octets by any of the encoding methods, beyond what is either implicit or specified in the represented data type (such as their ordering within 16-bit or 32-bit binary words on the destination application), is determined by the destination application and is beyond the scope of this Standard.

2.8.16.5 Data (ST)

Displayable ASCII characters which constitute the data to be sent from source application to destination application. The characters are limited to the legal characters of the ST data type, as defined in Section 2.8.40, “ST - string data,” and, if encoded binary, are encoded according to the method of Section 2.8.16.2, “Type of data.”

If the encoding component (see Section 2.8.16.4, “Encoding (ID)”) = ‘A’ (none), then the data component must be scanned before transmission for HL7 delimiter characters, and any found must be escaped by using the HL7 escape sequences defined in Section 2.9, “USE OF ESCAPE SEQUENCES IN TEXT FIELDS.” On the receiving application, the data field must be de-escaped after being parsed.

If the encoding component (see Section 2.8.16.4, “Encoding (ID)”) does not equal ‘A,’ then, after encoding, the (encoded) data must be scanned for HL7 delimiter characters, and any found must be escaped by using the HL7 escape sequences. Only then can the component be added to the HL7 segment/message. On the receiving application, the data field must be de-escaped after being parsed out of the message before being decoded. This can be expressed as ‘encode’, ‘escape’, parse, ‘de-escape’, ‘decode’.

2.8.17 EI - entity identifier

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ < universal ID type (ID)>

The entity identifier defines a given entity within a specified series of identifiers.

The specified series, the *assigning authority*, is defined by components 2 through 4. The assigning authority is of the hierarchic designator (HD) data type, but it is defined as three separate components in the EI data type, rather than as a single component as would normally be the case. This is in order to maintain backward compatibility with the EI’s use as a component in several existing data fields. Otherwise, the components 2 through 4 are as defined in Section 2.8.20, “HD - hierarchic designator.” Hierarchic designators (HD) are unique across a given HL7 implementation.

2.8.17.1 Entity identifier (ST)

The first component, <entity identifier>, is usually defined to be unique within the series of identifiers created by the <assigning authority>, defined by a hierarchic designator, represented by components 2 through 4. (See Section 2.8.20, “HD - hierarchic designator”).

2.8.17.2 Namespace ID (IS)

See Section 2.8.20.1, “Namespace ID (IS)” for definition.

The assigning authority is a unique identifier of the system (or organization or agency or department) that creates the data. *User-defined table 0363 – Assigning authority* is used as the HL7 identifier for the user-defined table of values for this component.

Note: When the HD is used as a part of another data type, in this case as part of the EI data type, this table may be re-defined (given a different user-defined table number and name) by the technical committee responsible for that segment.

By site agreement, implementors may continue to use *user-defined table 0300 – Namespace ID* for the first component

2.8.17.3 Universal ID (ST)

See Section 2.8.20.2, “Universal ID (ST)” for definition..

2.8.17.4 Universal ID type (ID)

Refer to *HL7 table 0301 - Universal ID type* for valid values. See Section 2.8.20.2 “Universal ID (ST),” for definition.

2.8.18 FC - financial class

Components: <financial class (IS)> ^ <effective date (TS)>

2.8.18.1 Financial class (IS)

This component contains the financial class assigned to a person. *User-defined table 0064 - Financial class* is used as the HL7 identifier for the user-defined table of values for this component.

2.8.18.2 Effective date (TS)

This component contains the effective date/time of the person’s assignment to the financial class specified in the first component.

2.8.19 FT - formatted text data

This data type is derived from the string data type by allowing the addition of embedded formatting instructions. These instructions are limited to those that are intrinsic and independent of the circumstances under which the field is being used. The actual instructions and their representation are described later in this chapter. *The FT field is of arbitrary length (up to 64k)* and may contain formatting commands enclosed in escape characters. Example:

| \. sp \ (skip one vertical line) |

For additional examples of formatting commands see Section 2.9, “USE OF ESCAPE SEQUENCES IN TEXT FIELDS.”

2.8.20 HD - hierarchic designator

Components: <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

The HD is designed to be more powerful and more general replacement for the application identifier of HL7 versions 2.1 and 2.2. It adds two additional components, the <universal ID> and the <universal ID type> to the former *application ID* (which is renamed more generically to be the *namespace ID*)

The basic definition of the HD is that it identifies an (administrative or system or application or other) entity that has responsibility for managing or assigning a defined set of instance identifiers (such as placer or filler number, patient identifiers, provider identifiers, etc.). This entity could be a particular health care ap-

plication such as a registration system that assigns patient identifiers, a governmental entity such as a licensing authority that assigns professional identifiers or drivers' license numbers, or a facility where such identifiers are assigned.

In the case where a HD identifies an entity that assigns/creates instance identifiers such as a particular patient registration system, it defines an "assigning authority." In the case where a HD identifies a location where instance identifiers are given out (although they may be created by another entity at another location) such as a particular "department of motor vehicles office location," it defines an "assigning facility." These two different uses of the HD appear in many of the extended data types.

The "assigning authority" defined by the HD is similar in its role to the coding system (and version) part of the coded element data types: both identify a set of more discrete instance identifiers. The difference is that the set of HD-defined discrete instances contain identifiers of "real-world" things such as patient or clinical orders, while the coded element-defined set of discrete instances contains concept identifiers (codes).

The HD is designed to be used either as a local identifier (with only the <namespace ID> valued) or a publicly-assigned identifier, a UID (<universal ID> and <universal ID type> both valued). Syntactically, the HD is a group of two identifiers: a local identifier defined by the first component, and a universal identifier defined by the second and third components. HDs that have defined third components (defined UID types) must have a second component that is unique within the series of IDs defined by that component.

Note: The HD is used in fields that in earlier versions of HL7 used the IS data type. Thus, a single component HD (only the first component valued) will look like a simple IS data type for older systems expecting a single component in the place of the HD data type.

If the first component for the HD data type is present, the second and third components are optional. If the third component is present, then the second must also be present (although in this case the first is optional). The second and third components must either both be valued (both non-null), or both be not valued (both null).

This means that if all three components of the HD are valued, the entity identified by the first component is the same as the entity identified by components two and three taken together. However, implementors may choose, by site agreement, to specify that if all three components of the HD are valued, the first component defines a member in the set defined by the second and third components.

2.8.20.1 Namespace ID (IS)

User-defined table 0300 - Namespace ID is used as the HL7 identifier for the user-defined table of values for this component.

Note: When the HD is used in a given segment (either as a field or as a component of another data type) this table may be re-defined (given a different user-defined table number and name) by the technical committee responsible for that segment.

2.8.20.2 Universal ID (ST)

The HD's second component, <universal ID (UID)>, is a string formatted according to the scheme defined by the third component, <universal ID type> (UID type). The UID is intended to be unique over time within the UID type. It is rigorously defined. Each UID must belong to one of the specifically enumerated schemes for constructing UID's (defined by the UID type). The UID (second component) must follow the syntactic rules of the particular universal identifier scheme (defined by the third component). Note that these syntactic rules are not defined within HL7 but are defined by the rules of the particular universal identifier scheme (defined by the third component).

2.8.20.3 Universal ID type (ID)

The third component governs the interpretation of the second component of the HD. If the third component is a known UID refer to *HL7 table 0301 - Universal ID type* for valid values, then the second component is a universal ID of that type.

Table 0301 - Universal ID type

Value	Description
DNS	An Internet dotted name. Either in ASCII or as integers
GUID	Same as UUID.
HCD	The CEN Healthcare Coding Scheme Designator. (Identifiers used in DICOM follow this assignment scheme.)
HL7	Reserved for future HL7 registration schemes
ISO	An International Standards Organization Object Identifier
L,M,N	These are reserved for locally defined coding schemes.
Random	Usually a base64 encoded string of random bits. The uniqueness depends on the length of the bits. Mail systems often generate ASCII string "unique names," from a combination of random bits and system names. Obviously, such identifiers will not be constrained to the base64 character set.
UUID	The DCE Universal Unique Identifier
x400	An X.400 MHS format identifier
x500	An X.500 directory name

Note: X400, X500, and DNS are not technically universally valid for all time. Names can be de-registered from an existing user and registered to a new user.

Examples:

Universal ID examples with only the 2nd and 3rd components valued:

^1. 2. 344. 24. 1. 1. 3^ISO

A HD consisting only of an ISO UID.

^1. 2. 34. 4. 1. 5. 1. 1. 1. 13143143. 131. 3131. 1^ISO

The syntax of the second component is defined by the ISO standard for object identifiers, not by HL7 (for which the second component is of the ST data type). Thus the periods (“.”) and comma (“,”) in the second component are part of the ISO syntax, but are legal by the definition of the HL7 ST data type.

^14344. 14144321. 4122344. 14434. 654^GUID

^fal con. iupui. edu^DNS

An internet example

^40C983F09183B0295822009258A3290582^RANDOM

An example of a RANDOM UID

Local examples:

LAB1

Local use only: a HD that looks like an IS data type

PathLab^PL. UCF. UC^L

The ‘PathLab’ application is identified by the namespace component but it is also identified by the 2nd and 3rd components, (i.e., by the locally-defined UID system “L”). The two identifiers are equivalent.

This is a more complex HD in which the middle component, which is locally defined, is itself structured.

As with the ISO example above, the middle component's structure is not defined by HL7 but by the site according to its own needs: the only requirement is that the middle component's structure is allowed by the HL7 string (ST) data type.

RX. PIMS. SystemB. KP. CA. SCA

Local use only: a HD that looks like an IS data type. Again, note that the syntax of the first component is not defined by HL7 but by the site according to its own needs: the only requirement is that the first component's structure is allowed by the HL7 string (ST) data type, which is used for values by the IS data type.

^RX. PIMS. SystemB. CA. SCA^M

An alternate way to encode the previous example, illustrating the use of the third component value of "M" (see above table 0301) to identify a locally-defined identifier set. The second component has the same value as the previous example but is now defined to be a member of a set of allowable values defined by a site for the identifier set "M".

Examples containing both local and universal ID types:

LAB1^1. 2. 3. 3. 4. 6. 7^ISO

A HD with an ISO "object Identifier" as a UID and a locally defined system name. Both the first component and the second and third (taken together) refer to the same entity. This example shows that the local value and the universal ID value may be transmitted with a single HD field.

2.8.21 ID - coded value for HL7 defined tables

The value of such a field follows the formatting rules for an ST field except that it is drawn from a table of legal values. There shall be an HL7 table number associated with ID data types. Examples of ID fields include *MSH-12-version ID* and *OBR-25-result status*. This data type should be used only for HL7 tables (see Section 2.6.7, "ID number"). The reverse is not true, since in some circumstances it is more appropriate to use the CE data type for HL7 tables.

2.8.22 IS - coded value for user-defined tables

The value of such a field follows the formatting rules for a ST field except that it is drawn from a site-defined (or user-defined) table of legal values. There shall be an HL7 table number associated with IS data types. An example of an IS field is the *Event reason code* defined in Section 3.3.1.4, "Event reason code." This data type should be used only for user-defined tables (see Section 2.6.7, "ID number"). The reverse is not true, since in some circumstances, it is more appropriate to use the CE data type for user-defined tables.

2.8.23 JCC - job code/class

Components: <job code (IS)> ^ <job class (IS)>

2.8.23.1 Job code (IS)

This component contains the person's job code. *User-defined table 0327 - Job code* is used as the HL7 identifier for the user-defined table of values for this component.

2.8.23.2 Job class (IS)

This component contains the person's employee classification. *User-defined table 0328 - Employee classification* is used as the HL7 identifier for the user-defined table of values for this component.

2.8.24 MA - multiplexed array

Components: <sample 1 from channel 1 (NM)> ^ <sample 1 from channel 2 (NM)> ^ <sample 1 from channel 3 (NM)> ...~<sample 2 from channel 1 (NM)> ^ <sample 2 from channel 2 (NM)> ^ <sample 2 from channel 3 (NM)> ...~
...

This data type is used to represent channel-multiplexed waveform data, (e.g., the digitized values from an analog-to-digital converter or other digital data source). Refer to Chapter 7, Section 7.15.2, “MA - multiplexed array,” for a complete description of this data type.

2.8.25 MO - money

Components: <quantity (NM)> ^ <denomination (ID)>

2.8.25.1 Quantity (NM)

The first component is a quantity.

2.8.25.2 Denomination (ID)

The second component is the denomination in which the quantity is expressed. The values for the denomination component are those specified in ISO-4217. If the denomination is not specified, *MSH-17-country code* is used to determine the default. Example:

|99.50^USD|

where USD is the ISO 4217 code for the U.S. American dollar.

2.8.26 NA - numeric array

This data type is used to represent a series (array) of numeric values, each one having a data type of NM. Refer to Chapter 7, Section 7.15.1, “NA - numeric array,” for a complete description of this data type.

2.8.27 NM - numeric

A number represented as a series of ASCII numeric characters consisting of an optional leading sign (+ or -), the digits and an optional decimal point. In the absence of a sign, the number is assumed to be positive. If there is no decimal point the number is assumed to be an integer. Examples:

|999|

|-123.792|

Leading zeros, or trailing zeros after a decimal point, are not significant. For example, the following two values with different representations, “01.20” and “1.2”, are identical. Except for the optional leading sign (+ or -) and the optional decimal point (.), no non-numeric ASCII characters are allowed. Thus, the value <12 should be encoded as a structured numeric (SN) (preferred) or as a string (ST) (allowed, but not preferred) data type.

2.8.28 PL - person location

Components: <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <person location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <location description (ST)>

This data type is used to specify a patient location within a healthcare institution. Which components are valued depends on the needs of the site. It is most commonly used for specifying patient locations, but may refer to other types of persons within a healthcare setting.

2.8.28.1 Point of care (IS)

Conditional on person location type (e.g., nursing unit or department or clinic). After floor, most general patient location designation. *User-defined table 0302 - Point of care* is used as the HL7 identifier for the user-defined table of values for this component.

2.8.28.2 Room (IS)

Patient room. After nursing unit, most general person location designation. *User-defined table 0303 - Room* is used as the HL7 identifier for the user-defined table of values for this component.

2.8.28.3 Bed (IS)

Patient bed. After room, most general person location designation. *User-defined table 0304 - Bed* is used as the HL7 identifier for the user-defined table of values for this component.

2.8.28.4 Facility (HD)

Most general person location designation. (See Section 2.8.20, "HD - hierarchic designator").

Note: When the HD data type is used in a given segment as a component of a field of another data type, *user-defined table 0300 - Namespace ID* (referenced by the first sub-component of the HD component) may be redefined (given a different user-defined table number and name) by the technical committee responsible for that segment.

2.8.28.5 Location status (IS)

Location (e.g., Bed) status. *User-defined table 0306 - Location status* is used as the HL7 identifier for the user-defined table of values for this component.

2.8.28.6 Person location type (IS)

Usually includes values such as nursing unit, department, clinic, SNF, physician's office. *User-defined table 0305 - Person location type* is used as the HL7 identifier for the user-defined table of values for this component.

2.8.28.7 Building (IS)

After facility, most general person location designation. *User-defined table 0307 - Building* is used as the HL7 identifier for the user-defined table of values for this component.

2.8.28.8 Floor (IS)

After building, most general person location designation. *User-defined table 0308 - Floor* is used as the HL7 identifier for the user-defined table of values for this component.

2.8.28.9 Location description (ST)

A free text description of the location.

Note: The actual order of components allows compatibility with previous versions of HL7. Without backward compatibility constraints, the hierarchical, structural order of components would be: <person location type (IS) > ^ <facility (HD)> ^ <building (IS)> ^ <floor (IS) > ^ <point of care (IS) > ^ <room (IS)> ^ <bed (IS)> ^ <location description (ST)> ^ <location status (IS)>.

2.8.29 PN - person name

Components: <family name (ST) & <last_name_prefix (ST)> (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)>

This data type includes multiple free text components. Each component is specified to be an HL7 ST data type. **The maximum length of a PN field is 48 characters including component separators.** The sending system may send upper- and lowercase or all uppercase. The receiving system may convert to all uppercase if required. Example:

|SMITH^JOHN^J^III^DR^PHD|

2.8.29.1 Family name and last name prefix (ST)

2.8.29.1.1 Family name (ST)

Surname/last name.

2.8.29.1.2 Last name prefix (ST)

Internationalization usage for Germanic languages. An example of a <last name prefix> is the “van” in “Ludwig van Beethoven.” Since the <last name prefix> doesn't sort completely alphabetically, it is reasonable to specify it as a separate sub-component of the PN and extended PN data types (XPN and XCN).

Note: If the <last name prefix> is not null, the <last name prefix> is not null, the <last name prefix> should also be present as part of the <family name> subcomponent e.g. “van Beethoven&van.”

2.8.29.2 Given name (ST)

2.8.29.3 Middle initial or name (ST)

2.8.29.4 Suffix (ST)

Used to specify a name suffix (e.g., Jr. or III).

2.8.29.5 Prefix (ST)

Used to specify a name prefix (e.g., Dr.).

2.8.29.6 Degree (IS)

Used to specify an educational degree (e.g., MD). Refer to *user-defined table 0360 – Degree* for suggested values.

2.8.29.6.1 Internationalization note

In countries using ideographic or syllabic (phonetic) character sets, it is sometimes necessary to send the name in one or both of these formats, as well as an alphabetic format. The switching between the different character sets can be accomplished using a character set such as JIS X 0202 - ISO 2022 which provides an escape sequence for switching among different character sets and among single-byte and multi-byte character representations. When the name field is repeated, the different repetitions of the name may be represented by these different character sets. The details are as follows. (See also Section 2.9.2, “Escape sequences supporting multiple character sets for PN, XPN, XCN, XON, and XAD data types.”)

HL7 supports the following standards for Japanese characters:

JIS X 0201 for ISO-IR 13 (Japanese Katakana)

for ISO-IR 14 (Japanese Romaji)

JIS X 0208 for ISO-IR 87 (Japanese Kanji, Hiragana and Katakana)

JIS X 0212 for ISO-IR 159 (supplementary Japanese Kanji)

HL7 supports the following standards for European characters:

ISO 8859 (1-9) for ISO-IR 100, 101, 109, 110, 144, 127, 126, 138 and 148.

Character sets are referenced in HL7 as ASCII, 8859/1, 8859/2, ISO IR14, ISO IR87, and ISO IR159. DICOM uses codes laid out in ISO 2375, of the form 'ISO-IR xxx'. HL7 supports this naming as well, to facilitate interoperability.

HL7 uses the Basic G0 Set of the International Reference Version of ISO 646:1990 (ISO IR-6) as the default character repertoire for character strings. This is a single-byte character set, identical to ASCII.

Each repetition of a PN, XPN, XON, XCN, or XAD field is assumed to begin with the default character set. If another character set is to be used, the HL7 defined escape sequence used to announce that character set must be at the beginning of the repetition, and the HL7 defined escape sequence used to start the default character set must be at the end of the repetition. Note also that several character sets may be intermixed within a single repetition as long as the repetition ends with a return to the default character set.

An application must specify which character sets it supports in the field "MSH-18 Character Sets" and which character set handling scheme it supports in the *field MSH-20-Alternate character set handling scheme*. It is assumed that the sending and receiving applications are aware of how to map character set names (i.e., ISO-IR xxx) to escape sequences.

For example, in many Japanese messages there is a mix of Romaji (i.e., Roman characters), Katakana (phonetic representation of foreign words), Hiragana (phonetic representation of Japanese words) and Kanji (pictographs). Such a message would require 4 character sets be specified in the MSH.

2.8.29.7 References for internationalization of name

1. "Understanding Japanese Information Processing" by Ken Lunde, O'Reilly Press
2. "DICOM Supplement 9 : Multi-Byte Character Set Support", ACR-NEMA
3. ANSI X3.4:1986 ASCII character set
4. ISO 646:1990 Information Processing - ISO 7-bit coded character set for information interchange
5. ISO/IEC 2022:1994 Information Technology - Character code structure and extension techniques
6. ISO 2375:1986 Data Processing - Procedure for the registration of escape sequences
7. ISO 6429:1990 Information Processing - Control functions for 7-bit and 8-bit coded character sets
8. ISO 8859 (1-9) Information Processing - 8-bit single-byte coded graphic character sets - parts 1-9
9. ENV 41 503:1990 Information systems interconnection - European graphic character repertoires and their coding
10. ENV 41 508:1990 Information systems interconnection - East European graphic character repertoires and their coding

- | | | |
|-----|-----------------|--|
| 11. | JIS X 0201-1976 | Code for Information Exchange |
| 12. | JIS X 0212-1990 | Code of the supplementary Japanese Graphic Character set for information interchange |
| 13. | JIS X 0208-1990 | Code for the Japanese Graphic Character set for information interchange |
| 14. | RFC 1468 | Japanese Character Encoding for Internet Messages |

This approach is in harmony with DICOM.

Character Repertoires supported by DICOM are defined in Part 5, section 62E1, of Supplement 9. It says, “Values that are text or character strings can be composed of Graphic and Control Characters. The Graphic Character set, independent of its encoding, is referred to as a Character Repertoire. Depending on the native context in which Application Entities wish to exchange data using the DICOM standard, different character repertoires will be used. The Character Repertoires supported by DICOM are defined in ISO 8859.”

In addition, DICOM supports the following Character Repertoires for the Japanese Language:

JIS X 0201-1976 - Code for Information Exchange

JIS X 0208-1990 - Code for the Japanese Graphic Character set for information interchange

JIS X 0212-1990 - Code of the supplementary Japanese Graphic Character set for information interchange

2.8.30 PPN - performing person time stamp

```
Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^  
            <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR)  
            (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^  
            <name type code(ID)> ^ <identifier check digit (ST)> ^ <code identifying the check  
            digit scheme employed (ID )> ^ <identifier type code (IS)> ^ <assigning facility  
            (HD)> ^ < date/time action performed (TS)> ^ <name representation code (ID)>
```

This data type is the equivalent of an XCN data type joined with a TS data type. However, since HL7 does not support subcomponents in Version 2.3, the XCN data type has been flattened.

2.8.30.1 ID number (ST)

Coded ID according to a user-defined table, defined by the 8th component. If the first component is present, either the source table or the assigning authority must be valued.

2.8.30.2 Family name (ST) & last name prefix (ST)

2.8.30.2.1 Family name (ST)

Family name. Surname/last name.

2.8.30.2.2 Last name prefix (ST)

International usage for Germanic languages. An example of a “last name prefix” is the “van” in “Ludwig van Beethoven.” Since the last name prefix doesn’t sort completely alphabetically, it is reasonable to specify it as a separate sub-component of the PN and extended PN data types (XPN and XCN).

Note: If the <last name prefix> is not null, the <last name prefix> should also be present as part of the <family name> subcomponent e.g. “van Beethoven&van.”

2.8.30.3 Given name (ST)

2.8.30.4 Middle initial or name (ST)

2.8.30.5 Suffix (ST)

Used to specify a name suffix (e.g., Jr. or III).

2.8.30.6 Prefix (ST)

Used to specify a name prefix (e.g., Dr.).

2.8.30.7 Degree (IS)

Used to specify an educational degree (e.g., MD). Refer to *user-defined table 0360 – Degree* for suggested values.

2.8.30.8 Source table (IS)

User-defined table 0297 - CN ID source is used as the HL7 identifier for the user-defined table of values for this component. Used to delineate the first component.

2.8.30.9 Assigning authority (HD)

The assigning authority is a unique identifier of the system (or organization or agency of department) that creates the data. It is a HD data type. *User-defined table 0363 – Assigning authority* is used as the HL7 identifier for the user-defined table of values for the first sub-component of the HD component, <namespace ID>.

Note: When the HD data type is used in a given segment as a component of a field of another data type, user-defined table 0300 - Namespace ID (referenced by the first sub-component of the HD component) may be re-defined (given a different user-defined table number and name) by the technical committee responsible for that segment.

By site agreement, implementors may continue to use user-defined table 0300 – Namespace ID for the first sub-component.

2.8.30.10 Name type code (ID)

A code that represents the type of name. Refer to *HL7 table 0200 - Name type* for valid values (see Section 2.8.51, “XPN - extended person name”).

2.8.30.11 Identifier check digit (ST)

The check digit in this data type is not an add-on produced by the message processor. It is the check digit that is part of the identifying number used in the sending application. If the sending application does not include a self-generated check digit in the identifying number, this component should be valued null.

2.8.30.12 Code identifying the check digit scheme employed (ID)

Refer to HL7 table 0061 - Check digit scheme for valid values.

2.8.30.13 Identifier type code (IS)

A code corresponding to the type of identifier. In some cases, this code may be used as a qualifier to the “Assigning authority” component. Refer to *user-defined table 0203 - Identifier type* for suggested values.

2.8.30.14 Assigning facility (HD)

The place or location identifier where the identifier was first assigned to the patient. This component is not an inherent part of the identifier but rather part of the history of the identifier: as part of this data type, its existence is a convenience for certain intercommunicating systems.

Note: When the HD data type is used in a given segment as a component of a field of another data type, user-defined table 0300 - Namespace ID (referenced by the first sub-component of the HD component) may be re-defined (given a different user-defined table number and name) by the technical committee responsible for that segment.

2.8.30.15 Date/time action performed (TS)

This component describes when the activity was performed.

Note: If this field is not null, both the performing person and the time stamp must be valued.

2.8.30.16 Name representation code (ID)

Different name/address types and representations of the same name/address should be described by repeating of this field, with different values of the Name/Address Type and/or Name/Address Representation component.

Note: This new component remains in "alphabetic" representation with each repetition of the field using these data types. I.e. even though the name may be represented in an ideographic character set, this component will remain represented in an alphabetic character set.

Table 4000 - Name/address representation

Value	Description
I	Ideographic (i.e., Kanji)
A	Alphabetic (i.e., Default or some single-byte)
P	Phonetic (i.e., ASCII, Katakana, Hiragana, etc.)

In general this component provides an indication of the representation provided by the data item. It does not necessarily specify the character sets used. Thus, even though the representation might provide an indication of what to expect, the sender is still free to encode the contents using whatever character set is desired. This component provides only hints for the receiver, so it can make choices regarding what it has been sent and what it is capable of displaying.

2.8.31 PT - processing type

Components: <processing ID (ID)> ^ <processing mode (ID)>

This data type indicates whether to process a message as defined in HL7 Application (level 7) Processing rules.

2.8.31.1 Processing ID (ID)

A value that defines whether the message is part of a production, training, or debugging system. Refer to *HL7 table 0103 - Processing ID* for valid values.

2.8.31.2 Processing mode (ID)

A value that defines whether the message is part of an archival process or an initial load. Refer to *HL7 table 0207 - Processing mode* for valid values.

2.8.32 QIP - query input parameter list

Components: <segment field name (ST) > ^ <value1 (ST) & value2 (ST) & value3 (ST) ...>

Example:

|@PID. 5. 1^EVANS|

Definition: This field contains the list of parameter names and values to be passed to the stored procedure.

2.8.32.1 Segment field name (ST)

This component contains the segment field name.

Field naming conventions:

Segment field names are designated by the “@” symbol concatenated with the HL7 segment ID followed by the sequence number for the field separated by a period (see sections 2.5 and 2.6.1 for a definition of segment ID and sequence number). If the field is divided into components, the designation may be suffixed with “.nn,” to identify a particular component (a suffix of “.3” indicates the third component of the field); otherwise, the whole field is assumed. If the field is further divided into subcomponents, the designation is suffixed with “.nn.mm,” which identifies the component and subcomponent requested by relative position.

Site-specific segment field names may be used. In this case, site-the specific segment ID (if the field is not being added to an existing HL7 segment) and the sequence number must be defined so that they do not conflict with existing HL7 segment IDs and field sequence numbers.

Values for this field are defined in the function-specific chapters of this specification.

Note: If the “@” is being used as one of the delimiter characters defined in MSH-2-encoding characters, it must be “escaped.” (See Section 2.9.1, “Formatting codes”).

2.8.32.2 Value1 & value2 & value3 (ST)

This component contains the field value or values in the form “value1& value2 & value3...”

A single valued parameter contains only a single subcomponent in the second component: thus no subcomponent delimiters are needed (e.g., <segment field name> ^ <value>). A simple list of values (i.e., a one-dimensional array) may be passed instead of a single value by separating each value with the subcomponent delimiter: “<segment field name> ^ <value1 & value2 &...>”

2.8.33 QSC - query selection criteria

Components: <segment field name(ST)> ^ <relational operator (ID)> ^ <value (ST)> ^ <relational conjunction (ID)>

Example:

|@PID. 5. 1^EQ^EVANS|

Definition: This field indicates the conditions that qualify the rows to be returned in the query response. (This field conveys the same information as the “WHERE” clause in the corresponding SQL expression of the query, but is formatted differently.)

2.8.33.1 Segment field name (ST)

The name of the field that is participating as a qualifier (usually the “key”). Refer to Section 2.8.32, “QIP - query input parameter list,” for segment field name conventions.

2.8.33.2 Relational operator (ID)

Refer to *HL7 table 0209 - Relational operator* for valid values.

Table 0209 - Relational operator

Relational operator	Value
EQ	Equal
NE	Not Equal
LT	Less than
GT	Greater than
LE	Less than or equal
GE	Greater than or equal
CT	Contains
GN	Generic

2.8.33.3 Value (ST)

The value to which the field will be compared.

2.8.33.4 Relational conjunction (ID)

Refer to *HL7 table 0210 - Relational conjunction* for valid values. The relational conjunction is defined as follows: If more than one comparison is to be made to select qualifying rows, a conjunction relates this repetition of the field to the next.

Table 0210 - Relational conjunction

Relational conjunction	Note
AND	Default
OR	

- When applied to strings, the relational operators LT, GT, LE, and GE imply an alphabetic comparison.
- A “generic” comparison selects a record for inclusion in the response when the beginning of the designated field matches the select string.
- Where a repeating field is specified as an operand, a match on any instance of that field qualifies the row for inclusion in the response message.
- AND takes precedence over OR. More sophisticated precedence rules require that the query be expressed as an embedded query language message or a stored procedure query message (see Section 2.19, “ENHANCED MODE QUERY MESSAGES,” and also Sections 2.24.15.4, “,” and 2.24.20, “SPR - stored procedure request definition segment.”

2.8.34 RCD - row column definition

Components: <segment field name (ST)> ^ <HL7 data type (ST)> ^ <maximum column width (NM)>

Example: This defines a column containing the value of the “last name” component of PID-5, expressed as a ST data type with a maximum width of 20.

|@PID. 5. 1^ST^20|

Definition: This specifies the format of a column in terms of a segment field name, a data type, and a maximum length. It consists of three components:

2.8.34.1 Segment field name (ST)

The HL7 segment field name, which identifies the field occupying the column. (Refer to Section 2.8.32, “QIP - query input parameter list,” for segment field name definition conventions.)

2.8.34.2 HL7 data type (ST)

The two or three character HL7 data type, as defined in Section 2.8, “DATA TYPES.”

2.8.34.3 Maximum column width (NM)

The maximum width of the column, as dictated by the responding system. (This may vary from the HL7-defined maximum field length.)

2.8.35 RI - repeat interval

Components: <repeat pattern (IS)> ^ <explicit time interval (ST)>

Definition: This field contains the interval between repeating appointments. The default setting indicates that the appointment should occur once, when the component is not valued. The definition of this field is equivalent to the definition of the Interval component of the Quantity/Timing field given in Chapter 4, Section 4.4.2 “Interval component (CM).”

2.8.35.1 Repeat pattern (IS)

The first component is defined by *user-defined table 0335 - Repeat pattern*. See Section 4.4.2.1 “Repeat pattern,” for further details.

2.8.35.2 Explicit time interval (ST)

The second component explicitly lists the actual times referenced by the code in the first subcomponent, in the following format: HHMM,HHMM,HHMM,... This second subcomponent will be used to clarify the first subcomponent in cases where the actual administration times vary within an institution. See Section 4.4.2.2, “Explicit time interval,” for further details.

2.8.36 RP - reference pointer

Components: <pointer (ST) > ^ < application ID (HD)> ^ <type of data (ID)> ^ <subtype (ID)>

This data type transmits information about data stored on another system. It contains a reference pointer that uniquely identifies the data on the other system, the identity of the other system, and the type of data.

2.8.36.1 Pointer (ST)

A unique key assigned by the system that stores the data. The key, which is a ST data type, is used to identify and access the data.

2.8.36.2 Application ID (HD)

Subcomponents: <namespace ID (IS)> & < universal ID (ST)> & <universal ID type (ID)>

A unique designator of the system that stores the data. It is a HD data type (See Section 2.8.20, “HD - hierarchical designator”). Application ID’s must be unique across a given HL7 implementation.

2.8.36.3 Type of data (ID)

An ID data type that declares the general type of data. Refer to *HL7 table 0191- Type of referenced data* for valid values.

Table 0191 - Type of referenced data

Value	Description
SI	Scanned image (HL7 V2.2 only)
NS	Non-scanned image (HL7 V2.2 only)
SD	Scanned document (HL7 V2.2 only)
TX	Machine readable text document (HL7 V2.2 only)
FT	Formatted text (HL7 V2.2 only)
TEXT	Machine readable text document (HL7 V2.3.1 and later)
Image	Image data (HL7 V2.3 and later)
Audio	Audio data (HL7 V2.3 and later)
Application	Other application data, typically uninterpreted binary data (HL7 V2.3 and later)

2.8.36.4 Subtype (ID)

An ID data type declaring the format for the data of subcomponent <main type>. Refer to *HL7 table 0291 - Subtype of referenced data* for valid values.

Table 0291 - Subtype of referenced data

Value	Description
TIFF	TIFF image data
PICT	PICT format image data
DICOM	Digital Imaging and Communications in Medicine
FAX	Facsimile data
JOT	Electronic ink data (Jot 1.0 standard)
BASIC	ISDN PCM audio data
Octet-stream	Uninterpreted binary data
PostScript	PostScript program
JPEG	Joint Photographic Experts Group
GIF	Graphics Interchange Format
HTML	Hypertext Markup Language
SGML	Structured General Markup Language (HL7 V2.3.1 and later)
XML	Extensible Markup Language (HL7 V2.3.1 and later)
RTF	Rich Text Format

2.8.36.5 Type-subtype combinations

Possible subtypes are specific to main types (though in principle the same subtype could be used for more than one main type), and so are defined under their main types.

Additional subtypes may be added to this Standard. In addition, private, non-standard subtypes may be defined by agreement between cooperating parties. All private, non-standard subtypes should begin with the letter **Z** to distinguish them from the standard subtypes.

2.8.36.5.1 Image subtypes

TIFF = TIFF image data

TIFF (Tagged Image File Format) is one of the common formats for scanned images. Its first version was developed in 1986 by Aldus Corporation as a standard for encoding scanned images. The official version of the TIFF standard is now maintained by Adobe Corporation. TIFF format is specified in the document "TIFF, Revision 6.0." Adobe Systems Incorporated, 1585 Charleston Road, P.O. Box 7900, Mountain View, CA 94039-7900. (415) 961-4400

The subtype "TIFF" implies recognition of that trademark and all the rights it entails.

PICT = PICT format image data

PICT is one of the common formats for scanned images. PICT is a graphics format developed by Apple Computer, Inc., Cupertino, California. PICT format is officially defined in the book set "Inside Macintosh," published by Addison-Wesley Publishing Company, Reading, Massachusetts.

DICOM = the Digital Imaging and Communications in Medicine (DICOM) standard

DICOM is the format developed jointly by the American College of Radiology (ACR) and the National Electrical Manufacturers Association (NEMA) as the standard for interchange of radiological images and

ancillary data. It is standardized as NEMA PS3, and is available from: NEMA, 2101 L Street NW, Washington, DC 20037

DICOM specifies a complete communications standard, including a generic messaging service for two-way exchange of imaging-related information between applications, as well as transfer of the actual images. In HL7, the use of DICOM data is limited to images only.

Images in this subtype shall be encoded according to the Generic DICOM File Format defined in DICOM Part 10, Media Storage and File Format (NEMA PS3.10). This shall be in accordance with the Image Information Object Definitions of DICOM Part 3 (NEMA PS3.3), Data Structure and Semantics of DICOM Part 5 (NEMA PS3.5), and the Data Dictionary of DICOM Part 6 (NEMA PS3.6).

The Generic DICOM File Format consists of two parts: a DICOM File Meta Information Header, immediately followed by a DICOM Data Set. The DICOM Data Set contains the image or images specified according to DICOM Part 10. The DICOM File Meta Information Header contains, among other information, a Transfer Syntax UID (Unique Identifier) which completely specifies the encoding of the Data Set according to DICOM Part 5. This encoding defines big endian vs. little endian byte ordering, as well as image compression via the JPEG (Joint Photographics Experts Group) standard (ISO/IS 10918-1 and 10918-2). The transfer syntax of the File Meta Information Header itself is little endian byte ordered, as required by DICOM Part 10.

`FAX = facsimile data`

Facsimile data as specified by CCITT standards F1.60, F1.80, F1.82, and F1.84.

`Jot = electronic ink data, as specified by the Jot 1.0 standard`

The JOT standard, proposed jointly by Slate Corporation, Microsoft, Apple, Lotus, GO, and General Magic, allows handwritten notes, sketches, signatures and other free-form written data to be transmitted. It is the standard by which portable pen computers or workstations equipped with stylus-input tablets can represent and exchange information.

It represents electronic ink as a series of stylus strokes, and therefore contains necessary information for potential automatic handwriting recognition, which would be lost if converted to other image representations. It may, however, be readily converted to another image representation for purposes of printing or display.

The JOT 1.0 standard is available from: Software Publishers Association, 1730 M Street Northwest, Suite 700
Washington, DC 20036-4510, (202) 452-1600

2.8.36.5.2 *Audio subtypes*

`basic = ISDN PCM audio data`

Telephone quality audio data, encoded as 8-bit ISDN mu-law Pulse Code Modulation sampled at 8 kHz, according to CCITT Fascicle III.4, Recommendation G.711. This subtype may be used for voice mail messages as well as voice dictation.

2.8.36.5.3 *Application subtypes*

`octet-stream = uninterpreted binary data`

This subtype is for binary data which has none of the other standard formats as given by Section 2.8.36.3, "Type of data (ID)." Its interpretation by the system utilizing the data must be mutually agreed upon by sending and receiving parties.

PostScript = PostScript program

A PostScript language program typically representing a formatted document for printing on a PostScript printer, or for display on a computer screen via a PostScript interpreter.

PostScript consists of the original specification, PostScript level 1, described in “PostScript Language Reference Manual,” Addison-Wesley, 1985, and a more advanced variant, PostScript level 2, described in “PostScript Language Reference Manual,” Addison-Wesley, Second Edition, 1990. PostScript is a registered trademark of Adobe Systems, Inc. Use of the subtype “PostScript” implies recognition of that trademark and all the rights it entails.

Other types may be added as needed.

Example:

| 1234A321634BC^EFC^SD |

2.8.37 SCV - scheduling class value pair

Components: <parameter class (IS)> ^ <parameter value (ST)>

For use only with the scheduling chapter.

Definition: This data type is used to communicate parameters and preferences to the filler application regarding the selection of an appropriate *time slot, resource, location, or filler override criterion* for an appointment.

2.8.37.1 Parameter class (IS)

The first component of this field is a code identifying the parameter or preference being passed to the filler application.

2.8.37.2 Parameter value (IS)

The second component is the actual data value for that parameter.

For example, if a filler application allows preference parameters to be passed to specify a preferred start time, a preferred end time, and preferred days of the week for the appointment, it may define the following parameter class codes and valid data sets.

User-defined Table 0294 - Time selection criteria parameter class codes

Parameter Class	Description: Valid Values
PREFSTART	The preferred start time for the appointment request, service or resource. Any legal time specification in the format HHMM, using 24-hour clock notation
PREFEND	The preferred end time for the appointment request, service or resource. Any legal time specification in the format HHMM, using 24-hour clock notation
MON	An indicator that Monday is or is not preferred for the day on which the appointment will occur. OK = Preferred appointment day NO = Day is not preferred
TUE	An indicator that Tuesday is or is not preferred for the day on which the appointment will occur. OK = Preferred appointment day NO = Day is not preferred
WED	An indicator that Wednesday is or is not preferred for the day on which the appointment will occur. OK = Preferred appointment day NO = Day is not preferred

Parameter Class	Description: Valid Values
THU	An indicator that Thursday is or is not preferred for the day on which the appointment will occur. OK = Preferred appointment day NO = Day is not preferred
FRI	An indicator that Friday is or is not preferred for the day on which the appointment will occur. OK = Preferred appointment day NO = Day is not preferred
SAT	An indicator that Saturday is or is not preferred for the day on which the appointment will occur. OK = Preferred appointment day NO = Day is not preferred
SUN	An indicator that Sunday is or is not preferred for the day on which the appointment will occur. OK = Preferred appointment day NO = Day is not preferred

2.8.38 SI - sequence ID

A non-negative integer in the form of a NM field. The uses of this data type are defined in the chapters defining the segments and messages in which it appears.

2.8.39 SN - structured numeric

Components: <comparator (ST)> ^ <num1 (NM)> ^ <separator/suffix (ST)> ^ <num2 (NM)>

The structured numeric data type is used to unambiguously express numeric clinical results along with qualifications. This enables receiving systems to store the components separately, and facilitates the use of numeric database queries. The corresponding sets of values indicated with the <comparator> and <separator/suffix> components are intended to be the authoritative and complete set of values. If additional values are needed for the <comparator> and <separator/suffix> components, they should be submitted to HL7 for inclusion in the Standard.

If <num1> and <num2> are both non-null, then the separator/suffix must be non-null. If the separator is “-”, the data range is inclusive; e.g., <num1> - <num2> defines a range of numbers x , such that: <num1> $\leq x \leq$ <num2>.

2.8.39.1 Comparator (ST)

Defined as greater than, less than, greater than or equal, less than or equal, equal, and not equal, respectively (= “>” or “<” or “>=” or “<=” or “=” or “<>”)

If this component is not valued, it defaults to equal (“=”).

2.8.39.2 Num1 (NM)

A number.

2.8.39.3 Separator/suffix (ST)

“-” or “+” or “/” or “.” or “:”

Examples:

>^100	(greater than 100)
^100^-^200	(equal to range of 100 through 200)
^1^: ^228	(ratio of 1 to 128, e.g., the results of a serological test)
^2^+	(categorical response, e.g., occult blood positivity)

2.8.39.4 Num2 (NM)

A number or null depending on the measurement.

2.8.40 ST - string data

String data is left justified with trailing blanks optional. Any displayable (printable) ACSII characters (hexadecimal values between 20 and 7E, inclusive, or ASCII decimal values between 32 and 126), except the defined delimiter characters. Example:

|almost any data at all|

To include any HL7 delimiter character (except the segment terminator) within a string data field, use the appropriate HL7 escape sequence (see Section 2.9.1, "Formatting codes").

Usage note: The ST data type is intended for short strings (e.g., less than 200 characters). For longer strings the TX or FT data types should be used (see Sections 2.8.45, "TX - text data," or 2.8.19, "FT - formatted text data").

2.8.41 TM - time

Format: HH[MM[SS[.S[S[S[S]]]]]][/-ZZZZ]

In prior versions of HL7, this data type was always specified to be in the format HHMM[SS[.SSSS]][/-ZZZZ] using a 24 hour clock notation. In the current and future versions, the precision of a time may be expressed by limiting the number of digits used with the format specification as shown above. By site-specific agreement, HHMM[SS[.SSSS]][/-ZZZZ] may be used where backward compatibility must be maintained.

Thus, HH is used to specify a precision of "hour," HHMM is used to specify a precision of "minute," HHMMSS is used to specify a precision of seconds, and HHMMSS.SSSS is used to specify a precision of ten-thousandths of a second.

In each of these cases, the time zone is an optional component. The fractional seconds could be sent by a transmitter who requires greater precision than whole seconds. Fractional representations of minutes, hours or other higher orders units of time are not permitted.

Note: The time zone [/ -ZZZZ], when used, is restricted to legally-defined time zones and is represented in HHMM format.

The time zone of the sender may be sent optionally as an offset from the coordinated universal time (previously known as Greenwich Mean Time). Where the time zone is not present in a particular TM field but is included as part of the date/time field in the MSH segment, the MSH value will be used as the default time zone. Otherwise, the time is understood to refer to the local time of the sender. Midnight is represented as 0000. Examples:

235959+1100	1 second before midnight in a time zone eleven hours ahead of Universal Coordinated Time (i.e., east of Greenwich).
0800	Eight AM local time of the sender.
093544.2312	44.2312 seconds after Nine thirty-five AM local time of sender.
13	1pm (with a precision of hours), local time of sender.

2.8.42 TN - telephone number

For use in the United States and conforming countries, the telephone number is always in the form:

Format: [NN] [(999)]999-9999[X99999][B99999][C any text]

The optional first two digits are the country code. The optional **X** portion gives an extension. The optional **B** portion gives a beeper code. The optional **C** portion may be used for comments like, **After 6:00**. While no explicit limit is placed on the text field, receiving systems may be expected to truncate values that are more than 10 characters long. To accommodate the variability of institutional phone systems, the length of the extension and beeper numbers may be extended by local agreement. Examples:

```
| (415) 925-0121X305 |  
| 234-4532C WEEKENDS |
```

2.8.43 TQ - timing quantity

Describes when a service should be performed and how frequently. See Chapter 4 (Section 4.4, “QUANTITY/TIMING (TQ) DEFINITION”) for a complete description of this data type.

2.8.44 TS - time stamp

Format: YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]][+/-ZZZZ]^<degree of precision>

Contains the exact time of an event, including the date and time. The date portion of a time stamp follows the rules of a date field and the time portion follows the rules of a time field. The time zone (+/-ZZZZ) is represented as +/-HHMM offset from UCT (formerly Greenwich Mean Time (GMT)), where +0000 or -0000 both represent UCT (without offset). The specific data representations used in the HL7 encoding rules are compatible with ISO 8824-1987(E).

In prior versions of HL7, an optional second component indicates the degree of precision of the time stamp (Y = year, L = month, D = day, H = hour, M = minute, S = second). This optional second component is retained only for purposes of backward compatibility.

By site-specific agreement, YYYYMMDD[HHMM[SS[.S[S[S[S]]]]][+/-ZZZZ]^<degree of precision> may be used where backward compatibility must be maintained.

In the current and future versions of HL7, the precision is indicated by limiting the number of digits used, unless the optional second component is present. Thus, YYYY is used to specify a precision of “year,” YYYYMM specifies a precision of “month,” YYYYMMDD specifies a precision of “day,” YYYYMMDDHH is used to specify a precision of “hour,” YYYYMMDDHHMM is used to specify a precision of “minute,” YYYYMMDDHHMMSS is used to specify a precision of seconds, and YYYYMMDDHHMMSS.SSSS is used to specify a precision of ten thousandths of a second. In each of these cases, the time zone is an optional component. Note that if the time zone is not included, the time-zone defaults to that of the local time zone of the sender. Also note that a TS valued field with the HHMM part set to “0000” represents midnight of the night extending from the previous day to the day given by the YYYYMMDD part (see example below). Maximum length of the time stamp is 26. Examples:

```
| 19760704010159-0500 |
```

1:01:59 on July 4, 1976 in the Eastern Standard Time zone (USA).

```
| 19760704010159-0400 |
```

1:01:59 on July 4, 1976 in the Eastern Daylight Saving Time zone (USA).

```
| 198807050000 |
```

Midnight of the night extending from July 4 to July 5, 1988 in the local time zone of the sender.

```
| 19880705 |
```

Same as prior example, but precision extends only to the day. Could be used for a birthdate, if the time of birth is unknown.

| 19981004010159+0100 |

1:01:59 on October 4, 1998 in Amsterdam, NL. (Time zone=+0100).

The HL7 Standard strongly recommends that all systems routinely send the time zone offset but does not require it. All HL7 systems are required to accept the time zone offset, but its implementation is application specific. For many applications the time of interest is the local time of the sender. For example, an application in the Eastern Standard Time zone receiving notification of an admission that takes place at 11:00 PM in San Francisco on December 11 would prefer to treat the admission as having occurred on December 11 rather than advancing the date to December 12.

Note: The time zone [+/-ZZZZ], when used, is restricted to legally-defined time zones and is represented in HHMM format.

One exception to this rule would be a clinical system that processed patient data collected in a clinic and a nearby hospital that happens to be in a different time zone. Such applications may choose to convert the data to a common representation. Similar concerns apply to the transitions to and from daylight saving time. HL7 supports such requirements by requiring that the time zone information be present when the information is sent. It does not, however, specify which of the treatments discussed here will be applied by the receiving system.

2.8.45 TX - text data

String data meant for user display (on a terminal or printer). Such data would not necessarily be left justified since leading spaces may contribute greatly to the clarity of the presentation to the user. Because this type of data is intended for display, it may contain certain escape character sequences designed to control the display. Escape sequence formatting is defined later in this chapter in Section 2.9, "USE OF ESCAPE SEQUENCES IN TEXT FIELDS." Leading spaces should be included. Trailing spaces should be removed. Example:

| leading spaces are allowed. |

Since TX data is intended for display purposes, the repeat delimiter, when used with a TX data field, implies a series of repeating lines to be displayed on a printer or terminal. Therefore, the repeat delimiters are regarded as paragraph terminators or hard carriage returns (e.g., they would display as though a CR/LF were inserted in the text (DOS type system) or as though a LF were inserted into the text (UNIX style system)).

A receiving system would word-wrap the text between repeat delimiters in order to fit it into an arbitrarily sized display window but start any line beginning with a repeat delimiter on a new line.

Usage note: The maximum length of a TX data field is 64K.

2.8.46 VH - visiting hours

Components: <start day range (ID)> ^ <end day range (ID)> ^ <start hour range (TM)> ^ <end hour range (TM)>

Definition: This data type contains the hours when a patient location is open for visiting. Refer to *HL7 table 0267 - Days of the week* for valid values for the first two components.

2.8.46.1 Start day range (ID)

Starting day of visiting hours range. See *HL7 table 0267 - Days of the week* for valid values.

2.8.46.2 End day range (ID)

Ending day of visiting hours range. Starting day of visiting hours range. See *HL7 table 0267 - Days of the week* for valid values

Table 0267 - Days of the Week

Value	Description
SAT	Saturday
SUN	Sunday
MON	Monday
TUE	Tuesday
WED	Wednesday
THU	Thursday
FRI	Friday

2.8.46.3 Start hour range (TM)

Starting hour on starting day of visiting hours range (see first component, 2.8.46.0, “Start day range”).

2.8.46.4 End hour range (TM)

Ending hour on ending day of visiting hours range (see second component, 2.8.46.2, “End day range”).

2.8.47 VID – version identifier

Components: <version ID (ID)> ^ <internationalization code (CE)> ^ <international version ID (CE)>

2.8.47.1 Version ID (ID)

Used to identify the HL7 version. Refer to *HL7 table 0104 – Version ID* for valid values.

2.8.47.2 Internationalization code (CE)

Used to identify the international affiliate country code. Refer to ISO 3166-1:1977 for the country code. The ISO 3166 table has three separate forms of the country code: HL7 specifies that the 3-character (alphabetic) form be used for the country code.

2.8.47.3 International version ID (CE)

This field component identifies international affiliate’s version; it is especially important when the international affiliate has more than a single local version associated with a single US version.

2.8.48 XAD - extended address

Components: <street address (ST)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code(ST)> ^ <country (ID)> ^ < address type (ID)> ^ <other geographic designation (ST)> ^ <county/parish code (IS)> ^ <census tract (IS)> ^ <address representation code(ID)>

Example:

|1234 Easy St.^Ste. 123^San Francisco^CA^95123^USA^B^SF^|

2.8.48.1 Street address (ST)

The street or mailing address of a person or institution. When referencing an institution, this first component is used to specify the institution name. When used in connection with a person, this component specifies the first line of the address.

2.8.48.2 Other designation (ST)

Second line of address. In general, it qualifies address. Examples: Suite 555 or Fourth Floor. When referencing an institution, this component specifies the street address.

2.8.48.3 City (ST)**2.8.48.4 State or province (ST)**

State or province should be represented by the official postal service codes for that country.

2.8.48.5 Zip or postal code (ST)

Zip or postal codes should be represented by the official codes for that country. In the US, the zip code takes the form 99999[-9999], while the Canadian postal code takes the form A9A-9A9.

2.8.48.6 Country (ID)

Defines the country of the address. ISO 3166 provides a list of country codes that may be used. The ISO 3166 table has three separate forms of the country code: HL7 specifies that the 3-character (alphabetic) form be used for the country code.

2.8.48.7 Address type (ID)

Address type is optional and defined by *HL7 table 0190 - Address type*.

2.8.48.8 Other geographic designation (ST)

Other geographic designation includes county, bioregion, SMSA, etc.

2.8.48.9 County/parish code (IS)

A code that represents the county in which the specified address resides. *User-defined table 0289 - County/parish* is used as the HL7 identifier for the user-defined table of values for this component. When this component is used to represent the county (or parish), component 8 <other geographic designation> should not duplicate it (i.e., the use of <other geographic designation> to represent the county is allowed only for the purpose of backward compatibility, and should be discouraged in this and future versions of HL7).

Allowable values: codes defined by government.

2.8.48.10 Census tract (IS)

A code that represents the census tract in which the specified address resides. *User-defined table 0288 - Census tract* is used as the HL7 identifier for the user-defined table of values for this component.

Allowable Values: codes defined by government.

2.8.48.11 Address representation code (ID)

Different <name/address types> and representations of the same name/address should be described by repeating of this field, with different values of the <name/address type> and/or <name/address representation> component.

Note: Also note that this new component remains in "alphabetic" representation with each repetition of the fields using these data types. I.e. even though the address may be represented in an ideographic character set, this component will remain represented in an alphabetic character set.

Table 4000 - Name/address representation

Value	Description
I	Ideographic (i.e., Kanji)
A	Alphabetic (i.e., Default or some single-byte)
P	Phonetic (i.e., ASCII, Katakana, Hiragana, etc.)

In general this component provides an indication of the representation provided by the data item. It does not necessarily specify the character sets used. Thus, even though the representation might provide an indication of what to expect, the sender is still free to encode the contents using whatever character set is desired. This component provides only hints for the receiver, so it can make choices regarding what it has been sent and what it is capable of displaying.

2.8.49 XCN - extended composite ID number and name for persons

Components: <ID number (ST)> ^ <family name (ST) > & <last_name_prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code(ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID) > ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code(ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

This data type is used extensively appearing in the PV1, ORC, RXO, RXE, OBR and SCH segments , as well as others, where there is a need to specify the ID number and name of a person.

Example without assigning authority and assigning facility:

|1234567^Smi th^John^J^III^DR^PHD^ADT01^^L^4^MI1^MR|

Examples with assigning authority and assigning facility:

Dr. Samuel Semmelweiss's provider ID was assigned by the Provider Master and was first issued at Fairview Hospital within the University Hospitals System. Since IS table values (first component of the HD) were not used for assigning authority and assigning facility, components 2 and 3 of the HD data type are populated and demoted to sub-components as follows:

12188^Sammelwei ss^Samuel ^S^IV^Dr^MD^^&Provi der Master. Uni versi ty
Hospi tal s&L^L^9^MI0^DN^&Fai rview Hospi tal . Uni versi ty Hospi tal s&L^A

Ludwig van Beethoven's medical record number was assigned by the Master Patient Index and was first issued at Fairview Hospital within the University Hospitals System.

10535^Beethoven&van^Ludwi g^A^III^Dr^PHD^^&MPI . Uni versi ty
Hospi tal s&L^L^3^MI0^MR^&Fai rview Hospi tal . Uni versi ty Hospi tal s&L^A

2.8.49.1 ID number (ST)

This string refers to the coded ID according to a user-defined table, defined by the 9th component. If the first component is present, either the source table or the assigning authority must be valued.

2.8.49.2 Family name (ST) & last name prefix (ST)

2.8.49.2.1 Family name (ST)

Surname/last name.

2.8.49.2.2 Last name prefix (ST)

Internationalization usage for Germanic languages. An example of a <last name prefix> is the “van” in “Ludwig van Beethoven.” Since the <last name prefix> doesn't sort completely alphabetically, it is reasonable to specify it as a separate sub-component of the PN and extended PN data types (XPN and XCN).

Note: If the <last name prefix> is not null, the <last name prefix> should also be present as part of the <family name> subcomponent e.g. “van Beethoven&van.”

2.8.49.3 Given name (ST)

2.8.49.4 Middle initial or name (ST)

2.8.49.5 Suffix (ST)

Used to specify a name suffix (e.g., Jr. or III).

2.8.49.6 Prefix (ST)

Used to specify a name prefix (e.g., Dr.).

2.8.49.7 Degree (IS)

Used to specify an educational degree (e.g., MD). Refer to *user-defined table 0360 – Degree* for suggested values.

2.8.49.8 Source table (IS)

User-defined table 0297 - CN ID source is used as the HL7 identifier for the user-defined table of values for this component. Used to delineate the first component.

2.8.49.9 Assigning authority (HD)

The assigning authority is a unique identifier of the system (or organization or agency or department) that creates the data. It is a HD data type. Assigning authorities are unique across a given HL7 implementation. *User-defined table 0363 – Assigning authority* is used as the HL7 identifier for the user-defined table of values for the first sub-component of the HD component, <namespace ID>.

Note: When the HD data type is used in a given segment as a component of a field of another data type, user-defined table 0300 - Namespace ID (referenced by the first sub-component of the HD component) may be re-defined (given a different user-defined table number and name) by the technical committee responsible for that segment.

By site agreement, implementors may continue to use user-defined table 0300 – Namespace ID for the first sub-component.

2.8.49.10 Name type code (ID)

A code that represents the type of name. Refer to *HL7 table 0200 - Name type* for valid values (see Section 2.8.51, “XPN - extended person name”).

2.8.49.11 Identifier check digit (ST)

The check digit in this data type is not an add-on produced by the message processor. It is the check digit that is part of the identifying number used in the sending application. If the sending application does not include a self-generated check digit in the identifying number, this component should be valued null.

2.8.49.12 Code identifying the check digit scheme employed (ID)

Refer to HL7 table 0061 - Check digit scheme for valid values.

2.8.49.13 Identifier type code (IS)

A code corresponding to the type of identifier. In some cases, this code may be used as a qualifier to the <assigning authority> component. Refer to *user-defined table 0203 - Identifier type* for suggested values.

2.8.49.14 Assigning facility (HD)

The place or location identifier where the identifier was first assigned to the person. This component is not an inherent part of the identifier but rather part of the history of the identifier: as part of this data type, its existence is a convenience for certain intercommunicating systems.

Note: When the HD data type is used in a given segment as a component of a field of another data type, user-defined table 0300 - Namespace ID (referenced by the first sub-component of the HD component) may be re-defined (given a different user-defined table number and name) by the technical committee responsible for that segment.

2.8.49.15 Name representation code (ID)

Different <name/address types> and representations of the same <name/address> should be described by repeating of this field, with different values of the <name/address type> and/or <name/address representation> component.

Note: This new component remains in "alphabetic" representation with each repetition of the field using these data types. I.e. even though the name may be represented in an ideographic character set, this component will remain represented in an alphabetic character set.

Table 4000 - Name/address representation

Value	Description
I	Ideographic (i.e., Kanji)
A	Alphabetic (i.e., Default or some single-byte)
P	Phonetic (i.e., ASCII, Katakana, Hiragana, etc.)

In general this component provides an indication of the representation provided by the data item. It does not necessarily specify the character sets used. Thus, even though the representation might provide an indication of what to expect, the sender is still free to encode the contents using whatever character set is desired. This component provides only hints for the receiver, so it can make choices regarding what it has been sent and what it is capable of displaying.

2.8.50 XON - extended composite name and identification number for organizations

Components: <organization name (ST)> ^ <organization name type code (IS)> ^ <ID number (NM)> ^ <check digit (NM)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility ID (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

This data type is used in fields (e.g., PV2-23, NK1-13, PD111-3, OBR-44) to specify the name and ID number of an organization.

Example 1:

The ID for Fairview Hospital was assigned by the University Hospital enterprise's Hospital Master and was first issued at the Central Offices.

Fairview Hospital^L^716^9^M10^&Hospital Master. University
Hospitals&L^XX^&Central Offices. University Hospitals&L^A

Example 2:

Fairview Hospital has another ID that was issued by HCFA. Assigning Authority, HCFA, values only the first HD component, an IS data type and assigning facility is not relevant. This information might be transmitted accordingly:

Fairview Hospital^L^4544^3^M10^HCFA^XX^A

2.8.50.1 Organization name (ST)

The name of the specified organization.

2.8.50.2 Organization name type code (IS)

A code that represents the type of name i.e., legal name, display name. Refer to *user-defined table 0204 - Organizational name type* for suggested values.

User-defined table 0204 - Organizational name type

Value	Description
A	Alias name
L	Legal name
D	Display name
SL	Stock exchange listing name

2.8.50.3 ID number (NM)

2.8.50.4 Check digit (NM)

The check digit in this data type is not an add-on produced by the message processor. It is the check digit that is part of the identifying number used in the sending application. If the sending application does not include a self-generated check digit in the identifying number, this component should be valued null.

2.8.50.5 Code identifying the check digit scheme employed (ID)

The check digit scheme codes are defined in *HL7 table 0061 - Check digit scheme*.

2.8.50.6 Assigning authority (HD)

The assigning authority is a unique identifier of the system (or organization or agency or department) that creates the data. It is a HD data type. Assigning authorities are unique across a given HL7 implementation. *User-defined table 0363 - Assigning authority* is used as the HL7 identifier for the user-defined table of values for the first sub-component of the HD component <namespace ID>.

Note: When the HD data type is used in a given segment as a component of a field of another data type, user-defined table 0300 - Namespace ID (referenced by the first sub-component of the HD component) may be re-defined (given a different user-defined table number and name) by the technical committee responsible for that segment.

By site agreement, implementors may continue to use user-defined table 0300 – Namespace ID for the first sub-component.

2.8.50.7 Identifier type code (IS)

A code corresponding to the type of identifier. In some cases, this code may be used as a qualifier to the “Assigning authority” component. Refer to *user-defined table 0203 - Identifier type* for suggested values.

2.8.50.8 Assigning facility ID (HD)

The place or location identifier where the identifier was first assigned to the person. This component is not an inherent part of the identifier but rather part of the history of the identifier: as part of this data type, its existence is a convenience for certain intercommunicating systems.

Note: When the HD data type is used in a given segment as a component of a field of another data type, user-defined table 0300 - Namespace ID (referenced by the first sub-component of the HD component) may be re-defined (given a different user-defined table number and name) by the technical committee responsible for that segment.

2.8.50.9 Name representation code (ID)

Different <name/address types> and representations of the same <name/address> should be described by repeating of this field, with different values of the <name/address type> and/or <name/address representation> component.

Note: This new component remains in “alphabetic” representation with each repetition of the field using these data types. I.e. even though the name may be represented in an ideographic character set, this component will remain represented in an alphabetic character set.

Table 4000 - Name/address representation

Value	Description
I	Ideographic (i.e., Kanji)
A	Alphabetic (i.e., Default or some single-byte)
P	Phonetic (i.e., ASCII, Katakana, Hiragana, etc.)

In general this component provides an indication of the representation provided by the data item. It does not necessarily specify the character sets used. Thus, even though the representation might provide an indication of what to expect, the sender is still free to encode the contents using whatever character set is desired. This component provides only hints for the receiver, so it can make choices regarding what it has been sent and what it is capable of displaying.

2.8.51 XPN - extended person name

Components: <family name (ST)> & <last_name_prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <name type code (ID)> ^ <name representation code (ID)>

Example:

|Smi th^John^J^III^DR^PHD^L|

2.8.51.1 Family name (ST) & last name prefix (ST)

2.8.51.1.1 Family name (ST)

Surname/last name.

2.8.51.1.2 Last name prefix (ST)

Internationalization usage for Germanic languages. An example of a <last name prefix> is the “van” in “Ludwig van Beethoven.” Since the <last name prefix> doesn't sort completely alphabetically, it is reasonable to specify it as a separate sub-component of the PN and extended PN data types (XPN and XCN).

Note: If the <last name prefix> is not null, the <last name prefix> is not null, the <last name prefix> should also be present as part of the <family name> subcomponent e.g. “van Beethoven&van.”

2.8.51.2 Given name (ST)

2.8.51.3 Middle initial or name (ST)

2.8.51.4 Suffix (ST)

Used to specify a name suffix (e.g., Jr. or III).

2.8.51.5 Prefix (ST)

Used to specify a name prefix (e.g., Dr.).

2.8.51.6 Degree (IS)

Used to specify an educational degree (e.g., MD). Refer to *user-defined table 0360 – Degree* for suggested values.

User-defined table 0360 - Degree

Value	Description
AAS	Associate of Applied Science
AA	Associate of Arts
ABA	Associate of Business Administration
AE	Associate of Engineering
AS	Associate of Science
BA	Bachelor of Arts
BBA	Bachelor of Business Administration
BE	Bachelor or Engineering
BFA	Bachelor of Fine Arts
BN	Bachelor of Nursing
BS	Bachelor of Science
BSL	Bachelor of Science – Law
BT	Bachelor of Theology
CER	Certificate
DIP	Diploma
DBA	Doctor of Business Administration

Value	Description
DED	Doctor of Education
PHE	Doctor of Engineering
PHD	Doctor of Philosophy
PHS	Doctor of Science
MD	Doctor of Medicine
DO	Doctor of Osteopathy
HS	High School Graduate
JD	Juris Doctor
MA	Master of Arts
MBA	Master of Business Administration
MCE	Master of Civil Engineering
MDI	Master of Divinity
MED	Master of Education
MEE	Master of Electrical Engineering
ME	Master of Engineering
MFA	Master of Fine Arts
MME	Master of Mechanical Engineering
MS	Master of Science
MSL	Master of Science – Law
MT	Master of Theology
NG	Non-Graduate
SEC	Secretarial Certificate
TS	Trade School Graduate

2.8.51.7 Name type code (ID)

A code that represents the type of name. Refer to *HL7 table 0200 - Name type* for valid values.

Table 0200 - Name type

Value	Description
A	Alias Name
L	Legal Name
D	Display Name
M	Maiden Name
C	Adopted Name
B	Name at Birth
P	Name of Partner/Spouse
S	Coded Pseudo-Name to ensure anonymity
T	Tribal/Community Name
U	Unspecified

Note: The content of Legal Name is country specific. In the US the legal name is the same as the current married name.

2.8.51.8 Name representation code (ID)

Different <name/address types> and representations of the same <name/address> should be described by repeating of this field, with different values of the <name/address type> and/or <name/address representation> component.

Note: This new component remains in "alphabetic" representation with each repetition of the field using these data types. I.e. even though the name may be represented in an ideographic character set, this component will remain represented in an alphabetic character set.

Table 4000 - Name/address representation

Value	Description
I	Ideographic (i.e., Kanji)
A	Alphabetic (i.e., Default or some single-byte)
P	Phonetic (i.e., ASCII, Katakana, Hiragana, etc.)

In general this component provides an indication of the representation provided by the data item. It does not necessarily specify the character sets used. Thus, even though the representation might provide an indication of what to expect, the sender is still free to encode the contents using whatever character set is desired. This component provides only hints for the receiver, so it can make choices regarding what it has been sent and what it is capable of displaying.

2.8.52 XTN - extended telecommunication number

Components: [NNN] [(999)]999-9999 [X99999] [B99999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Example:

(415) 555- 3210^ORN^FX^

2.8.52.1 [(999)] 999-9999 [X99999] [C any text]

Defined as the TN data type (see Section 2.8.42, “TN - telephone number”), except that the length of the country access code has been increased to three.

2.8.52.2 Telecommunication use code (ID)

A code that represents a specific use of a telecommunication number. Refer to *HL7 table 0201 - Telecommunication use code* for valid values.

Table 0201 - Telecommunication use code

Value	Description
PRN	Primary Residence Number
ORN	Other Residence Number
WPN	Work Number
VHN	Vacation Home Number
ASN	Answering Service Number
EMR	Emergency Number
NET	Network (email) Address
BPN	Beeper Number

2.8.52.3 Telecommunication equipment type (ID)

A code that represents the type of telecommunication equipment. Refer to *HL7 table 0202 - Telecommunication equipment type* for valid values.

Table 0202 - Telecommunication equipment type

Value	Description
PH	Telephone
FX	Fax
MD	Modem
CP	Cellular Phone
BP	Beeper
Internet	Internet Address: Use Only If Telecommunication Use Code Is NET
X.400	X.400 email address: Use Only If Telecommunication Use Code Is NET

2.8.52.4 Email address (ST)

Internationalization note: To make this data type interoperate with CEN's Telecommunication data attribute group, we allow use of the second component for email addresses. The presence of an email address is specified by the addition of the value *NET* to the Phone Use Code table, and the type of Internet address is specified with the values *Internet* and *X.400* to the Phone Equipment Type table. When used for an Internet address, the first component of the XTN data type will be null. If the @-sign is being used as a subcomponent delimiter, the HL7 subcomponent escape sequence may be used when encoding an Internet address (see Section 2.9.1., “Formatting codes”).

Note: Components five through nine reiterate the basic function of the first component in a delimited form that allows the expression of both local and international telephone numbers. In Version 2.3, the recommended form for the telephone number is to use the delimited form rather than the unstructured form supported by the first component (which is left in for backward compatibility only).

2.8.52.5 Country code (NM)

2.8.52.6 Area/city code (NM)

2.8.52.7 Phone number (NM)

2.8.52.8 Extension (NM)

2.8.52.9 Any text (ST)

2.9 USE OF ESCAPE SEQUENCES IN TEXT FIELDS

2.9.1 Formatting codes

When a field of type TX, FT, or CF is being encoded, the escape character may be used to signal certain special characteristics of portions of the text field. The escape character is whatever display ASCII character is specified in the <escape character> component of *MSH-2-encoding characters*. For purposes of this section, the character \ will be used to represent the character so designated in a message. An **escape sequence** consists of the escape character followed by an escape code ID of one character, zero (0) or more data characters, and another occurrence of the escape character. The following escape sequences are defined:

\H\	start highlighting
\N\	normal text (end highlighting)
\F\	field separator
\S\	component separator
\T\	subcomponent separator
\R\	repetition separator
\E\	escape character
\Xdddd...\	hexadecimal data
\Zdddd...\	locally defined escape sequence

The **escape sequences** for field separator, component separator, subcomponent separator, repetition separator, and escape character are also valid within an ST data field.

No escape sequence may contain a nested escape sequence.

2.9.2 Escape sequences supporting multiple character sets for PN, XPN, XCN, XON, and XAD data types

The following HL7 escape sequences are defined to support multiple character sets for fields of the PN and XPN data type. They allow HL7 parsers to use escape codes (defined in the standards used below), without breaking, and without being non-conformant, to the HL7 escape paradigm defined in this section.

`\Cxyy\` single-byte character set escape sequence with two hexadecimal values, xx and yy, that indicate the escape sequence defined for one of the character repertoires supported for the current message (i.e., ISO-IR xxx).

`\Mxyyzz\` multi-byte character set escape sequence with three hexadecimal values, xx, yy and zz. zz is optional.

Common character set escape sequences include the following which are defined in the standards mentioned:

Single-byte character sets:

<code>\C2842\</code>	ISO-IR 6 G0 (ISO 646 : ASCII)
<code>\C2D41\</code>	ISO-IR 100 (ISO 8859 : Latin Alphabet 1)
<code>\C2D42\</code>	ISO-IR 101 (ISO 8859 : Latin Alphabet 2)
<code>\C2D43\</code>	ISO-IR 109 (ISO 8859 : Latin Alphabet 3)
<code>\C2D44\</code>	ISO-IR 110 (ISO 8859 : Latin Alphabet 4)
<code>\C2D4C\</code>	ISO-IR 144 (ISO 8859 : Cyrillic)
<code>\C2D47\</code>	ISO-IR 127 (ISO 8859 : Arabic)
<code>\C2D46\</code>	ISO-IR 126 (ISO 8859 : Greek)
<code>\C2D48\</code>	ISO-IR 138 (ISO 8859 : Hebrew)
<code>\C2D4D\</code>	ISO-IR 148 (ISO 8859 : Latin Alphabet 5)
<code>\C284A\</code>	ISO-IR 14 (JIS X 0201 -1976: Romaji)
<code>\C2949\</code>	ISO-IR 13 (JIS X 0201 : Katakana)

Multi-byte codes:

<code>\M2442\</code>	ISO-IR 87 (JIS X 0208 : Kanji, hiragana and katakana)
<code>\M242844\</code>	ISO-IR 159 (JIS X 0212 : Supplementary Kanji)

2.9.3 Highlighting

In designating highlighting, the sending application is indicating that the characters that follow somehow should be made to stand out, but leaving the method of doing so to the receiving application. Depending on device characteristics and application style considerations, the receiving application may choose reverse

video, boldface, underlining, blink, an alternate color or another means of highlighting the displayed data. For example the message fragment:

```
DSP|      TOTAL CHOLESTEROL      \H\240*\N\      [90 - 200]
```

might cause the following data to appear on a screen or report:

```
TOTAL CHOLESTEROL      240*      [90 - 200]
```

whereas another system may choose to show the 240* in red.

2.9.4 Special character

The special character escape sequences (\F, \S, \R, \T, and \E) allow the corresponding characters to be included in the data in a text field, though the actual characters are reserved. For example, the message fragment

```
DSP|  TOTAL CHOLESTEROL      180  \F\90 - 200\F\
DSP|  \S\-----\S\
```

would cause the following information to be displayed, given suitable assignment of separators:

```
TOTAL CHOLESTEROL      180  |90 - 200|
^-----^
```

2.9.5 Hexadecimal

When the hexadecimal escape sequence (\Xddd...) is used the X should be followed by 1 or more pairs of hexadecimal digits (0, 1, . . . , 9, A, . . . , F). Consecutive pairs of the hexadecimal digits represent 8-bit binary values. The interpretation of the data is entirely left to an agreement between the sending and receiving applications that is beyond the scope of this Standard.

2.9.6 Formatted text

If the field is of the formatted text (FT) data type, formatting commands also may be surrounded by the escape character. Each command begins with the . (period) character. The following formatting commands are available:

.sp <number>	End current output line and skip <number> vertical spaces. <number> is a positive integer or absent. If <number> is absent, skip one space. The horizontal character position remains unchanged. Note that for purposes of compatibility with previous versions of HL7, “^\sp\” is equivalent to “\br\.”
.br	Begin new output line. Set the horizontal position to the current left margin and increment the vertical position by 1.
.fi	Begin word wrap or fill mode. This is the default state. It can be changed to a no-wrap mode using the .nf command.
.nf	Begin no-wrap mode.
.in <number>	Indent <number> of spaces, where <number> is a positive or negative integer. This command cannot appear after the first printable character of a line.
.ti <number>	Temporarily indent <number> of spaces where number is a positive or negative integer. This command cannot appear after the first printable character of a line.

.sk < number> Skip <number> spaces to the right.

.ce End current output line and center the next line.

The component separator that marks each line defines the extent of the temporary indent command (.ti), and the beginning of each line in the no-wrap mode (.nf). Examples of formatting instructions that are NOT included in this data type include: width of display, position on page or screen, and type of output devices.

Figure 2-3 is an example of the FT data type from a radiology impression section of a radiology report:

Figure 2-3. Formatted text as transmitted

```
.in+4\\.ti-4\ 1. The cardiomediastinal silhouette is now within normal limits. ^\\.sp\\.ti-4\ 2. Lung fields show minimal ground glass appearance. ^\\.sp\\.ti-4\ 3. A loop of colon visible in the left upper quadrant is distinctly abnormal with the appearance of mucosal effacement suggesting colitis.\\.in-4\|
```

Figure 2-4 shows one way of presenting the data in Figure 2-3. The receiving system can create many other interpretations by varying the right margin.

Figure 2-4. Formatted text in one possible presentation

```
1. The cardiomediastinal silhouette is now within normal limits.
2. Lung fields show minimal ground glass appearance.
3. A loop of colon visible in the left upper quadrant is distinctly abnormal with the appearance of mucosal effacement suggesting colitis.
```

2.9.7 Local

When the local escape sequence (\Zddd...\\) is used the Z should be followed by characters that are valid in a TX field. The interpretation of the data is entirely left to an agreement between the sending and receiving applications that is beyond the scope of this Standard.

2.10 MESSAGE CONSTRUCTION RULES

Note: These message construction rules define the standard HL7 encoding rules, creating variable length delimited messages. Although only one set of encoding rules is defined as a standard in HL7 Version 2.3, other encoding rules are possible (but since they are non-standard, they may only be used by a site-specific agreement).

Step 1 Construct the segments in the order defined for the message. Each message is constructed as follows:

- a) the first three characters are the segment ID code
- b) each data field in sequence is inserted in the segment in the following manner:
 - 1) a field separator is placed in the segment
 - 2) if the value is not present, no further characters are required
 - 3) if the value is present, but null, the characters "" (two consecutive double quotation marks) are placed in the field
 - 4) otherwise, place the characters of the value in the segment. As many characters can be included as the maximum defined for the data field. It is not necessary, and is undesirable, to pad fields to fixed lengths. Padding to fixed lengths is permitted. Encode the individual data fields as shown in Section 2.8, "DATA TYPES."

- 5) if the field definition calls for a field to be broken into components, the following rules are used:
 - i. if more than one component is included they are separated by the component separator
 - ii. components that are present but null are represented by the characters ""
 - iii. components that are not present are treated by including no characters in the component
 - iv. components that are not present at the end of a field need not be represented by component separators. For example, the two data fields are equivalent:

|ABC^DEF^^| and |ABC^DEF|.

- 6) if the component definition calls for a component to be broken into subcomponents, the following rules are used:
 - i. if more than one subcomponent is included they are separated by the subcomponent separator
 - ii. subcomponents that are present but null are represented by the characters ""
 - iii. subcomponents that are not present are treated by including no characters in the subcomponent
 - iv. subcomponents that are not present at the end of a component need not be represented by subcomponent separators. For example, the two data components are equivalent:

^XXX&YYY&&^ and ^XXX&YYY^.

- 7) if the field definition permits repetition of a field, the following rules are used, the repetition separator is used only if more than one occurrence is transmitted and is placed between occurrences. (If three occurrences are transmitted, two repetition separators are used.) In the example below, two occurrences of telephone number are being sent:

|234- 7120~599- 1288B1234|

- c) repeat Step 1b while there are any fields present to be sent. If all the data fields remaining in the segment definition are not present there is no requirement to include any more delimiters.
- d) end each segment with an ASCII carriage return character

Step 2 Repeat Step 1 until all segments have been generated.

The following rules apply to receiving HL7 messages and converting their contents to data values:

- a) ignore segments, fields, components, subcomponents, and extra repetitions of a field that are present but were not expected
- b) treat segments that were expected but are not present as consisting entirely of fields that are not present
- c) treat fields and components that are expected but were not included in a segment as not present.

2.10.1 Encoding rules notes

If a segment is to be continued across messages, use the extended encoding rules. These rules are defined in terms of the more general message continuation protocol (see Section 2.23.2, "Continuation messages and segments").

2.10.2 Version compatibility definition

The above rules for receiving HL7 messages and converting their contents to data values allow the following definition of a backward compatibility requirement between the 2.x versions of HL7:

- a) New messages may be introduced.

- b) New segments may be introduced to an existing message. In general these will be introduced at the end of a message, but they may be introduced elsewhere within the message if the segment hierarchy makes this necessary.
- c) New fields may be added at the end of a segment, new components may be added at the end of a field, new subcomponents may be added at the end of a component, and a non-repeating field may be made repeating.

If a non-repeating field is made repeating, the first instance of that repeating field must have the same meaning as the non-repeating field had in the prior version of HL7.

For existing fields in existing segments, data types may be changed by the above rule (Section 2.10.2,c) if the leftmost (prior version) part of the field has the same meaning as it had in the prior version of HL7. In other words, if the new parts of the field (those that are part of the new data type) are ignored, what remains is the old field (defined by the old data type), which has the same meaning as it had in the prior version of HL7.

2.11 CHAPTER FORMATS FOR DEFINING HL7 MESSAGES

Subsequent chapters of this document describe messages that are exchanged among applications in functionally-specific situations. Each chapter is organized as follows:

- a) **purpose.** This is an overview describing the purpose of the chapter, general information and concepts.
- b) **trigger events and messages.** There is a list of the trigger events. For each trigger event the messages that are exchanged when the trigger event occurs are defined using the HL7 abstract message syntax as follows:

Each message is defined in special notation that lists the segment IDs in the order they would appear in the message. Braces, { . . . }, indicate one or more repetitions of the enclosed group of segments. (Of course, the group may contain only a single segment.) Brackets, [. . .], show that the enclosed group of segments is optional. If a group of segments is optional and may repeat it should be enclosed in brackets and braces, { [. . .] }.

Note: {[...]} and {[...]} are equivalent.
--

Whenever braces or brackets enclose more than one segment ID a special stylistic convention is used to help the reader understand the hierarchy of repetition. For example, the first segment ID appears on the same line as the brace, two columns to the right. The subsequent segment IDs appear under the first. The closing brace appears on a line of its own in the same column as the opening brace. This convention is an optional convenience to the user. If there is conflict between its use and the braces that appear in a message schematic, the braces define the actual grouping of segments that is permitted.

- c) **message segments.** The segments defined in a chapter are then listed in a functional order designed to maximize conceptual clarity.
- d) **examples.** Complete messages are included.
- e) **implementation considerations.** Special supplementary information is presented here. This includes issues that must be addressed in planning an implementation.
- f) **outstanding issues.** Issues still under consideration or requiring consideration are listed here.

Consider the hypothetical triggering event **a widget report is requested**. It might be served by the Widget Request (WRQ) and Widget Report (WRP) messages. These would be defined in the Widget chapter (say Chapter XX). The Widget Request message might consist of the following segments: Message Header (MSH), Widget ID (WID). The Widget Report message might consist of the following segments: Message Header (MSH), Message acknowledgment (MSA), one or more Widget Description (WDN) Segments each of which is followed by a single Widget Portion segment (WPN) followed by zero or more Widget Portion Detail (WPD) segments.

2.11.1 HL7 abstract message syntax example

The schematic form for this hypothetical exchange of messages is shown in *Figure 2-5*:

Figure 2-5. Hypothetical schematic message

Trigger Event: WIDGET REPORT IS REQUESTED

<u>WRQ</u>	<u>Widget Request</u>	<u>Chapter</u>
MSH	Message Header	2
WID	Widget ID	XX

<u>WRP</u>	<u>Widget Report</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgement	2
{ WDN	Widget Description	XX
WPN	Widget Portion	XX
}		

The WID, WDN, WPN, and WPD segments would be defined by the widget committee in the widget chapter, as designated by the Arabic numeral XX in the right column. The MSH and MSA segments, although included in the widget messages, are defined in another chapter. They are incorporated by reference into the widget chapter by the chapter number XX.

On the other hand, the widget committee might decide that the WPN and WPD segments should appear in pairs, but the pairs are optional and can repeat. Then the schematic for the WRP message would be as shown in *Figure 2-6*.

Figure 2-6. WPN and WPD segments in pairs

<u>WRF</u>	<u>Widget Report</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgement	XX
{ WDN	Widget Description	XX
[{ WPN	Widget Portion	XX
WPD	Widget Portion Detail	XX
}]		
}		

If the widget committee determined that at least one pair of WPN and WPD segments must follow a WDN, then the notation would be as shown in *Figure 2-7*.

Figure 2-7. At least one pair of WPN and WPD

<u>WRP</u>	<u>Widget Report</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgement	XX
{ WDN	Widget Description	XX
{ WPN	Widget Portion	XX
WPD	Widget Portion Detail	XX
}		
}		

2.12 APPLICATION (LEVEL 7) PROCESSING RULES

2.12.1 Original and enhanced processing rules

The processing rules described here apply to all exchanges of messages, whether or not the HL7 encoding rules or Lower Layer Protocols are used. They represent the primary message processing mode. Certain

variants are documented in Section 2.12.2, “APPLICATION (LEVEL 7) PROCESSING RULES.” These include:

- a) the application processing rules for a special processing mode, deferred processing. This mode remains in the specification only for backward compatibility.
- b) an optional sequence number protocol
- c) an optional protocol for continuing a very long message

The processing rules were extended in Version 2.2 of the Standard. The extensions provide a greater degree of flexibility in the way that messages can be acknowledged, as specified by several new fields in the Message Header segment. To provide backward compatibility with prior versions, the absence of these fields implies that the extended processing rules are not used. In the remainder of this section the extended mode is called the enhanced acknowledgment mode; the prior version is called the original acknowledgment mode.

Because the protocol describes an exchange of messages, it is described in terms of two entities, the initiating and responding systems. Each is both a sender and receiver of messages. The initiating system sends first and then receives, while the responding system receives and then sends.

In overview this exchange proceeds as follows:

Step 1 the initiating system constructs an HL7 message from application data and sends it to the responding system

Step 2 responder receives message and

2.1 when the original acknowledgment rules apply:

- a) validates the message syntactically and against the detailed rules described in Section 2.12.1.0, “Initiation.” If it fails, a reject message is constructed by the protocol software and returned to the initiator; if it does not fail, continue to the next step (2.1,b)
- b) passes the message to the application, which:
 - 1) creates a response message, or
 - 2) creates an error message, or
 - 3) creates a reject message
- c) sends the response, error, or reject message

Initiator passes the message to the initiating application.

2.2 when enhanced acknowledgment rules apply:

- a) the responding system receives the message and commits it to safe storage. This means that the responding system accepts the responsibility for the message in a manner that releases the sending system from any obligation to resend the message. The responding system now checks the message header record to determine whether or not the initiating system requires an accept acknowledgment message indicating successful receipt and secure storage of the message. If it does, the accept acknowledgment message is constructed and returned to the initiator.
- b) at this point, the requirements of the applications involved in the interface determine whether or not more information needs to be exchanged. This exchange is referred to as an application acknowledgment and includes information ranging from simple validation to a complex application-dependent response. If the receiving system is expected to return application-dependent information, it initiates another exchange when this information is available. This time, the roles of initiator and responder are reversed.

The details follow.

2.12.1.1 Initiation

The initiating application creates a message with data values as defined in the appropriate chapter of this Standard. The fields shown below should be valued in the MSH segment (as defined under the MSH segment definition of this chapter). The message is encoded according to the applicable rules and sent to the lower level protocols, which will attempt to deliver it to the responding application. (For definitions of the MSH fields see Section 2.24.1, “MSH - message header segment.”)

Field	Notes
<i>MSH-3-sending application</i>	
<i>MSH-4-sending facility</i>	
<i>MSH-5-receiving application</i>	
<i>MSH-6-receiving facility</i>	
<i>MSH-7-date/time of message</i>	This field is not used in the processing logic of the HL7 protocol. It is optional.
<i>MSH-9-message type</i>	
<i>MSH-10-message control ID</i>	Unique identifier used to relate the response to the initial message.
<i>MSH-11-processing ID</i>	
<i>MSH-12-version ID</i>	
<i>MSH-13-sequence number</i>	
<i>MSH-14-continuation pointer</i>	Used in implementation of message continuation protocol. See Sections 2.23.2, “Continuation messages and segments,” 2.14.3, “Continuation of unsolicited display update message,” and 2.15.4, “Interactive continuation or cancellation of response messages: original mode (display and record-oriented) and enhanced mode (display, tabular, and event replay).”

Certain other fields in the MSH segment are required for the operation of the HL7 encoding rules; they will not be relevant if other encoding rules are employed.

The event code in the second component of *MSH-9-message type* is redundantly shown elsewhere in some messages. For example, the same information is in the EVN segment of the ADT message. This is for compatibility with prior versions of the HL7 protocol. Newly-defined messages should only show the event code in *MSH-9-message type*.

2.12.1.2 Response

The protocol software in the responding system does one of the following:

2.12.1.2.1 When the original acknowledgment rules apply

Note: Both MSH-15-accept acknowledgment type and MSH-16-application acknowledgment type are null or not present.

- a) accepts the message
- b) validates it against at least the following criteria:
 - 1) the value in *MSH-9-message type* is one that is acceptable to the receiver
 - 2) the value in *MSH-12-version ID* is acceptable to the receiver

- 3) the value in *MSH-11-processing ID* is appropriate for the application process handling the message

If any of these edits fail, the protocol software rejects the message. That is, it creates an ACK message with **AR** in *MSA-1-acknowledgment code*.

- c) if the message passes the edits, the message is passed to the receiving application, which performs one of these functions:
 - 1) process the message successfully, generating the functional response message with a value of **AA** in *MSA-1-acknowledgment code*.

-OR-

- 2) send an error response, providing error information in functional segments to be included in the response message with a value of **AE** in *MSA-1-acknowledgment code*.

-OR-

- 3) fail to process (reject) the message for reasons unrelated to its content or format (system down, internal error, etc.). For most such problems it is likely that the responding system will be able to accept the same message at a later time. The implementors must decide on an application-specific basis whether the message should be automatically sent again. The response message contains a value of **AR** in *MSA-1-acknowledgment code*.

- d) passes the message to the initiating system

- e) the protocol software in the initiating system passes the response message to the initiating application

In all the responses described above the following values are put in the MSA segment. Note that the field definitions for the MSA segment fields are in Section 2.24.2, “MSA - message acknowledgment segment”:

Field	Notes
<i>MSA-1-acknowledgment code</i>	As described above.
<i>MSA-2-message control ID</i>	MSH-10-message control ID from MSH segment of incoming message.
<i>MSA-3-text message</i>	Text description of error.
<i>MSA-4-expected sequence number</i>	As described in Section 2.23.1, “Sequence number protocol,” (if the sequence number protocol is being used).
<i>MSA-5-delayed acknowledgment type</i>	For use only as described in Section 2.12.2, “Application (level 7) processing rules, deferred processing two phase reply (original acknowledgment mode only).”

The MSH segment in the response is constructed anew following the rules used to create the initial message described above. In particular, *MSH-7-date/time of message* and *MSH-10-message control ID* refer to the response message; they are not echoes of the fields in the initial message. *MSH-5-receiving application*, *MSH-6-receiving facility*, and *MSH-11-processing ID* contain codes that are copied from *MSH-3-sending application*, *MSH-4-sending facility* and *MSH-11-processing ID* in the initiating message.

2.12.1.2.2 When enhanced acknowledgment rules apply

Note: At least one of MSH-15-accept acknowledgment type or MSH-16-application acknowledgment type is not null.

- a) accepts the message
- b) makes an initial determination as to whether or not the message can be accepted, based on factors such as:

- 1) the status of the interface
 - 2) the availability of safe storage onto which the message can be saved
 - 3) the syntactical correctness of the message, if the design of the receiving system includes this type of validation at this phase
 - 4) the values of *MSH-9-message type*, *MSH-12-version ID*, and *MSH-11-processing ID*, if the design of the receiving system includes this type of validation at this phase
- c) examines the Message Header segment (MSH) to determine whether or not the initiating system requires an accept acknowledgment.

If it does, the responding system returns a general acknowledgment message (ACK) with:

- 1) a commit accept (CA) in *MSA-1-acknowledgment code* if the message can be accepted for processing
- 2) a commit reject (CR) in *MSA-1-acknowledgment code* if the one of the values of *MSH-9-message type*, *MSH-12-version ID* or *MSH-11-processing ID* is not acceptable to the receiving application
- 3) a commit error (CE) in *MSA-1-acknowledgment code* if the message cannot be accepted for any other reason (e.g., sequence number error)

For this response, the following values are put in the MSA segment. Note that the field definitions for the MSA segment fields are in Section 2.24.2, “MSA - message acknowledgment segment”:

Field	Notes
<i>MSA-2-message control ID</i>	MSH-10-message control ID from the incoming message.
<i>MSA-1-acknowledgment code</i>	As described above.
<i>MSA-3-text message</i>	Text description of error.
<i>MSA-4-expected sequence number</i>	As described in Section 2.23.1, “Sequence Number Protocol” (if the sequence number protocol is being used).

The MSH segment in the response is constructed anew following the rules used to create the initial message described above. In particular, *MSH-7-date/time of message* and *MSH-10-message control ID* refer to the response message; they are not echoes of the fields in the initial message. *MSH-5-receiving application*, *MSH-6-receiving facility*, and *MSH-11-processing ID* contain codes that are copied from *MSH-3-sending application*, *MSH-4-sending facility* and *MSH-11-processing ID* in the initiating message.

Note: MSH-15-accept acknowledgment type and MSH-16-application acknowledgment type are not valued (not present or null). At this point, the accept portion of this message exchange is considered complete.

- d) If the message header segment indicates that the initiating system also requires an application acknowledgment, this will be returned as the initial message of a later exchange.

For this response, the following values are put in the MSA segment. Note that the field definitions for the MSA segment fields are in Section 2.24.2, “MSA - message acknowledgment segment”:

Field	Notes
<i>MSA-2-message control ID</i>	Identifies the initial message from the original initiating system as defined in Section 2.12.1.0, “Initiation.”
<i>MSA-1-acknowledgment code</i>	Uses the application (processing) acknowledgment codes as described in Section 2.12.1.2.1, “When the original acknowledgment rules apply.”
<i>MSA-3-text message</i>	Text description of error.

For this message, the receiving system acts as the initiator. Since the message it sends is application-specific, the layouts of these application-level response messages are defined in the relevant application-specific chapter. If needed, this application acknowledgment message can itself require (in *MSH-15-accept acknowledgment type*) an accept acknowledgment message (MSA). *MSH-16-application acknowledgment type*, however, is always null, since the protocol does not allow the application acknowledgment message to have an application acknowledgment.

At this point, the application acknowledgment portion of this message exchange is considered complete.

If the processing on the receiving system goes through multiple stages, chapter-defined messages may be used to relay status or informational changes to other systems (including the original initiating system). Such messages are not part of the acknowledgment scheme for the original message, but are considered to be independent messages triggered by events on the (original) responding system.

Note: The original acknowledgment protocol is equivalent to the enhanced acknowledgment protocol with *MSH-15-accept acknowledgment type* = NE and *MSH-16-application acknowledgment type* = AL, and with the application acknowledgment message defined so that it never requires an accept acknowledgment (*MSH-15-accept acknowledgment type* = NE).

2.12.2 Application (level 7) processing rules, deferred processing two phase reply (original acknowledgment mode only)

(This section remains in the specification only for reasons of providing backward compatibility: it is to be used only with the original acknowledgment protocol. For the original acknowledgment protocol, it creates a generic form of an asynchronous application level acknowledgment, the MCF message.)

The application processing rules for deferred processing are described here. In this mode the responding system sends an acknowledgment to the initiating system that means the message has been placed in some type of secure environment (e.g., disk storage), and the receiving system commits to processing it within a reasonable amount of time, if a) the message contains the necessary information, and b) nothing causes the message's request for action to be canceled before the responding system processes the request.

Note: Neither of these two conditions is completely checked at the time of the first acknowledgment. They are both checked at the time of processing.

The receipt of the first delayed acknowledgment by the initiating system means that the responding system has taken responsibility for the subsequent processing of the message. This also implies that the initiating system no longer needs to keep the particular message in its current form to send out later. For example, if the sending system were maintaining a queue of outgoing messages, the particular message could be deleted from the output queue at this point.

The receipt of the second delayed acknowledgment message informs the initiating application of either: a) the application's successful processing of the initial message, or b) an error that prevented its processing. If the receiving application needs to return detailed change of status information, an application-specific message will be used. An example of the latter is the General Order message (ORM) described in Chapter 4.

The general delayed acknowledgment protocol is implemented on a site-specific and application-specific basis as needed. At a particular site, for a given transaction type the choices are:

- a) do not allow deferred acknowledgments
- b) all messages will have a deferred acknowledgment
- c) only exceptional cases (errors) will receive the deferred acknowledgment

In overview the processing for options b) and c) proceeds as follows:

Initiator receives message from sending application and sends it to the responding system.

The responding system receives the message from the initiating system and

- a) partially validates it syntactically and against the detailed rules described in Section 2.12.1, “Original and enhanced processing rules.” This validation need not be complete but should be sufficient to determine the application that will ultimately respond to the message. If this validation fails, a reject message is constructed by the protocol software and returned to the initiator.
- b) (if the message passes this validation) stores it and constructs a response message that simply acknowledges receipt. *MSA-5-delayed acknowledgment type* then has a value of **D**.
- c) subsequently passes the message to the application, which:
 - 1) creates a response message, or
 - 2) creates an error message, or
 - 3) creates a reject message
- d) The protocol software sends the response, error, or reject message to the initiating system as an unsolicited update with no value present in *MSA-5-delayed acknowledgment type*.

The protocol software of the initiating system responds to the response, error, or reject message with simple acknowledgment and passes it to the initiating application.

The details follow.

2.12.2.1 Initiation

The rules for creating the initial message are exactly as defined in Section 2.12.1, “Original and enhanced processing rules,” for the original acknowledgment rules.

2.12.2.2 Response

The processing in the responding system follows this pattern:

- a) the protocol software accepts the message and validates it against at least the following criteria:
 - 1) the value in *MSH-9-message type* is one that is acceptable to the receiver
 - 2) the value in *MSH-12-version ID* is acceptable to the receiver
 - 3) the value in *MSH-11-processing ID* is appropriate for the application process handling the message

If any of these edits fail, the protocol software rejects the message. That is, it creates an ACK message with **AR** in *MSA-1-acknowledgment code*.

- b) If the message passes the edits, the protocol software stores it and generates a response message of type ACK with a value of **AA** in *MSA-1-acknowledgment code* and **D** in *MSA-5-delayed acknowledgment type*.
- c) Subsequently the protocol software passes the message to the application, which performs one of these functions:
 - 1) processes the message successfully, generating the functional response message (message type MCF) with a value of **AA** in *MSA-1-acknowledgment code*.

- OR -

- 2) creates an error response, providing error information in functional segments to be included in the response message, which has a value of **AE** in *MSA-1-acknowledgment code*.

- OR -

- 3) fails to process (rejects) the message for reasons unrelated to its content or format (system down, internal error, etc.) For most such problems it is likely that the responding system will be able to accept the same message at a later time. The implementors must decide on an application-specific basis whether the message should be automatically sent again. The MSA segment of the response message contains a value of **AR** in *MSA-1-acknowledgment code*.
- d) the application passes the message to the protocol software, which constructs a message of type MCF with **F** in *MSA-5-delayed acknowledgment type*.
- e) the protocol software passes the message to the initiating system as an unsolicited update.
- f) the protocol software in the initiating system passes the response message to the initiating application and generates a simple ACK message. No value is present in *MSA-5-delayed acknowledgment type*.

All other values are put in the MSA segment as described in Section 2.12.1, “Original and enhanced processing rules.”

2.13 ACKNOWLEDGMENT MESSAGES

Acknowledgment messages may be defined on an application basis. However the simple general acknowledgment message (ACK) may be used where the application does not define a special message (application level acknowledgment) and in other cases as described in Section 2.12.1, “Original and enhanced processing rules.” ***The MCF message is included only for backward compatibility with HL7 Version 2.1 (see Section 2.12.2, “Application (level 7) processing rules, deferred processing two phase reply (original acknowledgment mode only)”***.

2.13.1 ACK - general acknowledgment

The simple general acknowledgment (ACK) can be used where the application does not define a special application level acknowledgment message or where there has been an error that precludes application processing. It is also used for accept level acknowledgments. The details are described in Section 2.12.1, “Original and enhanced processing rules.”

<u>ACK</u>	<u>General Acknowledgement</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgement	2
[ERR]	Error	2

2.13.2 MCF - delayed acknowledgment

This message remains in the specification only for reasons of backward compatibility with HL7 Version 2.1. It is used as part of the protocol which creates a generic form of an asynchronous application level acknowledgment, the MCF message. See Section 2.12.1.2, “Response.”

The first MCF message, sent after the initial receipt has the following structure.

<u>MCF</u>	<u>Delayed Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

The second MCF message, sent after application processing, has this structure:

<u>MCF</u>	<u>Delayed Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

2.14 DISPLAY MESSAGES

2.14.1 Display vs. record-oriented messages

HL7 messages may contain:

- a) data in a format suitable for display purposes (display-oriented data), or
- b) data in a format which explicitly denotes field content (record-oriented)

This record-oriented data appears in two forms: tabular (defined in Section 2.15, “QUERIES,” of this chapter); and application-message segment-oriented (defined in the various application sections of this document, see Chapters 3-12).

A display message can be generated to fit a variety of needs for unsolicited updates between systems. These are situations where the update information does not need to be captured by the receiving system’s database, but only displayed, either on a visual medium (such as a PC, workstation or a CRT) or on printed medium.

The Unsolicited Display Message describes the display-oriented message. It is the unsolicited version of the generalized Response display message (see Section 2.15, “QUERIES”). It is acknowledged by a general acknowledgment message (ACK).

The content and format of record-oriented messages require functionally-specific capabilities. The technical committees responsible for functionally-specific chapters define them within those chapters.

2.14.2 UDM/ACK - unsolicited display update message (event Q05)

There is a simple HL7 message that allows for unsolicited display update messages to be sent in HL7 format from one system to another.

Trigger events for the unsolicited update are generally the completion of a particular action (concerning a given patient). For example, a lab test might be completed, generating a STAT unsolicited display message to be sent to the appropriate location

<u>UDM^Q05</u>	<u>Unsolicited Display Message</u>	<u>Chapter</u>
MSH	Message Header	2
URD	Results/Update Definition	2
[URS]	Results/Update Selection Criteria	2
{ DSP }	Display Data	2
[DSC]	Continuation Pointer	2

<u>ACK^Q05</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

2.14.3 Continuation of unsolicited display update message

Like other types of HL7 messages, the UDM message can be continued by use of the DSC segment and *MSH-14-continuation pointer*. Thus if a UDM needs to be continued as three separate UDM messages, the first message would contain:

```
MSH                (no continuation pointer)
URD
[URS]
{DSP}
DSC
```

The second message would contain:

```
MSH                (continuation pointer (to first message))
{DSP}
DSC                (with continuation pointer)
```

The last message would then contain:

```
MSH                (continuation pointer (to second message))
{DSP}
```

Note: This scheme works equally well with non-display messages, such as the Unsolicited Update ORU message (see Chapter 7).

Since these are unsolicited messages, intervening messages (from other systems) may be sent to the receiving application while the sections of the particular message are being continued. *MSH-14-continuation pointer* enables the receiving system to keep track of extraneous intervening messages.

2.15 QUERIES

2.15.1 Display vs. record-oriented queries (original mode, embedded query language, virtual table, and stored procedure queries); and event replay requests

This section addresses the framework defined for responses to queries formatted as display or record-oriented (original mode, tabular, and event replay response messages). The detailed content of the record-oriented query and response messages is defined by the technical committees responsible for the functionally-specific chapters: their basic forms are defined in this chapter.

2.15.2 Message definition

This section defines the following message:

- a generalized query, compatible with previous releases of HL7 (henceforth referred to as the original query)
- An Embedded Query Language query, which supports free-form select statements, based on the query language of choice (e.g., SQL)
- a virtual table request query which supports queries against server database tables (virtual or actual) based on specific selection criteria
- a stored procedure request, which enables an application on one system to execute a stored procedure on another system, which is coded to extract specific data
- a generalized display response message in which the responding system formats the data for direct output to a display device (in both original and enhanced modes)
- an event replay request message, which is used to request data formatted as an event replay response
- a tabular response message in which the responding system formats the data in a relational format, as rows and columns
- an event replay response, in which the responding system formats the data on the basis of an application-specific segment-oriented (record-oriented) message

Note : The response paradigm and basic form of the original mode record-oriented query are defined in this chapter, while the detailed forms are defined in the functionally-specific chapters.

The following represents typical examples of queries supported by the Standard:

- a) for data regarding a single patient, e.g., send all lab results for patient #123456
- b) for data regarding multiple patients, e.g., send the list of patients whose attending physician is Dr. #123
- c) for data that is not patient related, e.g., send the age specific normal values for serum protein.

The variety of potential queries is almost unlimited. There was no attempt here to define a Standard that would cover every possible query. Instead, the Standard embraces the most common queries that are likely to occur in a hospital. For each common query there is a corresponding unsolicited update. See Section 2.14.2, "UDM/ACK - unsolicited display update message (event Q05)."

In particular, there is no implication that a specific system must support generalized queries to comply with the Standard. Rather, these transactions provide a format, or a set of tools to support queries to the extent desired by the institution. The resources available and local policies will influence the type of queries that are implemented.

2.15.3 Immediate vs. deferred response

Responses to queries can be either immediate or deferred. The query describes this as the expected response time. In the immediate mode, the responding process gives the response immediately or in a short period during which the requesting process will wait for the response.

2.15.4 Interactive continuation or cancellation of response messages: original mode (display and record-oriented) and enhanced mode (display, tabular, and event replay)

One use of queries is to retrieve data from one application for presentation to users of another. This approach might be used for users of a patient care system retrieving data from lab or other ancillaries. It also might permit users of a pharmacy system to retrieve a patient's lab results from the lab system or non-pharmacy order data from the patient care system. Almost any other application system could be the source of data or the system initiating the query for its users.

Of particular interest is the case where the inquiring user formulates the query online at the terminal of one system and waits while that system sends the query to another. He gets the response and displays it at their terminal. When the user is formulating such a query she may only have limited understanding of what data is available for a given patient. Sometimes the user's preference would be to make a simple query such as give me recent data in reverse chronological sequence rather than give me data for yesterday, since there may be some data available for today, or there may be data from two days ago that is of interest. The user will look at the data returned and simply quit looking at it after he or she has found the part that is of interest. (The time frames or the sort sequence may differ, or the user may wish to impose some selectivity on the response, but the general principle remains the same. The user would prefer to make a vague statement of the interest, have the data presented in order of decreasing likelihood of interest, and quit when he or she has seen enough.)

While beneficial to the user, this way of requesting data could be very burdensome when the resulting query takes place over an inter-application interface. If the responding system were to retrieve, format, and send all the data the user might like to see, the processing load would be extremely high and the response time unacceptable.

The continuation query provides a way to permit the users to formulate queries loosely while limiting the processing burden on the responding system. The initial query specifies the general constraints of the query and an amount of data to be returned. (For example, the query might be for lab results for patient #12379 and 44 lines would be requested.) The responding system retrieves and formats the specified amount of data and returns it with a special key field, *DSC-I-continuation pointer*. The initiating system presents the requested data to the user and retains the continuation pointer field for use if another query is needed. The internal structure of the value is not known to the initiating system.

If, after viewing the data, the user requests more, the initiating system sends the query again in a format that is identical with the first, except that the *DSC-I-continuation pointer* value is included and the requested amount of data may be changed. The responding system uses the continuation pointer field as a key into its database to continue retrieval and formatting of the results. If the user does not request more data, no further messages are exchanged.

The initiating system may also explicitly terminate the query by sending a "cancel query" message. This message is formatted just like a continuation query, except that the event-type (*MSH-9-message type*) is set

equal to CNQ. Although the effect to the initiating system is the same as if it had not sent any message (no further query data is received), receipt of this message by the responding system enables it to discard any unsent continuation data that might be queued.

2.15.5 Logical display break points

Often the lines of display text will fall into logical groups that differ from the physical size of screen or printer page. For example, a complete battery or an entire radiology report might be thought of as comprising a logical group, though they might have as few as six or as many as 120 lines. Knowledge of the logical break points in the display data can be useful to the application system that is displaying or printing data. For this reason, *DSP-4-logical break point* is used. The sending application (the one that formats the data) places the logical break points where appropriate. If there is a particular ancillary result ID associated with the data delineated by *DSP-4-logical break point*, the value of this ID also can be returned in *DSP-5-result ID*. Then if the user selects the area of the display delineated by *DSP-4-logical break point*, the displaying system can query for the associated *DSP-5-result ID*.

2.16 QUERY TRIGGER EVENTS AND MESSAGE DEFINITIONS

These are the trigger event types associated with queries:

- a) a need occurs for immediate access to data that may be available from another application, this may be an initial request for data or a continuation
- b) a need occurs for deferred access to data that may be available from another application

Where an original-style query is involved, these trigger events are served by the query message (QRY). When display data is involved, these trigger events are served by the Query (QRY) and Display Response (DSR) and General Acknowledgment (ACK) messages. When the query is for record-oriented data, the QRY message is used, but the response message is specific to a functional area. Record-oriented queries are described in detail in the relevant application chapters. Display-oriented responses are described in detail in this chapter.

Although the query message of an event replay message is described in detail in this chapter, event replay response messages will be described in detail in the relevant application chapters.

Where an Embedded Query Language query is involved, these trigger events are served by the Embedded Query Language query (EQQ).

Where a virtual table query is involved, these trigger events are served by the Virtual Table Query (VQQ).

Where a stored procedure request is involved, these trigger events are served by the Stored Procedure request (SPQ) message.

For each of these query messages, one of the following response messages is used.

When display data is involved, these queries are responded to with the Display Response (DSR) message.

When tabular data is involved, these queries are responded to with the Tabular Data Response (TBR).

Where an event replay query is involved, these trigger events are served by the Event Replay Query (ERQ) and the Event Replay Response (RQQ) messages.

Where an original QRY query message is used to request record-oriented data, the response message is specific to a functional area. Application-segment record-oriented queries are described in other chapters (3-8).

Display-oriented, tabular response messages, and event replay response messages are described here.

Each trigger event is listed below, with the applicable form of message exchange.

2.17 ORIGINAL MODE QUERIES

2.17.1 QRY/DSR - original mode display query - immediate response (event Q01)

<u>QRY^Q01</u>	<u>Query Message</u>	<u>Chapter</u>
MSH	Message Header	2
QRD	Query Definition	2
[QRF]	Query Filter	2
[DSC]	Continuation Pointer	2

<u>DSR^Q01</u>	<u>Display Response Message</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2
[QAK]	Query Acknowledgment	2
QRD	Query Definition	2
[QRF]	Query Filter	2
{ DSP }	Display Data	2
[DSC]	Continuation Pointer	2

The QRF and QRD segments from the QRY are echoed back in the response. The DSC segment contains the continuation pointer, if it is not null (*DSC-1-continuation pointer*).

2.17.1.1 Original mode display query variants

If a display query has more than a single type of response (i.e., a DSR message with a different meaning, requiring different processing on the querying system), the second component of the Message Type field of the MSH segment may be used to indicate the response event type. For example, an ancillary name search display query may be defined using the query event code of DNM. The display response to such a query may be either a list of name matches (response event type is DNM) or the ancillary's display results for an exact match to the name query (response event type is NRS). See *HL7 table 0003 - Event type code* and field notes for *MSH-9-message type*.

2.18 ORIGINAL MODE DEFERRED ACCESS

For clarity, A is the system initiating the query and B is the system sending the responses. Multiple queries and responses are permitted within single messages. The responses to a given query may be broken into several separate DSR messages. A single DSR message may contain responses to more than one QRY.

2.18.1 QRY/QCK - deferred query (event Q02)

For clarity, A is the system initiating the query and B is the system sending the responses. Multiple queries and responses are permitted within single messages. The responses to a given query may be broken into several separate DSR messages. A single DSR message may contain responses to more than one QRY.

<u>QRY^Q02 (A to B)</u>	<u>Query Message</u>	<u>Chapter</u>
MSH	Message Header	2
QRD	Query Definition	2
[QRF]	Query Filter	2
[DSC]	Continuation Pointer	2

<u>QCK^Q02 (B to A)</u>	<u>Query General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message acknowledgment	2
[ERR]	Error	2
[QAK]	Query Acknowledgment	2

2.18.2 DSR/ACK - deferred response to a query (event Q03)

Later, perhaps more than once.

<u>DSR^Q03</u>	<u>Display Response Message</u>	<u>Chapter</u>
MSH	Message Header	2
[MSA]	Message Acknowledgment	2
[ERR]	Error	2
[QAK]	Query Acknowledgment	2
QRD	Query Definition	2
[QRF]	Query Filter	2
{ DSP }	Display Data	
[DSC]	Continuation Pointer	2

<u>ACK^Q03 (A to B)</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

Note: All record-oriented original mode and all enhanced mode queries follow the immediate and deferred acknowledgment modes defined in Section 2.18.1, "QRY/QCK - deferred query (event Q02)."

2.19 ENHANCED MODE QUERY MESSAGES

2.19.1 EQQ - embedded query language query (event Q04)

<u>EQQ^Q04</u>	<u>Embedded Query Language Query</u>	<u>Chapter</u>
MSH	Message Header	2
EQL	EQL Definition	2
[DSC]	Continuation Pointer	2

2.19.2 VQQ - virtual table query (event Q07)

<u>VQQ^Q07</u>	<u>Virtual Table Query</u>	<u>Chapter</u>
MSH	Message Header	2
VTQ	VTQ Definition	2
[RDF]	Table Row Definition	2
[DSC]	Continuation Pointer	2

2.19.3 SPQ - stored procedure request (event Q08)

<u>SPQ^Q08</u>	<u>Stored Procedure Request</u>	<u>Chapter</u>
MSH	Message Header	2
SPR	Store Procedure Request	2
[RDF]	Table Row Definition	2
[DSC]	Continuation Pointer	2

2.19.4 RQQ - event replay query (event Q09)

<u>RQQ^Q09</u>	<u>Event Replay Query</u>	<u>Chapter</u>
MSH	Message Header	2
ERQ	Event Replay Query	2
[DSC]	Continuation Pointer	2

2.20 ENHANCED QUERY MODE RESPONSE MESSAGES

2.20.1 EDR - enhanced display response (event R07)

<u>EDR^R07</u>	<u>Enhanced Display Response</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2
QAK	Query Acknowledgment	2
{ DSP }	Display Data	2
[DSC]	Continuation Pointer	2

2.20.2 TBR - tabular data response (event R08)

<u>TBR^R08</u>	<u>Tabular Data Response</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2
QAK	Query Acknowledgment	2
RDF	Table Row Definition	2
{ RDT }	Table Row Data	2
[DSC]	Continuation Pointer	2

2.20.3 ERP - event replay response (event R09)

<u>ERP^R09</u>	<u>Event Replay Response</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2
QAK	Query Acknowledgment	2
ERQ	Event Replay Query	2
	...	
	...	
	...	
[DSC]	Continuation Pointer	2

Note: The remainder of this message is defined by the contents of the corresponding segment-oriented record-oriented unsolicited update message, excluding the MSH, as defined by the function-specific chapters of this specification. The input parameter list may be satisfied by more than one record-oriented unsolicited update message: in this case, the segment group after the ERQ segment may repeat.

When this message is continued, the continuation messages should include the MSH, MSA, [ERR], QAK, ERQ, and [DSC] segments, as well as the segments indicated by the ellipsis (...) in the response definition and the DSC should be used only at the end of the group corresponding to the record-oriented unsolicited update message.

Enhanced mode record-oriented response messages note: The RDF segment from the EQQ, VQQ and SPQ messages, and the ERQ segment from the EQQ message, are echoed back in their respective responses. The DSC segment contains the continuation pointer, if it is not null (*DSC-I-continuation pointer*).

2.21 QUERY MESSAGE IMPLEMENTATION CONSIDERATIONS

2.21.1 Original mode implementation considerations

- The particular allowable values for the filters in the QRD and QRF segments are determined among cooperating applications during implementation.
- The format chosen for the query segments is very general. This might be read by prospective implementors to imply that the requirement for using the Standard is the ability to respond to a wide variety

of inquiries. This is not the intent. The format here can be used with specific restrictions in any interface.

2.21.2 Enhanced mode implementation considerations: definition of tables and “virtual tables”

- a) The particular allowable values for the EQL, VTQ, SPR, and RDF segments are determined among cooperating applications during implementation.
- b) The formats chosen for the query messages are very general. This might be read by prospective implementors to imply that the requirement for using the Standard is the ability to respond to a wide variety of inquiries. This is not the intent. The format here can be used with specific restrictions in any interface.
- c) The contents of the tables expressed as TBR response messages are defined by the functional chapters. Where an existing HL7 segment contains the fields needed to form a row of a tabular response, the segment ID can be referenced. For example, if a table of patients is needed, where each row represents a patient and each column a field from the PID segment, then the PID can be referenced as a table, also sometimes referred to as a “virtual table.”

Where each row is comprised of fields from multiple HL7 segments, the functional chapters may define additional tables. For example, a table may be defined to respond to insurance queries where each row represents a patient, and is comprised of columns derived from the PID segment and the insurance segments (IN1-IN4).

2.22 QUERY ERROR RESPONSE

If an application detects an error while processing a query, it responds by returning an Application Error (AE) or Application Reject (AR) condition in the MSA segment of the applicable query response message (DSR, TBR or ERP). The responding application values *MSA-6 error condition* with the appropriate error code and message. The continuation (DSC) segment is not sent or, if it is, its continuation pointer field (*DSC-1-continuation pointer*) is null. If the QAK segment is being used, the field *QAK-2-query response status* is valued appropriately with either AE (application error) or AR (application reject).

Note: If the responding application successfully processes the query, but is unable to find any qualifying data, this is not an error condition. The responding application returns an Application Accept (AA) in the MSA segment of the query response message, but does not return any data segments (DSP, RDT, or event replay segments). The continuation (DSC) segment is not sent or, if it is, its continuation pointer field (DSC-1- continuation pointer) is null. If the QAK segment is being used, the field QAK-2-query response status is valued with NF (no data found, no errors).

2.23 SPECIAL HL7 PROTOCOLS

This section contains several extensions to the basic HL7 message protocol. These extensions represent implementation choices, and are to be used on a site-specific and application-specific basis as needed.

2.23.1 Sequence number protocol

For certain types of data transactions between systems the issue of keeping databases synchronized is critical. An example is an ancillary system such as lab, which needs to know the locations of all inpatients to route stat results correctly. If the lab receives an ADT transaction out of sequence, the census/location information may be incorrect. Although it is true that a simple one-to-one acknowledgment scheme can prevent out-of-sequence transactions between any two systems, only the use of sequence numbers can prevent duplicate transactions.

Note: Although this sequence number protocol is limited to the use of sequence numbers on a single transaction stream between two applications, this sequencing protocol is sufficiently robust to allow the design of HL7-compatible store-and-forward applications.
--

a) initial conditions:

- 1) the system receiving the data stream is expected to store the sequence number of the most recently accepted transaction in a secure fashion before acknowledging that transaction. This stored sequence number allows comparison with the next transaction's sequence number, and the implementation of fault-tolerant restart capabilities.
- 2) the initiating system keeps a queue of outgoing transactions indexed by the sequence number. The length of this queue must be negotiated as part of the design process for a given link. The minimum length for this queue is one.
- 3) the sequence number is a positive (non-zero) integer; and it is incremented by one (by the initiating system) for each successive transaction.

b) starting the link:

- 1) the value of 0 (zero) for a sequence number is reserved: it is allowed only when the initiating system (re-)starts the link.
- 2) if the receiving system gets a transaction with a 0 (zero) in the sequence number field, it should respond with a general acknowledgment message whose MSA contains a sequence number one greater than the sequence number of the last transaction it accepted in the Expected Sequence Number field. If this value does not exist (as on the first startup of a given link), the MSA should contain a sequence number of -1, meaning that the receiving system will use the positive, non-zero sequence number of the first transaction it accepts as its initial sequence number (see resynching the link, item e below).
- 3) the initiating system then sends the transaction indexed by the expected sequence number (if that expected transaction is still on its queue). Otherwise the link is frozen until an operator intervenes.

c) normal operation of the link:

As it accepts each transaction, the receiving system securely stores the sequence number (which agrees with its expected sequence number), and then acknowledges the message by echoing the sequence number in *MSA-4-expected sequence number*.

- d) error conditions (from point of view of initiating system). These are generated by the receiving system, by its comparison of the sequence number sent out (with the MSH in *MSH-13-sequence number*) with the expected sequence number (*MSA-4-expected sequence number* received with the MSA).
- 1) **expected sequence number is one greater than current value.** The previous acknowledgment was lost. That transaction was sent again. Correct by sending next transaction.
 - 2) **expected sequence number less than current value.** Initiating system can try starting again by issuing a transaction with a sequence number of zero; or freeze the link for operator intervention.
 - 3) **other errors:** freeze the link for operator intervention
- e) forcing resynchronization of sequence numbers across the link. The value of -1 for a sequence number is reserved: it is allowed only when the initiating system is resynching the link. Thus if the receiving system gets a value of -1 in the sequence number field, it should return a general acknowledgment message with a -1 in the expected sequence number field. The receiving system then resets its sequence number, using the non-zero positive sequence number of the next transaction it accepts.
- f) notes

When the initiating system sends a message with a sequence number of **0** or **-1** (see b or e above), the segments beyond the MSH need not be present in the message, or, if present, all fields can be null. In terms of the responding system, for these two cases, only a General acknowledgment message is needed.

2.23.2 Continuation messages and segments

See Section 2.15.4, “Interactive continuation or cancellation of response messages: original mode (display and record-oriented) and enhanced mode (display, tabular, and event replay),” for a discussion of the continuation pointer segment and the continuation pointer field, and their use in the continuation of responses to queries and in the continuation of unsolicited update messages.

Besides the need to continue a message, there are occasional implementation conditions that force the continuation of a segment across messages. Such continued segments require the use of the ADD segment as follows:

- a) the segment being continued (call it ANY for this example) is ended at an arbitrary character position and terminated with the standard segment terminator (carriage return).
- b) the following segment is the ADD segment. When it follows a segment being continued, the ADD segment contains no fields. Whether the message being continued is a response to a query, or an unsolicited update, the receiving system will use the continuation pointer (with the ADD segment) to continue the message.
- c) when a response (to a query) is continued, the first segment after the QRD and QRF (on a continued query) will be the ADD segment. All the fields after the ADD segment identifier (fields 1-N) will be the continuation of the ANY segment. The receiving system will then use the continuation pointer to join the two parts of the ANY segment and continue processing the message.
- d) for the continuation of an unsolicited update message, the ADD segment will be the first segment after the MSH segment. The receiving system will use the continuation pointer field in the MSH segment to identify the message being continued, and then use the ADD segment as described in c) to join the two parts of the ANY segment.
- e) limitations: MSH, MSA, DSC, PID, QRD, QRF, URD and URS segments cannot be continued.
- f) although the UU example given below is for a display message, there is nothing in the protocol to prevent a record-oriented UU from being continued in this fashion. In the unsolicited display message, the ADD record on the continuation comes just after the URD/[URS] pair instead of directly after the MSH.
- g) transaction flow for a continued query-response pair with an ADD segment:

- 1) first query and response:

```

MSH
QRD
[ QRF ]
MSH
MSA
[ ERR ]
[ QAK ]
QRD
[ QRF ]
{ DSP }           (last DSP segment is incomplete)
ADD               (ADD segment contains no fields)
DSC

```

- 2) second query and response:

```

MSH
QRD
{ QRF }
DSC               (contains the continuation pointer from the DSC segment
                  of prior response message)

MSH
MSA
[ ERR ]
[ QAK ]
QRD

```

```
[QRF]
ADD                                     (contains the remainder of the last DSP segment of the
                                         previous response)

{DSP}                                  (remaining DSP segments are complete)
```

Note: This second response could itself be continued with a second DSC and (if needed) a second ADD segment prior to it. This paradigm also applies to both original mode and enhanced mode queries of display and record-oriented types.

h) transaction flow for a continued unsolicited message with a continued segment.

1) first unsolicited message and acknowledgment:

```
MSH
URD
[ URS ]
{DSP}                                  (last DSP is incomplete)
ADD                                     (contains no fields)
DSC                                     (Continuation segment)
```

```
MSH                                     (General acknowledgment)
MSA
[ ERR ]
```

2) second unsolicited message and acknowledgment:

```
MSH                                     (contains continuation pointer from DSC segment of prior
                                         message)
ADD                                     (contains remainder of data from continued DSP segment
                                         from prior message)
{DSP}
```

Note: This second message could itself be continued with a second DSC and (if needed) a second ADD segment prior to it.

```
MSH                                     (General acknowledgement)
MSA
[ ERR ]
```

2.23.3 HL7 batch protocol

There are instances when it is convenient to transfer a batch of HL7 messages. Common examples would be a batch of financial posting detail transactions (DFT's) sent from an ancillary to a financial system. Such a batch could be sent online using a common file transfer protocol, or offline via tape or diskette.

2.23.3.1 HL7 batch file structure

The structure of an HL7 batch file is given by the following (using the HL7 abstract message syntax)

```
[FHS]                                  (file header segment)
{ [BHS]                                (batch header segment)
  { [MSH                                (zero or more HL7 messages)
    ....
    ....
    ....
  ] }
[BTS]                                  (batch trailer segment)
}
[FTS]                                  (file trailer segment)
```

Notes:

The sequence numbering protocol has a natural application in batch transfers. See the discussion of batch acknowledgments that follows.

Although a batch will usually consist of a single type of message, there is nothing in the definition that restricts a batch to only one message type.

The HL7 file and batch header and trailer segments are defined in exactly the same manner as the HL7 message segments. Hence the HL7 message construction rules of Section 2.10, "MESSAGE CONSTRUCTION RULES," can be used to encode and decode HL7 batch files.

There are only two cases in which an HL7 batch file may contain zero HL7 messages:

- a) a batch containing zero HL7 messages may be sent to meet a requirement for periodic submission of batches when there are no messages to send.
- b) a batch containing zero negative acknowledgment messages may be sent to indicate that all the HL7 messages contained in the batch being acknowledged are implicitly acknowledged. See Section 2.23.3.3, "Related segments and data usage."

2.23.3.2 Related segments and data usage

The following segments defined in Section 2.24, "MESSAGE CONTROL SEGMENTS," relate to the HL7 Batch Protocol:

BHS	Batch Header
BTS	Batch Trailer
FHS	File Header
FTS	File Trailer

The BTS segment contains a field, *BTS-3-batch totals*, which may have one or more totals drawn from fields within the individual messages. The method for computing such totals will be determined on a site or application basis unless explicitly stated in a functional chapter.

2.23.3.3 Acknowledging batches

In general, the utility of sending batches of data is that the data is accepted all at once, with errors processed on an exception basis. However, it is a permissible application of HL7 to acknowledge all messages. Several options for acknowledgment are given and will be chosen on an application basis. In these cases, the sequence numbering protocol can be useful to the applications processing the batch.

The options are:

- a) all messages are acknowledged in the response batch.
- b) the receiving system prints some form of batch control report, which is then dealt with manually by personnel at the sending system. No acknowledgments are performed by the protocol software.
- c) an automated acknowledgment batch is created containing acknowledgment messages only for those messages containing errors. In this mode an empty acknowledgment batch may be created (i.e., an HL7 batch file without any HL7 acknowledgment messages).

In each case where there is a response batch, its format is a batch of individual messages. Each individual message is in the format defined for an online response in the chapters. Consider, for example, a batch that might be constructed to respond to a batch of Detailed Financial Transactions (Chapter 6). The messages in the response batch would consist entirely of ACK messages, since ACK is the response shown in Chapter 6.

When batches are retransmitted after the correction of errors, *BHS-12-reference batch control ID* should contain the batch control ID of the original batch.

2.23.3.4 Batch message as a query response

The HL7 query also can be used to query for a batch in the following manner:

- a) use the value BB or BL of *QRD-5-deferred response type* to specify a batch response. The query will be acknowledged with a general acknowledgment as in the Deferred Access example above (see Section 2.18.2, “QRY/QCK - deferred query (event Q02)”).
- b) in addition, insert into the batch file the QRD and QRF segments as follows:

```
[FHS]                (file header segment)
{ [BHS]              (batch header segment)
  [QRD]              (the QRD and QRF define the
                    [QRF]                query that this batch is a response to)
    { MSH            (one or more HL7 messages)
      ....
      ....
      ....
    }
  [BTS]              (batch trailer segment)
}
[FTS]                (file trailer segment)
```

- c) the acknowledgment of a batch is described in this chapter (see Section 2.23.3.3, “HL7 batch protocol”).

2.23.4 Modes for updating via repeating segments

When groups of repeating segments appear within a message it is not obvious from the basic HL7 abstract message syntax how best to apply the new group of repeating segments on the receiving system. HL7 suggests two methods: the “snapshot” mode and the “action code/unique identifier” mode.

Background:

The segments which repeat in HL7 messages Patient Administration (ADT)/Financial Information messages (AL1, DG1, PR1, GT1, IN1, IN2, IN3, NK1, NTE) present a problem if the requirement is to update only part of the information previously sent. Prior to Version 2.3 of the Standard, all such repeating segments had to be sent again in the update, because there was no way to indicate which ones changed and which ones did not. For example, if two DG1 segments were sent originally (containing a primary and secondary diagnosis), and then if a tertiary diagnoses needed to be sent, the sending system had to send all diagnoses which were currently valid, that is, three DG1 segments (containing primary, secondary and tertiary diagnosis). This way of doing things is referred to as the “snapshot” mode. In this mode, everything (all repeating segments) must be sent with every subsequent message in the series of messages.

In the Order Entry, Observation Reporting, and Master Files chapters, action codes (e.g., order control codes and result status codes) and unique identifiers (e.g., placer and filler numbers) are currently specified as part of the ORC, OBR, OBX and MFE segments. So, except for the NTE segments, this problem exists mainly for the Patient Administration and Financial Management chapter segments.

For systems implementing Version 2.3 or higher, if a particular repeating segment can be updated by either of these two modes, the parties concerned will determine by agreement on a site-specific basis whether an interface will use the “snapshot” mode or the “action code/unique identifier” mode.

2.23.4.1 Snapshot mode update definition

In the “snapshot” mode, the group of repeating segments from the incoming message replaces the prior group of repeating segments on the receiving system. This is equivalent to a deletion of the prior group followed by the addition of the new group. The snapshot mode is the usual mode in Version 2.2 and 2.1 implementations of HL7, but it is also available for Version 2.3 and future versions. To specify “delete all

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
5	180	HD	O		0361	00005	Receiving Application
6	180	HD	O		0362	00006	Receiving Facility
7	26	TS	O			00007	Date/Time Of Message
8	40	ST	O			00008	Security
9	7	CM	R		0076 0003	00009	Message Type
10	20	ST	R			00010	Message Control ID
11	3	PT	R			00011	Processing ID
12	60	VID	R		0104	00012	Version ID
13	15	NM	O			00013	Sequence Number
14	180	ST	O			00014	Continuation Pointer
15	2	ID	O		0155	00015	Accept Acknowledgment Type
16	2	ID	O		0155	00016	Application Acknowledgment Type
17	2	ID	O			00017	Country Code
18	16	ID	O	Y	0211	00692	Character Set
19	60	CE	O			00693	Principal Language Of Message
20	20	ID	O		0356	01317	Alternate Character Set Handling Scheme

2.24.1.0 MSH field definitions

2.24.1.1 Field separator (ST) 00001

Definition: This field contains the separator between the segment ID and the first real field, *MSH-2-encoding characters*. As such it serves as the separator and defines the character to be used as a separator for the rest of the message. Recommended value is |, (ASCII 124).

2.24.1.2 Encoding characters (ST) 00002

Definition: This field contains the four characters in the following order: the component separator, repetition separator, escape character, and subcomponent separator. Recommended values are ^~\& (ASCII 94, 126, 92, and 38, respectively). See Section 2.7, “MESSAGE DELIMITERS.”

2.24.1.3 Sending application (HD) 00003

Components: <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field uniquely identifies the sending application among all other applications within the network enterprise. The network enterprise consists of all those applications that participate in the exchange of HL7 messages within the enterprise. Entirely site-defined. *User-defined table 0361-Sending/receiving application* is used as the user-defined table of values for the first component.

Note: By site agreement, implementors may continue to use *user-defined table 0300 – Namespace ID* for the first component.

2.24.1.4 Sending facility (HD) 00004

Components: <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field further describes the sending application, *MSH-3-sending application*. With the promotion of this field to an HD data type, the usage has been broadened to include not just the sending facility but other organizational entities such as a) the organizational entity responsible for sending application; b) the responsible unit; c) a product or vendor’s identifier, etc. Entirely site-defined. *User-defined table 0362 – Sending/receiving facility* is used as the HL7 identifier for the user-defined table of values for the first component.

Note: By site agreement, implementors may continue to use *user-defined table 0300 – Namespace ID* for the first component.

2.24.1.5 Receiving application (HD) 00005

Components: <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field uniquely identifies the receiving application among all other applications within the network enterprise. The network enterprise consists of all those applications that participate in the exchange of HL7 messages within the enterprise. Entirely site-defined. *User-defined table 0361-Sending/receiving application* is used as the HL7 identifier for the user-defined table of values for the first component.

Note: By site agreement, implementors may continue to use *user-defined table 0300 – Namespace ID* for the first component.

2.24.1.6 Receiving facility (HD) 00006

Components: <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field identifies the receiving application among multiple identical instances of the application running on behalf of different organizations. *User-defined table 0362 – Sending/receiving facility* is used as the HL7 identifier for the user-defined table of values for the first component. Entirely site-defined.

Note: By site agreement, implementors may continue to use *user-defined table 0300 – Namespace ID* for the first component.

2.24.1.7 Date/time of message (TS) 00007

Definition: This field contains the date/time that the sending system created the message. If the time zone is specified, it will be used throughout the message as the default time zone.

2.24.1.8 Security (ST) 00008

Definition: In some applications of HL7, this field is used to implement security features. Its use is not yet further specified.

2.24.1.9 Message type (CM) 00009

Components: <message type (ID)> ^ <trigger event (ID)> ^ <message structure (ID)>

Definition: This field contains the message type, trigger event, and the message structure ID for the message.

The first component is the message type code defined by *HL7 table 0076 - Message type*.

The second component is the trigger event code defined by *HL7 table 0003 - Event type*.

The third component is the abstract message structure code defined by *HL7 Table 0354 - Message structure*. This table has two columns. The first column contains the value of this code, which describes a particular HL7 “abstract message structure definition” in terms of segments, as defined in sections 2.11 and 2.11.1. The second column of table 0354 lists the various HL7 trigger events that use the particular abstract message definition. For example, the message structure code ADT_A01 describes the single abstract message structure used by the trigger events A01, A04, A05, A08, A13, A14, A28 and A31.

The receiving system uses this field to recognize the data segments, and possibly, the application to which to route this message. For certain queries, which may have more than a single response event type, the second component may, in the response message, vary to indicate the response event type. See the discussion of the display query variants in Section 2.17.1.0, “

Original mode display query variants.” The second component is not required on response or acknowledgment messages.

Table 0076 - Message type

Message	Description	Chapter
ACK	General acknowledgment message	2
ADR	ADT response	3
ADT	ADT message	3
BAR	Add/change billing account	6
CRM	Clinical study registration message	7
CSU	Unsolicited study data message	7
DFT	Detail financial transactions	6
DOC	Document response	9
DSR	Display response	2
EDR	Enhanced display response	2
EQQ	Embedded query language query	2
ERP	Event replay response	2
MDM	Medical document management	9
MFD	Master files delayed application acknowledgment	8
MFK	Master files application acknowledgment	8
MFN	Master files notification	8
MFQ	Master files query	8
MFR	Master files response	8
OMD	Dietary order	4
OMN	Nonstock requisition order message	4
OMS	Stock requisition order message	4
ORD	Dietary order - General order acknowledgment message	4
ORF	Query for results of observation	7
ORM	Pharmacy/treatment order message	4
ORN	Nonstock requisition - General order acknowledgment message	4
ORR	General order response message response to any ORM	4
ORS	Stock requisition - General order acknowledgment message	4
ORU	Unsolicited transmission of an observation message	7
OSQ	Query response for order status	4
OSR	Query response for order status	4
PEX	Product experience message	7
PGL	Patient goal message	12
PIN	Patient insurance information	11
PPG	Patient pathway message (goal-oriented)	12
PPP	Patient pathway message (problem-oriented)	12
PPR	Patient problem message	12
PPT	Patient pathway goal-oriented response	12
PPV	Patient goal response	12
PRR	Patient problem response	12
PTR	Patient pathway problem-oriented response	12
QCK	Deferred query	2
QRY	Query, original mode	3
R0R	Pharmacy/treatment order response	4
RAR	Pharmacy/treatment administration information	4
RAS	Pharmacy/treatment administration message	4

Message	Description	Chapter
RCI	Return clinical information	11
RCL	Return clinical list	11
RDE	Pharmacy/treatment encoded order message	4
RDO	Pharmacy/treatment order message	4
RDR	Pharmacy/treatment dispense information	4
RDS	Pharmacy/treatment dispense message	4
REF	Patient referral	11
RER	Pharmacy/treatment encoded order information	4
RGR	Pharmacy/treatment dose information	4
RGV	Pharmacy/treatment give message	4
RPA	Return patient authorization	11
RPI	Return patient information	11
RPL	Return patient display list	11
RPR	Return patient list	11
RQA	Request patient authorization	11
RQC	Request clinical information	11
RQI	Request patient information	11
RQP	Request patient demographics	11
RQQ	Event replay query	2
RRA	Pharmacy/treatment administration acknowledgement message	4
RRD	Pharmacy/treatment dispense acknowledgment message	4
RRE	Pharmacy/treatment encoded order acknowledgment message	4
RRG	Pharmacy/treatment give acknowledgment message	4
RRI	Return referral information	11
RRO	ORR message for pharmacy/treatment	4
SIU	Schedule information unsolicited	10
SPQ	Stored procedure request	2
SQM	Schedule query message	10
SQR	Schedule query response	10
SRM	Schedule request message	10
SRR	Scheduled request response	10
SUR	Summary product experience report	7
TBR	Tabular data response	2
UDM	Unsolicited display update message	2
VQQ	Virtual table query	2
VXQ	Query for vaccination record	4
VXR	Vaccination record response	4
VXU	Unsolicited vaccination record update	4
VXX	Response for vaccination query with multiple PID matches	4

Table 0003 - Event type

Value	Description
A01	ADT/ACK - Admit/visit notification
A02	ADT/ACK - Transfer a patient
A03	ADT/ACK - Discharge/end visit

Value	Description
A04	ADT/ACK - Register a patient
A05	ADT/ACK - Pre-admit a patient
A06	ADT/ACK - Change an outpatient to an inpatient
A07	ADT/ACK - Change an inpatient to an outpatient
A08	ADT/ACK - Update patient information
A09	ADT/ACK - Patient departing - tracking
A10	ADT/ACK - Patient arriving - tracking
A11	ADT/ACK - Cancel admit/visit notification
A12	ADT/ACK - Cancel transfer
A13	ADT/ACK - Cancel discharge/end visit
A14	ADT/ACK - Pending admit
A15	ADT/ACK - Pending transfer
A16	ADT/ACK - Pending discharge
A17	ADT/ACK - Swap patients
A18	ADT/ACK - Merge patient information
A19	QRY/ADR - Patient query
A20	ADT/ACK - Bed status update
A21	ADT/ACK - Patient goes on a "leave of absence"
A22	ADT/ACK - Patient returns from a "leave of absence"
A23	ADT/ACK - Delete a patient record
A24	ADT/ACK - Link patient information
A25	ADT/ACK - Cancel pending discharge
A26	ADT/ACK - Cancel pending transfer
A27	ADT/ACK - Cancel pending admit
A28	ADT/ACK - Add person information
A29	ADT/ACK - Delete person information
A30	ADT/ACK - Merge person information
A31	ADT/ACK - Update person information
A32	ADT/ACK - Cancel patient arriving - tracking
A33	ADT/ACK - Cancel patient departing - tracking
A34	ADT/ACK - Merge patient information - patient ID only
A35	ADT/ACK - Merge patient information - account number only
A36	ADT/ACK - Merge patient information - patient ID and account number
A37	ADT/ACK - Unlink patient information
A38	ADT/ACK - Cancel pre-admit
A39	ADT/ACK - Merge person – patient ID
A40	ADT/ACK - Merge patient – patient identifier list

Value	Description
A41	ADT/ACK - Merge account - patient account number
A42	ADT/ACK - Merge visit - visit number
A43	ADT/ACK - Move patient information – patient identifier list
A44	ADT/ACK - Move account information - patient account number
A45	ADT/ACK - Move visit information - visit number
A46	ADT/ACK - Change patient ID
A47	ADT/ACK - Change patient identifier list
A48	ADT/ACK - Change alternate patient ID
A49	ADT/ACK - Change patient account number
A50	ADT/ACK - Change visit number
A51	ADT/ACK - Change alternate visit ID
C01	CRM - Register a patient on a clinical trial
C02	CRM - Cancel a patient registration on clinical trial (for clerical mistakes only)
C03	CRM - Correct/update registration information
C04	CRM - Patient has gone off a clinical trial
C05	CRM - Patient enters phase of clinical trial
C06	CRM - Cancel patient entering a phase (clerical mistake)
C07	CRM - Correct/update phase information
C08	CRM - Patient has gone off phase of clinical trial
C09	CSU - Automated time intervals for reporting, like monthly
C10	CSU - Patient completes the clinical trial
C11	CSU - Patient completes a phase of the clinical trial
C12	CSU - Update/correction of patient order/result information
CNQ	QRY/EQQ/SPQ/VQQ/RQQ - Cancel query
I01	RQI/RPI - Request for insurance information
I02	RQI/RPL - Request/receipt of patient selection display list
I03	RQI/RPR - Request/receipt of patient selection list
I04	RQD/RPI - Request for patient demographic data
I05	RQC/RCI - Request for patient clinical information
I06	RQC/RCL - Request/receipt of clinical data listing
I07	PIN/ACK - Unsolicited insurance information
I08	RQA/RPA - Request for treatment authorization information
I09	RQA/RPA - Request for modification to an authorization
I10	RQA/RPA - Request for resubmission of an authorization
I11	RQA/RPA - Request for cancellation of an authorization
I12	REF/RRI - Patient referral
I13	REF/RRI - Modify patient referral

Value	Description
I14	REF/RRI - Cancel patient referral
I15	REF/RRI - Request patient referral status
M01	MFN/MFK - Master file not otherwise specified (for backward compatibility only)
M02	MFN/MFK - Master file – staff practitioner
M03	MFN/MFK - Master file - test/observation (for backward compatibility only)
varies	MFQ/MFR - Master files query (use event same as asking for e.g., M05 - location)
M04	MFN/MFK - Master files charge description
M05	MFN/MFK - Patient location master file
M06	MFN/MFK - Clinical study with phases and schedules master file
M07	MFN/MFK - Clinical study without phases but with schedules master file
M08	MFN/MFK - Test/observation (numeric) master file
M09	MFN/MFK - Test/observation (categorical) master file
M10	MFN/MFK - Test /observation batteries master file
M11	MFN/MFK - Test/calculated observations master file
O01	ORM - Order message (also RDE, RDS, RGV, RAS)
O02	ORR - Order response (also RRE, RRD, RRG, RRA)
P01	BAR/ACK - Add patient accounts
P02	BAR/ACK - Purge patient accounts
P03	DFT/ACK - Post detail financial transaction
P04	QRY/DSP – Generate bill and A/R statements
P05	BAR/ACK – Update account
P06	BAR/ACK - End account
P07	PEX - Unsolicited initial individual product experience report
P08	PEX - Unsolicited update individual product experience report
P09	SUR - Summary product experience report
PC1	PPR - PC/ problem add
PC2	PPR - PC/ problem update
PC3	PPR - PC/ problem delete
PC4	QRY - PC/ problem query
PC5	PRR - PC/ problem response
PC6	PGL - PC/ goal add
PC7	PGL - PC/ goal update
PC8	PGL - PC/ goal delete
PC9	QRY - PC/ goal query
PCA	PPV - PC/ goal response

Value	Description
PCB	PPP - PC/ pathway (problem-oriented) add
PCC	PPP - PC/ pathway (problem-oriented) update
PCD	PPP - PC/ pathway (problem-oriented) delete
PCE	QRY - PC/ pathway (problem-oriented) query
PCF	PTR - PC/ pathway (problem-oriented) query response
PCG	PPG - PC/ pathway (goal-oriented) add
PCH	PPG - PC/ pathway (goal-oriented) update
PCJ	PPG - PC/ pathway (goal-oriented) delete
PCK	QRY - PC/ pathway (goal-oriented) query
PCL	PPT - PC/ pathway (goal-oriented) query response
Q01	QRY/DSR - Query sent for immediate response
Q02	QRY/QCK - Query sent for deferred response
Q03	DSR/ACK - Deferred response to a query
Q04	EQQ – Embedded query language query
Q05	UDM/ACK - Unsolicited display update message
Q06	OSQ/OSR - Query for order status
Q07	VQQ – Virtual table query
Q08	SPQ – Stored procedure request
Q09	RQQ – event replay query
R01	ORU/ACK - Unsolicited transmission of an observation message
R02	QRY - Query for results of observation
R03	QRY/DSR Display-oriented results, query/unsol. update (for backward compatibility only)
R04	ORF - Response to query; transmission of requested observation
R05	QRY/DSR - query for display results
R06	UDM - unsolicited update/display results
R07	EDR – enhanced display response
R08	TBR – tabular data response
R09	ERP – event replay response
RAR	RAR - Pharmacy administration information query response
RDR	RDR - Pharmacy dispense information query response
RER	RER - Pharmacy encoded order information query response
RGR	RGR - Pharmacy dose information query response
ROR	ROR - Pharmacy prescription order query response
S01	SRM/SRR - Request new appointment booking
S02	SRM/SRR - Request appointment rescheduling
S03	SRM/SRR - Request appointment modification

Value	Description
S04	SRM/SRR - Request appointment cancellation
S05	SRM/SRR - Request appointment discontinuation
S06	SRM/SRR - Request appointment deletion
S07	SRM/SRR - Request addition of service/resource on appointment
S08	SRM/SRR - Request modification of service/resource on appointment
S09	SRM/SRR - Request cancellation of service/resource on appointment
S10	SRM/SRR - Request discontinuation of service/resource on appointment
S11	SRM/SRR - Request deletion of service/resource on appointment
S12	SIU/ACK - Notification of new appointment booking
S13	SIU/ACK - Notification of appointment rescheduling
S14	SIU/ACK - Notification of appointment modification
S15	SIU/ACK - Notification of appointment cancellation
S16	SIU/ACK - Notification of appointment discontinuation
S17	SIU/ACK - Notification of appointment deletion
S18	SIU/ACK - Notification of addition of service/resource on appointment
S19	SIU/ACK - Notification of modification of service/resource on appointment
S20	SIU/ACK - Notification of cancellation of service/resource on appointment
S21	SIU/ACK - Notification of discontinuation of service/resource on appointment
S22	SIU/ACK - Notification of deletion of service/resource on appointment
S23	SIU/ACK - Notification of blocked schedule time slot(s)
S24	SIU/ACK - Notification of opened ("unblocked") schedule time slot(s)
S25	SQM/SQR - Schedule query message and response
S26	SIU/ACK Notification that patient did not show up for schedule appointment
T01	MDM/ACK - Original document notification
T02	MDM/ACK - Original document notification and content
T03	MDM/ACK - Document status change notification
T04	MDM/ACK - Document status change notification and content
T05	MDM/ACK - Document addendum notification
T06	MDM/ACK - Document addendum notification and content
T07	MDM/ACK - Document edit notification
T08	MDM/ACK - Document edit notification and content
T09	MDM/ACK - Document replacement notification
T10	MDM/ACK - Document replacement notification and content
T11	MDM/ACK - Document cancel notification
T12	QRY/DOC - Document query
V01	VXQ - Query for vaccination record
V02	VXX - Response to vaccination query returning multiple PID matches

Value	Description
V03	VXR - Vaccination record response
V04	VXU - Unsolicited vaccination record update
W01	ORU - Waveform result, unsolicited transmission of requested information
W02	QRF - Waveform result, response to query

Table 0354 - Message structure

Value	Events
ADT_A01	A01, A04, A05, A08, A13, A14, A28, A31
ADT_A02	A02, A21, A22, A23, A25, A26, A27, A29, A32, A33
ADT_A03	A03
ADT_A06	A06, A07
ADT_A09	A09, A10, A11, A15
ADT_A12	A12
ADT_A16	A16
ADT_A17	A17
ADT_A18	A18
ADT_A20	A20
ADT_A24	A24
ADT_A28	A28, A31
ADT_A30	A30, A34, A35, 136, A46, A47, A48, A49
ADT_A37	A37
ADT_A38	A38
ADT_A39	A39, A40, A41, A42
ADT_A43	A43, A44
ADT_A45	A45
ADT_A50	A50, A51
ARD_A19	A19
BAR_P01	P01, P05
BAR_P02	P02
BAR_P06	P06
CRM_C01	C01, C02, C03, C04, C05, C06, C07, C08
CSU_C09	C09, C10, C11, C12
DFT_P03	P03
DOC_T12	T12
DSR_Q01	Q01
DSR_Q03	Q03
EDR_R07	R07

Value	Events
EQQ_Q04	Q04
ERP_R09	R09
MDM_T01	T01, T03, T05, T07, T09, T11
MDM_T02	T02, T04, T06, T08, T10
MFD_P09	P09
MFK_M01	M01, M03, M05, M06, M07, M08, M09, M10, M11
MFN_M01	M01
MFN_M02	M02
MFN_M03	M03
MFN_M05	M05
MFN_M06	M06
MFN_M07	M07
MFN_M08	M08
MFN_M09	M09
MFN_M10	M10
MFN_M11	M11
NUL	Null
ORF_R02	R02, R04
ORM_O01	O01
ORM_Q06	Q06
ORR_O02	O02
ORR_Q06	Q06
ORU_R01	R01
ORU_W01	W01
OSQ_Q06	Q06
OSR_Q06	Q06
PEX_P07	P07, P08
PGL_PC6	PC6, PC7, PC8
PIN_I07	I07
PPG_PCG	PCC, PCH, PCJ
PPP_PCB	PCB, PCD
PPR_PC1	PC1, PC2, PC3
PPT_PCL	PCL
PPV_PCA	PCA
PRR_PC5	PC5
PTR_PCF	PCF
QCK_Q02	Q02

Value	Events
QRY_A19	A19
QRY_PC4	PC4, PC9, PCE, PCK
QRY_Q01	Q01
QRY_Q02	Q02
QRY_R02	R02, R04
QRY_T12	T12
RAR_RAR	RAR
RAS_O01	O01
RAS_O02	O022
RCI_I05	I05
RCL_I06	I06
RDE_O01	O01
RDR_RDR	RDR
RDS_O01	O01
REF_I12	I12, I13, I14, I15
RER_RER	RER
RGR_RGR	RGR
RGV_O01	O01
RROR_ROR	ROR
RPA_I08	I08, I09, I10, I11
RPI_I01	I01, I04
RPL_I02	I02
RPR_I03	I03
RQA_I08	I08, I09, I10, I11
RQC_I05	I05
RQC_I06	I06
RQI_I01	I01, I02, I03
RQP_I04	I04
RQQ_Q09	Q09
RRA_O02	O02
RRD_O02	O02
RRE_O01	O01
RRG_O02	O02
RRI_I12	I12, I13, I14, I15
SIIU_S12	S12, S13, S14, S15, S16, S17, S18, S19, S20, S21, S22, S23, S24, S26
SPQ_Q08	Q08
SQM_S25	S25

Value	Events
SQR_S25	S25
SRM_S01	S01, S02, S03, S04, S05, S06, S07, S08, S09, S10, S11
SRM_T12	T12
SRR_S01	S01, S02, S03, S04, S05, S06, S07, S08, S09, S10, S11
SRR_T12	T12
SUR_P09	P09
TBR_R09	R09
UDM_Q05	Q05
VQQ_Q07	Q07
VXQ_V01	V01
VXR_V03	V03
VXU_V04	V04
VXX_V02	V02

2.24.1.10 Message control ID (ST) 00010

Definition: This field contains a number or other identifier that uniquely identifies the message. The receiving system echoes this ID back to the sending system in the Message acknowledgment segment (MSA).

2.24.1.11 Processing ID (PT) 00011

Components: <processing ID (ID)> ^ <processing mode (ID)>

Definition: This field is used to decide whether to process the message as defined in HL7 Application (level 7) Processing rules, above. The first component defines whether the message is part of a production, training, or debugging system (refer to *HL7 table 0103 - Processing ID* for valid values). The second component defines whether the message is part of an archival process or an initial load (refer to *HL7 table 0207 - Processing mode* for valid values). This allows different priorities to be given to different processing modes.

Table 0103 - Processing ID

Value	Description
D	Debugging
P	Production
T	Training

Table 0207 - Processing mode

Value	Description
A	Archive
R	Restore from archive
I	Initial load
T	Current processing, transmitted at intervals (scheduled or on demand)

not present	Not present (the default, meaning <i>current</i> processing)
-------------	--

2.24.1.12 Version ID (VID) 00012

Components: <version ID (ID)> ^ <internationalization code (CE)> ^ <internal version ID (CE)>

Definition: This field is matched by the receiving system to its own version to be sure the message will be interpreted correctly. In version 2.3.1, it has two additional “internationalization” components, for use by HL7 international affiliates. The <internationalization code> is CE data type (using the ISO country codes where appropriate) which represents the HL7 affiliate. The <internal version ID> is used if the HL7 Affiliate has more than a single ‘local’ version associated with a single US version. The <internal version ID> has a CE data type, since the table values vary for each HL7 Affiliate.

Table 0104 - Version ID

Value	Description	Date
2.0	Release 2.0	September 1988
2.0D	Demo 2.0	October 1988
2.1	Release 2. 1	March 1990
2.2	Release 2.2	December 1994
2.3	Release 2.3	March 1997
2.3.1	Release 2.3.1	May 1999
2.3.2	Release 2.3.2	Planned for May 2000

2.24.1.13 Sequence number (NM) 00013

Definition: A non-null value in this field implies that the sequence number protocol is in use. This numeric field is incremented by one for each subsequent value.

2.24.1.14 Continuation pointer (ST) 00014

Definition: This field is used to define continuations in application-specific ways.

2.24.1.15 Accept acknowledgment type (ID) 00015

Definition: This field identifies the conditions under which accept acknowledgments are required to be returned in response to this message. Required for enhanced acknowledgment mode. Refer to *HL7 table 0155 - Accept/application acknowledgment conditions* for valid values.

2.24.1.16 Application acknowledgment type (ID) 00016

Definition: This field contains the conditions under which application acknowledgments are required to be returned in response to this message. Required for enhanced acknowledgment mode.

The following table contains the possible values for *MSH-15-accept acknowledgment type* and *MSH-16-application acknowledgment type*:

Table 0155 - Accept/application acknowledgment conditions

Value	Description
AL	Always
NE	Never

ER	Error/reject conditions only
SU	Successful completion only

Note: If *MSH-15-accept acknowledgment type* and *MSH-16-application acknowledgment type* are omitted (or are both null), the original acknowledgment mode rules are used.

2.24.1.17 Country code (ID) 00017

Definition: This field contains the country of origin for the message. It will be used primarily to specify default elements, such as currency denominations. ISO 3166 provides a list of country codes that may be used³. The ISO 3166 table has three separate forms of the country code: HL7 specifies that the 3-character (alphabetic) form be used for the country code.

2.24.1.18 Character set (ID) 00692

Definition: This field contains the character set for the entire message. Refer to *HL7 table 0211 - Alternate character sets* for valid values.

Table 0211 - Alternate character sets

Value	Description
ASCII	The printable 7-bit ASCII character set. (This is the default if this field is omitted)
8859/1	The printable characters from the ISO 8859/1 Character set
8859/2	The printable characters from the ISO 8859/2 Character set
8859/3	The printable characters from the ISO 8859/3 Character set
8859/4	The printable characters from the ISO 8859/4 Character set
8859/5	The printable characters from the ISO 8859/5 Character set
8859/6	The printable characters from the ISO 8859/6 Character set
8859/7	The printable characters from the ISO 8859/7 Character set
8859/8	The printable characters from the ISO 8859/8 Character set
8859/9	The printable characters from the ISO 8859/9 Character set
ISO IR14	Code for Information Exchange (one byte)(JIS X 0201-1976). Note that the code contains a space, i.e. "ISO IR14".
ISO IR87	Code for the Japanese Graphic Character set for information interchange (JIS X 0208-1990), Note that the code contains a space, i.e. "ISO IR87".
ISO IR159	Code of the supplementary Japanese Graphic Character set for information interchange (JIS X 0212-1990). Note that the code contains a space, i.e. "ISO IR159".
UNICODE	The world wide character standard from ISO/IEC 10646-1-19934

Note: The field separator character must still be chosen from the printable 7-bit ASCII character set.

³ Available from ISO 1 Rue de Varembe, Case Postale 56, CH 1211, Geneve, Switzerland

⁴ Available from The Unicode Consortium, P.O. Box 700519, San Jose, CA 95170-0519. See <http://www.unicode.org/unicode/consortium/consort.html>

The repetitions of this field to specify different character sets apply only to fields of the PN and XPN data types.

The field *MSH-18-character set* is an optional, repeating field of data type ID, using IDs outlined in *HL7 table 0211 - Alternate character sets* (or equivalents from "ISO 2375").

- if the field is not valued, the default single-byte character set (ASCII ("ISO IR6")) should be assumed. No other character sets are allowed in the message.
- if the field repeats, but the first element is NULL (i.e., present but unvalued), the single-byte ASCII ("ISO IR6") is assumed as the default character set.
- if the sequence is present and the first element is specified, this character set is regarded as the default character set for the message. This must be a single-byte character set (i.e., "ISO IR6", "ISO IR13", "ISO IR14", "ISO IR100", etc.).
- elements in the remainder of the sequence (i.e., elements 2..n) are alternate character sets that may be used. These may include multi-byte character sets (i.e., JIS X 0208).
- the default character set should always be a single-byte character set. It should always have "ISO IR6" (ISO 646) or "ISO IR14" (JIS X 0201-1976) in the G0 area.

2.24.1.19 Principal language of message (CE) 00693

Components: <identifier (ID)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ID)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the principal language of the message. Codes come from ISO 639.

2.24.1.20 Alternate character set handling (ID) 01317

Definition: When any alternative character sets are used (as specified in the second or later components of *MSH-18 character sets*), and if any special handling scheme is needed, this component is to specify the scheme used, according to *HL7 table 0356- Alternate character set handling scheme* as defined below:

Table 0356 - Alternate character set handling scheme

Value	Description
ISO 2022-1994	This standard is titled "Information Technology - Character Code Structure and Extension Technique". This standard specifies an escape sequence from basic one byte character set to specified other character set, and vice versa. The escape sequence explicitly specifies what alternate character set to be evoked. Note that in this mode, the actual ASCII escape character is used as defined in the referenced ISO document. As noted in 1.6.1., escape sequences to/from alternate character set should occur within HL7 delimiters. In other words, HL7 delimiters are basic one byte characters only, and just before and just after delimiters, character encoding status should be the basic one byte set. This value is allowed only for HL7 v. 2.3.1.
2.3	The character set switching mode specified in HL7 2.3, sections 2.8.28.6.1, and 2.9.2. Note that the escape sequences used in this mode are "HL7 escapes sequences" as defined in HL7 2.3, sec. 2.9, and do not use the ASCII "esc" character, as defined in ISO 2022-1994
<null>	This is the default, indicating that there is no character set switching occurring in this message.

2.24.2 MSA - message acknowledgment segment

The MSA segment contains information sent while acknowledging another message.

Figure 2-9. MSA attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	2	ID	R		0008	00018	Acknowledgment Code
2	20	ST	R			00010	Message Control ID
3	80	ST	O			00020	Text Message
4	15	NM	O			00021	Expected Sequence Number
5	1	ID	B		0102	00022	Delayed Acknowledgment Type
6	100	CE	O			00023	Error Condition

2.24.2.0 MSA field definitions

2.24.2.1 Acknowledgment code (ID) 00018

Definition: This field contains an acknowledgment code, see message processing rules. Refer to *HL7 table 0008 - Acknowledgment code* for valid values.

Table 0008 - Acknowledgment code

Value	Description
AA	Original mode: Application Accept - Enhanced mode: Application acknowledgment: Accept
AE	Original mode: Application Error - Enhanced mode: Application acknowledgment: Error
AR	Original mode: Application Reject - Enhanced mode: Application acknowledgment: Reject
CA	Enhanced mode: Accept acknowledgment: Commit Accept
CE	Enhanced mode: Accept acknowledgment: Commit Error
CR	Enhanced mode: Accept acknowledgment: Commit Reject

2.24.2.2 Message control ID (ST) 00010

Definition: This field contains the message control ID of the message sent by the sending system. It allows the sending system to associate this response with the message for which it is intended.

2.24.2.3 Text message (ST) 00020

Definition: This optional field further describes an error condition. This text may be printed in error logs or presented to an end user.

2.24.2.4 Expected sequence number (NM) 00021

Definition: This optional numeric field is used in the sequence number protocol.

2.24.2.5 Delayed acknowledgment type (ID) 00022

Definition: ***This field has been retained for backward compatibility.*** This field is used only as described above, in Section 2.12.2, “Application (level 7) processing rules, deferred processing two phase reply (original acknowledgment mode only).” Otherwise this field is not used.

Table 0102 - Delayed acknowledgment type

Value	Description
D	Message received, stored for later processing
F	acknowledgment after processing

2.24.2.6 Error condition (CE) 00023

Components: <identifier (ID)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ID)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field allows the acknowledging system to use a user-defined error code to further specify AR or AE type acknowledgments. This field is a generalized replacement for *MSA-3-text message*.

The Message Error Condition codes are defined by *HL7 table 0357 - Message error condition codes*.

Table 0357 - Message error status codes

Error Condition Code	Error ConditionText	Description/Comment
Succes		
0	Message accepted	Success. Optional, as the AA conveys success. Used for systems that must always return a status code.
Errors		
100	Segment sequence error	The message segments were not in the proper order, or required segments are missing.
101	Required field missing	A required field is missing from a segment
102	Data type error	The field contained data of the wrong data type, e.g. an NM field contained "FOO".
103	Table value not found	A field of data type ID or IS was compared against the corresponding table, and no match was found.
Rejection		
200	Unsupported message type	The Message Type is not supported.
201	Unsupported event code	The Event Code is not supported.
202	Unsupported processing id	The Processing ID is not supported.
203	Unsupported version id	The Version ID is not supported.
204	Unknown key identifier	The ID of the patient, order, etc., was not found. Used for transactions <i>other than</i> additions, e.g. transfer of a non-existent patient.
205	Duplicate key identifier	The ID of the patient, order, etc., already exists. Used in response to addition transactions (Admit, New Order, etc.).
206	Application record locked	The transaction could not be performed at the application storage level, e.g. database locked.
207	Application internal error	A catchall for internal errors not explicitly covered by other codes.

2.24.3 ERR - error segment

The ERR segment is used to add error comments to acknowledgment messages.

Figure 2-10. ERR attribute

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	80	CM	R	Y		00024	Error Code and Location

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2.24.3.0 ERR field definition

2.24.3.1 Error code and location (CM) 00024

Components: <segment ID (ST)> ^ <sequence (NM)> ^ <field position (NM)> ^ <code identifying error (CE)>

Definition: This field identifies an erroneous segment in another message. The second component is an index if there is more than one segment of type <segment ID>. For systems that do not use the HL7 Encoding Rules, the data item number may be used for the third component. The fourth component (which references *HL7 Table 0357 - Message error condition codes*, (as a CE data type)) is restricted from having any subcomponents as the subcomponent separator is now the CE's component separator.

Note: See section 2.24.2.6, *MSA-6-error condition*, for a listing of this table.

2.24.4 QRD - original-style query definition segment

The QRD segment is used to define a query.

Figure 2-11. QRD attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	26	TS	R			00025	Query Date/Time
2	1	ID	R		0106	00026	Query Format Code
3	1	ID	R		0091	00027	Query Priority
4	10	ST	R			00028	Query ID
5	1	ID	O		0107	00029	Deferred Response Type
6	26	TS	O			00030	Deferred Response Date/Time
7	10	CQ	R		0126	00031	Quantity Limited Request
8	60	XCN	R	Y		00032	Who Subject Filter
9	60	CE	R	Y	0048	00033	What Subject Filter
10	60	CE	R	Y		00034	What Department Data Code
11	20	CM	O	Y		00035	What Data Code Value Qual.
12	1	ID	O		0108	00036	Query Results Level

2.24.4.0 QRD field definitions

2.24.4.1 Query date/time (TS) 00025

Definition: This field contains the date the query was generated by the application program.

2.24.4.2 Query format code (ID) 00026

Definition: This field refers to *HL7 table 0106 - Query/response format code* for valid values.

Table 0106 - Query/response format code

Value	Description
D	Response is in display format
R	Response is in record-oriented format
T	Response is in tabular format

2.24.4.3 Query priority (ID) 00027

Definition: This field contains the time frame in which the response is expected. Refer to *HL7 table 0091 - Query priority* for valid values. Table values and subsequent fields specify time frames for response.

Table 0091 - Query priority

Value	Description
D	Deferred
I	Immediate

2.24.4.4 Query ID (ST) 00028

Definition: This field contains a unique identifier for the query. Assigned by the querying application. Returned intact by the responding application.

2.24.4.5 Deferred response type (ID) 00029

Definition: This field refers to *HL7 table 0107 - Deferred response type* for valid entries.

Table 0107 - Deferred response type

Value	Description
B	Before the Date/Time specified
L	Later than the Date/Time specified

2.24.4.6 Deferred response date/time (TS) 00030

Definition: This field contains the date/time before or after which to send a deferred response. If not present, the response can be sent when it is available. (See *QRD-5-deferred response type* above).

2.24.4.7 Quantity limited request (CQ) 00031

Components: <quantity (NM)> ^ <units (CE)>

Definition: This field contains the maximum length of the response that can be accepted by the requesting system. Valid responses are numerical values (in the first component) given in the units specified in the second component. Refer to *HL7 table 0126 - Quantity limited request* for valid entries for the second component.. Default is LI (lines).

Table 0126 - Quantity limited request

Value	Description
CH	Characters
LI	Lines
PG	Pages
RD	Records
ZO	Locally defined

2.24.4.8 Who subject filter (XCN) 00032

Components: <ID number (ST)> ^ <family name (ST) > & <last_name_prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code(ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code(ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

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Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field identifies the subject, or who the inquiry is about.

2.24.4.9 What subject filter (CE) 00033

Components: <identifier (ID)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ID)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field describes the kind of information that is required to satisfy the request. Valid values define the type of transaction inquiry and may be extended locally during implementation.

Table 0048 - What subject filter

Value	Description
ADV	Advice/diagnosis
ANU	Nursing unit lookup (returns patients in beds, excluding empty beds)
APN	Patient name lookup
APP	Physician lookup
ARN	Nursing unit lookup (returns patients in beds, including empty beds)
APM	Medical record number query, returns visits for a medical record number
APA	Account number query, return matching visit
CAN	Cancel. Used to cancel a query
DEM	Demographics
FIN	Financial
GOL	Goals
MRI	Most recent inpatient
MRO	Most recent outpatient
NCK	Network clock
NSC	Network status change
NST	Network statistic
ORD	Order
OTH	Other
PRB	Problems
PRO	Procedure
RES	Result
RAR	Pharmacy administration information
RER	Pharmacy encoded order information
RDR	Pharmacy dispense information
RGR	Pharmacy give information
ROR	Pharmacy prescription information
SAL	All schedule related information, including open slots, booked slots, blocked slots
SBK	Booked slots on the identified schedule

Value	Description
SBL	Blocked slots on the identified schedule
SOP	Open slots on the identified schedule
SSA	Time slots available for a single appointment
SSR	Time slots available for a recurring appointment
STA	Status
VXI	Vaccine Information

See the HL7 Implementation Guide for detailed examples of use of various query filter fields.

2.24.4.10 What department data code (CE) 00034

Components: <identifier (ID)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ID)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the possible contents including test number, procedure number, drug code, item number, order number, etc. The contents of this field are determined by the contents of the previous field. This field could contain multiple occurrences separated by repetition delimiters.

2.24.4.11 What data code value qual (CM) 00035

Components: <first data code value (ST)> ^ <last data code value (ST)>

Definition: This field contains start and stop values separated by a component separator. These values constitute a window or range to further refine the inquiry.

2.24.4.12 Query results level (ID) 00036

Definition: This field is used to control level of detail in results. Refer to *HL7 table 0108 - Query results level* for valid values. See chapters 4 and 7.

Table 0108 - Query results level

Value	Description
O	Order plus order status
R	Results without bulk text
S	Status only
T	Full results

2.24.5 QRF - original style query filter segment

The QRF segment is used with the QRD segment to further refine the content of an original style query.

Figure 2-12. QRF attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	20	ST	R	Y		00037	Where Subject Filter
2	26	TS	O			00038	When Data Start Date/Time
3	26	TS	O			00039	When Data End Date/Time
4	60	ST	O	Y		00040	What User Qualifier
5	60	ST	O	Y		00041	Other QRY Subject Filter
6	12	ID	O	Y	0156	00042	Which Date/Time Qualifier

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
7	12	ID	O	Y	0157	00043	Which Date/Time Status Qualifier
8	12	ID	O	Y	0158	00044	Date/Time Selection Qualifier
9	60	TQ	O			00694	When Quantity/Timing Qualifier

2.24.5.0 QRF field definitions**2.24.5.1 Where subject filter (ST) 00037**

Definition: This field identifies the department, system, or subsystem to which the query pertains. This field may repeat as in LAB~HEMO, etc.

2.24.5.2 When data start date/time (TS) 00038

Definition: This field contains the dates and times equal to or after which this value should be included.

2.24.5.3 When data end date/time (TS) 00039

Definition: This field contains the dates and times equal to or before which this date should be included.

2.24.5.4 What user qualifier (ST) 00040

Definition: This field contains an identifier to further define characteristics of the data of interest.

2.24.5.5 Other QRY subject filter (ST) 00041

Definition: This field contains a filter defined locally for use between two systems. This filter uses codes and field definitions which have specific meaning only to the applications and/or site involved.

2.24.5.6 Which date/time qualifier (ID) 00042

Definition: This field specifies the type of date referred to in *QRF-2-when data start date/time* and *QRF-3-when data end date/time*.

Table 0156 - Which date/time qualifier

Value	Description
ANY	Any date/time within a range
COL	Collection date/time, equivalent to film or sample collection date/time
ORD	Order date/time
RCT	Specimen receipt date/time, receipt of specimen in filling ancillary (Lab)
REP	Report date/time, report date/time at filing ancillary (i.e., Lab)
SCHED	Schedule date/time

2.24.5.7 Which date/time status qualifier (ID) 00043

Definition: This field specifies the status type of objects selected in date range defined by *QRF-2-when data start date/time* and *QRF-3-when data end date/time*.

Table 0157 - Which date/time status qualifier

Value	Description
ANY	Any status
CFN	Current final value, whether final or corrected

Value	Description
COR	Corrected only (no final with corrections)
FIN	Final only (no corrections)
PRE	Preliminary
REP	Report completion date/time

2.24.5.8 Date/time selection qualifier (ID) 00044

Definition: This field allows the specification of certain types of values within the date/time range.

Table 0158 - Date/time selection qualifier

Value	Description
1ST	First value within range
ALL	All values within the range
LST	Last value within the range
REV	All values within the range returned in reverse chronological order (This is the default if not otherwise specified.)

2.24.5.9 When quantity/timing qualifier (TQ) 00694

Components: <quantity (CQ)> ^ <interval (CM)> ^ <duration (CM)> ^ <start date/time (TS)> ^ <end date/time (TS)> ^ <priority (ST)> ^ <condition (ST)> ^ <text (TX)> ^ <conjunction (ID)> ^ <order sequencing (CM)> ^ <occurrence duration (CE)> ^ <total occurrences (NM)>

Definition: This field allows an interval definition to be used for specifying multiple responses to a query. With the addition of this filter, new query specifications should no longer use *QRF-2-when data start date/time* and *QRF-3-when data end date/time* in future implementations.

2.24.6 URD - results/update definition segment

The URD segment is used in sending unsolicited updates about orders and results. Its purpose is similar to that of the QRD segment, but from the results/unsolicited update point of view. Some of the fields have parallels in the QRD segment.

Figure 2-13. URD attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	26	TS	O			00045	R/U Date/Time
2	1	ID	O		0109	00046	Report Priority
3	60	XCN	R	Y		00047	R/U Who Subject Definition
4	60	CE	O	Y	0048	00048	R/U What Subject Definition
5	60	CE	O	Y		00049	R/U What Department Code
6	20	ST	O	Y		00050	R/U Display/Print Locations
7	1	ID	O		0108	00051	R/U Results Level

2.24.6.0 URD field definitions

2.24.6.1 R/U date/time (TS) 00045

Definition: This field contains the date and time the update was generated by the application program.

2.24.6.2 Report priority (ID) 00046

Definition: This field contains the priority associated with this report or update. Refer to *HL7 table 0109 - Report priority* for valid values.

Table 0109 - Report priority

Value	Description
R	Routine
S	Stat

2.24.6.3 R/U who subject definition (XCN) 00047

Components: <ID number (ST)> ^ <family name (ST) > & <last_name_prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code(ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID) > ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code(ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the definition of the subject, or who the report is about.

2.24.6.4 R/U what subject definition (CE) 00048

Components: <identifier (ID)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ID)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field describes the kind of information that is provided in the report. Valid values are the type of transaction inquiry. Refer to *HL7 table 0048 - What subject filter* for valid values.

This table may be extended by local agreement during implementation. See the HL7 Implementation Guide for detailed examples of use of various query filter fields.

2.24.6.5 R/U what department code (CE) 00049

Components: <identifier (ID)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ID)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains either a test number, procedure number, drug code, item number, order number, etc. to identify the department. The contents of this field are determined by the contents of the previous field. This field could contain multiple occurrences separated by repetition delimiters.

2.24.6.6 R/U display/print locations (ST) 00050

Definition: This field contains a list of the locations to which the report should be distributed.

2.24.6.7 R/U results level (ID) 00051

Definition: This field is used to control level of detail in results. Refer to *HL7 table 0108 - Query results level* for valid values. Default level is **T** for full results. See chapters 4 and 7.

2.24.7 URS - unsolicited selection segment

The URS segment is identical with the QRF segment, except that if the name of any field contains Query (of QRY), this word has been changed to Results (see *URS-5-R/U other results subject definition*).

Figure 2-14. URS attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	20	ST	R	Y		00052	R/U Where Subject Definition
2	26	TS	O			00053	R/U When Data Start Date/Time
3	26	TS	O			00054	R/U When Data End Date/Time
4	20	ST	O	Y		00055	R/U What User Qualifier
5	20	ST	O	Y		00056	R/U Other Results Subject Definition
6	12	ID	O	Y	0156	00057	R/U Which Date/Time Qualifier
7	12	ID	O	Y	0157	00058	R/U Which Date/Time Status Qualifier
8	12	ID	O	Y	0158	00059	R/U Date/Time Selection Qualifier
9	60	TQ	O			00695	R/U Quantity/Timing Qualifier

2.24.7.0 URS field definitions

2.24.7.1 R/U where subject definition (ST) 00052

Definition: This field identifies the department, system, or subsystem to which the result pertains. This field may repeat as in **LAB~HEMO**, etc.

2.24.7.2 R/U when data start date/time (TS) 00053

Definition: This field contains the date/time the result starts (if applicable).

2.24.7.3 R/U when data end date/time (TS) 00054

Definition: This field contains the date/time the result ends (if applicable).

2.24.7.4 R/U what user qualifier (ST) 00055

Definition: This field contains an identifier to define further the characteristics of the data that are of interest.

2.24.7.5 R/U other results subject definition (ST) 00056

Definition: This field contains a further qualifier, defined locally, for use between two systems. This filter uses codes and field definitions that have specific meaning only to the application and/or site involved.

2.24.7.6 R/U which date/time qualifier (ID) 00057

Definition: This field specifies the type of date referred to in URS-2-when data start date/time and URS-3-when data end date/time. Refer to HL7 table 0156 - Which date/time qualifier for valid values.

2.24.7.7 R/U which date/time status qualifier (ID) 00058

Definition: This field specifies the status type of objects selected in date range defined by URS-2-when data start date/time and URS-3-when data end date/time. Refer to HL7 table 0157 – Which date/time status qualifier for valid values.

2.24.7.8 R/U date/time selection qualifier (ID) 00059

Definition: This field allows the specification of certain types of values within the date/time range. Refer to HL7 table 0158 - Date/time selection qualifier for valid values.

2.24.7.9 R/U quantity/timing qualifier (TQ) 00695

Components: <quantity (CQ)> ^ <interval (CM)> ^ <duration (CM)> ^ <start date/time (TS)> ^ <end date/time (TS)> ^ <priority (ST)> ^ <condition (ST)> ^ <text (TX)> ^ <conjunction (ID)> ^ <order sequencing (CM)> ^ <occurrence duration (CE)> ^ <total occurrences (NM)>

Definition: This field allows an interval definition to be used for specifying multiple responses to a query. With the addition of this filter, new query specifications should no longer use *URS-2-R/U when data start date/time* and *URS-3-R/U when data end date/time* in future implementations

2.24.8 DSC - continuation pointer segment

The DSC segment is used in the continuation protocol.

Figure 2-15. DSC attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	180	ST	O			00014	Continuation Pointer

2.24.8.0 DSC field definition**2.24.8.1 Continuation pointer (ST) 00014**

Definition: This field contains the continuation pointer. See the description of Continuation Fields in Section 2.15.4, “Interactive continuation or cancellation of response messages: original mode (display and record-oriented) and enhanced mode (display, tabular, and event replay).” In an initial query, this field is not present. If the responder returns a value of null or not present, then there is no more data to fulfill any future continuation requests. For use with continuations of unsolicited messages, see Sections 2.14.2, “UDM/ACK - unsolicited display update message (event Q05),” and 2.23.2 “Continuation messages and segments.” Note that continuation protocols work with both display- and record-oriented messages.

2.24.9 DSP - display data segment

The DSP segment is used to contain data that has been preformatted by the sender for display. The semantic content of the data is lost; the data is simply treated as lines of text.

Figure 2-16. DSP attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	4	SI	O			00061	Set ID - DSP
2	4	SI	O			00062	Display Level
3	300	TX	R			00063	Data Line
4	2	ST	O			00064	Logical Break Point
5	20	TX	O			00065	Result ID

2.24.9.0 DSP field definitions**2.24.9.1 Set ID - DSP (SI) 00061**

Definition: This field is used optionally to number multiple display segments.

2.24.9.2 Display level (SI) 00062

Definition: This field contains numbering to define groups of fields as assigned by the individual sites or applications.

2.24.9.3 Data line (TX) 00063

Definition: This field contains an actual line as it should be displayed. As described for the TX data type, highlighting and other special display characteristics may be included.

2.24.9.4 Logical break point (ST) 00064

Definition: This field is non-null if this line is the last line of a logical break point in the response as defined by the responding system. See Section 2.15.5, "Logical display break points," for the discussion of Logical display break points.

2.24.9.5 Result ID (TX) 00065

Definition: When the user selects a result ID (defined by *DSP-4-logical break point*) from the screen display corresponding to a record in which *DSP-5-result ID* is non-null, the application can initiate a second query (a separate session) to the ancillary with the *QRD-10-what department data code* filled in with this non-null value (e.g., the ancillary accession number or its equivalent). The ancillary response will contain the report referenced by this result ID (e.g., accession number). The ancillary should correlate the result ID with *DSP-4-logical break point* as follows: If more than one line of text is sent per result, *DSP-5-result ID* should be only non-null for a DSP segment that contains a non-null *DSP-4-logical break point*. This field may be broken into components by local agreement. A common example might be to include placer order number, filler order number, and universal service identifier. Whenever such fields are used as components of the result ID, their components will be sent as subcomponents.

2.24.10 ADD - addendum segment

The ADD segment is used to define the continuation of the prior segment in a continuation message. See Section 2.23.2, "Continuation messages and segments," for details.

Figure 2-17. ADD attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1-n	64k	ST	O			00066	Addendum Continuation Pointer

2.24.10.0 ADD field definition

2.24.10.1 Addendum continuation pointer (ST) 00066

Definition: This field is used to define the continuation of the prior segment in a continuation message. See text for details. When the ADD is sent after the segment being continued, it contains no fields. It is only a marker that the previous segment is being continued in a subsequent message. Thus fields 1-N are not present. The sequence designation, 1-N, means the remainder of the fields in the segment being continued. These remainder of the segment being continued fields are present only when the ADD is sent with a continuation message.

2.24.11 FHS - file header segment

The FHS segment is used to head a file (group of batches) as defined in Section 2.23.3, "HL7 batch protocol."

Figure 2-18. FHS attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	1	ST	R			00067	File Field Separator
2	4	ST	R			00068	File Encoding Characters
3	15	ST	O			00069	File Sending Application

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
4	20	ST	O			00070	File Sending Facility
5	15	ST	O			00071	File Receiving Application
6	20	ST	O			00072	File Receiving Facility
7	26	TS	O			00073	File Creation Date/Time
8	40	ST	O			00074	File Security
9	20	ST	O			00075	File Name/ID
10	80	ST	O			00076	File Header Comment
11	20	ST	O			00077	File Control ID
12	20	ST	O			00078	Reference File Control ID

2.24.11.0 FHS field definitions

2.24.11.1 File field separator (ST) 00067

Definition: This field has the same definition as the corresponding field in the MSH segment.

2.24.11.2 File encoding characters (ST) 00068

Definition: This field has the same definition as the corresponding field in the MSH segment.

2.24.11.3 File sending application (ST) 00069

Definition: This field has the same definition as the corresponding field in the MSH segment.

2.24.11.4 File sending facility (ST) 00070

Definition: This field has the same definition as the corresponding field in the MSH segment.

2.24.11.5 File receiving application (ST) 00071

Definition: This field has the same definition as the corresponding field in the MSH segment.

2.24.11.6 File receiving facility (ST) 00072

Definition: This field has the same definition as the corresponding field in the MSH segment.

2.24.11.7 File creation date/time (TS) 00073

Definition: This field has the same definition as the corresponding field in the MSH segment.

2.24.11.8 File security (ST) 00074

Definition: This field has the same definition as the corresponding field in the MSH segment.

2.24.11.9 File name/ID (ST) 00075

Definition: This field can be used by the application processing file. Its use is not further specified.

2.24.11.10 File header comment (ST) 00076

Definition: This field contains the free text field, the use of which is not further specified.

2.24.11.11 File control ID (ST) 00077

Definition: This field is used to identify a particular file uniquely. It can be echoed back in *FHS-12-reference file control ID*.

2.24.11.12 Reference file control ID (ST) 00078

Definition: This field contains the value of *FHS-11-file control ID* when this file was originally transmitted. Not present if this file is being transmitted for the first time.

2.24.12 FTS - file trailer segment

The FTS segment defines the end of a file.

Figure 2-19. FTS attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	10	NM	O			00079	File Batch Count
2	80	ST	O			00080	File Trailer Comment

2.24.12.0 FTS field definitions

2.24.12.1 File batch count (NM) 00079

Definition: This field contains the number of batches contained in this file.

2.24.12.2 File trailer comment (ST) 00080

Definition: The use of this free text field is not further specified.

2.24.13 BHS - batch header segment

The BHS segment defines the start of a batch.

Figure 2-20. BHS attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	1	ST	R			00081	Batch Field Separator
2	3	ST	R			00082	Batch Encoding Characters
3	15	ST	O			00083	Batch Sending Application
4	20	ST	O			00084	Batch Sending Facility
5	15	ST	O			00085	Batch Receiving Application
6	20	ST	O			00086	Batch Receiving Facility
7	26	TS	O			00087	Batch Creation Date/Time
8	40	ST	O			00088	Batch Security
9	20	ST	O			00089	Batch Name/ID/Type
10	80	ST	O			00090	Batch Comment
11	20	ST	O			00091	Batch Control ID
12	20	ST	O			00092	Reference Batch Control ID

2.24.13.0 BHS field definition

2.24.13.1 Batch field separator (ST) 00081

Definition: This field contains the separator between the segment ID and the first real field, *BHS-2-batch encoding characters*. As such it serves as the separator and defines the character to be used as a separator for the rest of the message. Recommended value is |,(ASCII 124).

2.24.13.2 Batch encoding characters (ST) 00082

Definition: This field contains the four characters in the following order: the component separator, repetition separator, escape characters, and subcomponent separator. Recommended values are ^~\& (ASCII 94, 126, 92, and 38, respectively). See Section 2.7, “MESSAGE DELIMITERS.”

2.24.13.3 Batch sending application (ST) 00083

Definition: This field uniquely identifies the sending application among all other applications within the network enterprise. The network enterprise consists of all those applications that participate in the exchange of HL7 messages within the enterprise. Entirely site-defined.

2.24.13.4 Batch sending facility (ST) 00084

Definition: This field contains the address of one of several occurrences of the same application within the sending system. Absent other considerations, the Medicare Provider ID might be used with an appropriate sub-identifier in the second component. Entirely user-defined.

2.24.13.5 Batch receiving application (ST) 00085

Definition: This field uniquely identifies the receiving applications among all other applications within the network enterprise. The network enterprise consists of all those applications that participate in the exchange of HL7 messages within the enterprise. Entirely site-defined.

2.24.13.6 Batch receiving facility (ST) 00086

Definition: This field identifies the receiving application among multiple identical instances of the application running on behalf of different organizations. See comments *BSH-4-batch sending facility*. Entirely site-defined.

2.24.13.7 Batch creation date/time (TS) 00087

Definition: This field contains the date/time that the sending system created the message. If the time zone is specified, it will be used throughout the message as the default time zone.

2.24.13.8 Batch security (ST) 00088

Definition: In some applications of HL7, this field is used to implement security features. Its use is not yet further specified.

2.24.13.9 Batch name/ID/type (ST) 00089

Definition: This field can be used by the application processing the batch. It can have extra components if needed.

2.24.13.10 Batch comment (ST) 00090

Definition: This field is a comment field that is not further defined in the HL7 protocol.

2.24.13.11 Batch control ID (ST) 00091

Definition: This field is used to uniquely identify a particular batch. It can be echoed back in *BHS-12-reference batch control ID* if an answering batch is needed.

2.24.13.12 Reference batch control ID (ST) 00092

Definition: This field contains the value of *BHS-11-batch control ID* when this batch was originally transmitted. Not present if this batch is being sent for the first time. See definition for *BHS-11-batch control ID*.

2.24.14 BTS - batch trailer segment

The BTS segment defines the end of a batch.

Figure 2-21. BTS attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	10	ST	O			00093	Batch Message Count
2	80	ST	O			00090	Batch Comment
3	100	NM	O	Y		00095	Batch Totals

2.24.14.0 BTS field definitions

2.24.14.1 Batch message count (ST) 00093

Definition: This field contains the count of the individual messages contained within the batch.

2.24.14.2 Batch comment (ST) 00090

Definition: This field is a comment field that is not further defined in the HL7 protocol.

2.24.14.3 Batch totals (NM) 00095

Definition: We encourage new users of this field to use the HL7 Version 2.3 data type of NM and to define it as “repeating.” This field contains the batch total. If more than a single batch total exists, this field may be repeated.

This field may be defined as a CM data type for backward compatibility with HL7 Versions 2.2 and 2.1 with each total being carried as a separate component. Each component in this case is an NM data type.

2.24.15 NTE - notes and comments segment

The NTE segment is defined here for inclusion in messages defined in other chapters. It is a common format for sending notes and comments.

Figure 2-22. NTE attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	4	SI	O			00096	Set ID - NTE
2	8	ID	O		0105	00097	Source of Comment
3	64k	FT	O	Y		00098	Comment
4	60	CE	O		0364	01318	Comment Type

2.24.15.0 NTE field definitions

2.24.15.1 Set ID - NTE (SI) 00096

Definition: This field may be used where multiple NTE segments are included in a message. Their numbering must be described in the application message definition.

2.24.15.2 Source of comment (ID) 00097

Definition: This field is used when source of comment must be identified. This table may be extended locally during implementation.

Table 0105 - Source of comment

Value	Description
L	Ancillary (filler) department is source of comment
P	Orderer (placer) is source of comment
O	Other system is source of comment

2.24.15.3 Comment (FT) 00098

Definition: This field contains the comment contained in the segment.

Note: In the current HL7 version, this is a FT rather than a TX data type. Since there is no difference between a FT data type without any embedded formatting commands, and a TX data type, this change is compatible with the previous version.

2.24.15.4 Comment type (CE) 01318

Definition: This field contains a value to identify the type of comment text being sent in the specific comment record. Refer to *user-defined table 0364-Comment type* for suggested values.

User table 0364-Comment type

Value	Description
PI	Patient Instructions
AI	Ancillary Instructions,
GI	General Instructions
1R	Primary Reason
2R	Secondary Reason
GR	General Reason
RE	Remark
DR	Duplicate/Interaction Reason

Note: A field already exists on the NTE record that identifies the Sources of Comment (e.g., ancillary, placer, other). However some applications need to support other types of comment text (e.g., instructions, reason, remarks, etc.). A separate NTE segment can be used for each type of comment (e.g., instructions are on one NTE and remarks on another NTE).

2.24.16 EQL - embedded query language segment

The EQL segment is used to define queries using select statements based on the query language of choice (e.g., SQL). Refer to the functional chapters for the lists of HL7-defined EQL select statements.

Figure 2-23. EQL attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	32	ST	O			00696	Query Tag
2	1	ID	R		0106	00697	Query/Response Format Code
3	60	CE	R			00709	EQL Query Name
4	4096	ST	R			00710	EQL Query Statement

2.24.16.0 EQL field definitions

2.24.16.1 Query tag (ST) 00696

Definition: This field may be valued by the initiating system to identify the query, and may be used to match response messages to the originating query. If it is valued, the responding system is required to echo it back as the first field in the query acknowledgment segment (QAK). This field differs from *MSA-2-message control ID* in that its value remains constant for each message (i.e., all continuation messages) associated with the query, whereas *MSA-2-message control ID* may vary with each continuation message, since it is associated with each individual message, not the query as a whole.

2.24.16.2 Query/response format code (ID) 00697

Definition: This field refers to *HL7 table 0106 - Query/response format code* for valid values.

2.24.16.3 EQL query name (CE) 00709

Components: <identifier (ID)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ID)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the name of the query. Where the default HL7 coding system is used, these names are assigned by the function-specific chapters of this specification. The values for this field are equivalent to those of *SPR-3-stored procedure name* (see Section 2.24.20, “SPR - stored procedure request definition segment”).

2.24.16.4 EQL query statement (ST) 00710

Definition: This field contains the EQL select statement that is the basis of the query.

Fields are designated by the “@” symbol concatenated with the HL7 segment ID followed by the sequence number for the field separated by a period (see sections 2.6.1 and 2.6.2 for definition of segment ID and sequence number). If the field is divided into components, the designation may be suffixed with “.nn,” to identify a particular component (a suffix of “.3” indicates the third component of the field); otherwise, the whole field is assumed. If the field is further divided into subcomponents, the designation is suffixed with “.nn.mm,” which identifies the component and subcomponent requested by relative position.

Site-specific fields may be used, provided that they begin with the letter “Z.” Note that in this case the site-specified segment ID (if the field is not being added to an existing HL7 segment) followed by the sequence number must be defined so that they do not conflict with existing HL7 segment IDs and field sequence numbers. Values for this field are defined in the function-specific chapters of this specification.

<p>Note: If the “@” is being used as one of the delimiter characters defined in <i>MSH-2-encoding characters</i>, it must be “escaped “ (See Section 2.9.1, “Formatting codes.”)</p>

2.24.17 VTQ - virtual table query request segment

The VTQ segment is used to define queries that are responded to with the Tabular Data Message (TBR). The VTQ query message is an alternate method to the EQQ query message that some systems may find easier to implement, due to its use of HL7 delimiters that separate components of the selection definition, and its limited selection criteria. Queries involving complex selection criteria (nested operators, etc.) may need to be formatted as an EQL segment.

As with the other query methods, the functional chapters define specific queries supported as VTQ messages. Refer to these functional chapters for the lists of HL7-defined virtual tables, selection lists and criteria.

Figure 2-24. VTQ attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	32	ST	O			00696	Query Tag
2	1	ID	R		0106	00697	Query/ Response Format Code
3	60	CE	R			00698	VT Query Name
4	60	CE	R			00699	Virtual Table Name
5	256	QSC	O	Y		00700	Selection Criteria

2.24.17.0 VTQ field definitions

2.24.17.1 Query tag (ST) 00696

Definition: This field may be valued by the initiating system to identify the query, and may be used to match response messages to the originating query. If it is valued, the responding system is required to echo it back as the first field in the query acknowledgment segment (QAK). This field differs from *MSA-2-message control ID* in that its value remains constant for each message (i.e., all continuation messages) associated with the query, whereas *MSA-2-message control ID* may vary with each continuation message, since it is associated with each individual message, not the query as a whole.

2.24.17.2 Query/response format code (ID) 00697

Definition: This field refers to *HL7 table 0106 - Query/response format code* for valid values.

2.24.17.3 VT query name (CE) 00698

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the name of the virtual table query. These names are assigned by the function-specific chapters of this specification. Site-specific VT query names begin with the letter “Z.”

2.24.17.4 Virtual table name (CE) 00699

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the name of the virtual table being referenced. This table name may refer to an HL7-defined segment, an HL7 virtual table (refer to the functional chapters), or a site-specific “Z table.”

2.24.17.5 Selection criteria (QSC) 00700

Components: <segment field name (ST)> ^ <relational operator (ID)> ^ <value (ST)> ^ <relational conjunction (ID)>

Definition: Each repetition of this field defines a column in the RDT segment: the first repetition defines the first column of the RDT segment; the second repetition defines the second column of the RDT segments, etc.

This field indicates the conditions that qualify the rows to be returned in the query response. (This field conveys the same information as the “WHERE” clause in the corresponding SQL expression of the query, but is formatted differently.) It is comprised of the following components:

- The segment field name that is participating as a qualifier (usually the “key”). Refer to Section 2.24.16.4, for field naming conventions.
- A relational operator, refer to *HL7 table 0209 - Relational operator* for valid values.

Table 0209 - Relational operator

Relational operator	Value
EQ	Equal
NE	Not Equal
LT	Less than
GT	Greater than
LE	Less than or equal
GE	Greater than or equal
CT	Contains
GN	Generic

- The value to which the field will be compared.

If more than one comparison is to be made to select qualifying rows, a conjunction (defined by *HL7 table 0210 - Relational conjunction*) relating this repetition of the field to the next:

Table 0210 - Relational conjunction

Relational conjunction	Note
AND	Default
OR	

Hence, the segment

```
VTQ|TAG001|T|VT_QUERY_NAME|PID|@00108.1^EQ^EVANS^AND~@00108.2^EQ^CAROLYN <cr>
```

causes a response to be generated from the virtual table defined by the PID segment. All rows containing the name field subcomponents defined in the selection criteria field (last name = “Evans,” first name = “Carolyn”) will be selected for the response. The columns returned from each selected row will be defined by the RDF segment (see Section 2.24.18, “RDF - table row definition segment”).

Notes:

- As previously stated, the VTQ segment does not, and is not intended to, provide as robust selection function as native EQQ query. It is offered as a simpler alternative.
- When applied to strings, the relational operators LT, GT, LE, and GE imply an alphabetic comparison.
- A “generic” comparison selects a record for inclusion in the response if the beginning of the designated field matches the select string.
- Where a repeating field is specified as an operand, a match on any instance of that field qualifies the row for inclusion in the response message.
- AND takes precedence over OR. More sophisticated precedence rules require that the query be expressed as an SQL message, or a stored procedure for the query may be written and referenced with the SPR segment.

2.24.18 RDF - table row definition segment

The RDF segment defines the content of the row data segments (RDT) in the Tabular Data Response Message (TBR). It is used in two ways:

- As an optional segment in the SPQ message (Stored Procedure Request) or the VQQ (Virtual Table Query) message, this segment can be used to limit the number of columns returned and to specify what column positions the fields occupy (where supported, these features can be used to override the defaults for the particular query). If omitted, all fields defined for the query are returned in their default column order.
- As a required segment on the tabular data response message (TBR), this segment defines the contents of the table row data (RDT) segments that follow.

Figure 2-25. RDF attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	3	NM	R			00701	Number of Columns per Row
2	40	RCD	R	Y		00702	Column Description

2.24.18.0 RDF field definitions

2.24.18.1 Number of columns per row (NM) 00701

Definition: This field specifies the number of data columns (and therefore the number of fields) contained within each row of returned data.

2.24.18.2 Column description (RCD) 00702

Components: <Segment field name (ST)> ^ <HL7 data type (ST)> ^ <maximum column width (NM)>

Definition: Each repetition of this field consists of three components:

- The segment field name that identifies the field occupying the column. (Refer to Section 2.24.16.2, “Query/response format code (ID) 00697,” for segment field name definition conventions).
- The 2 or 3 character HL7 data type, as defined in Section 2.8, “Data types.”
- The maximum width of the column, as dictated by the responding system. (This may vary from the HL7-defined maximum field length.)

2.24.19 RDT - table row data segment

The RDT segment contains the row data of the tabular data response message (TBR).

Figure 2-26. RDT attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1-n	Variable	Variable	R			00703	Column Value

2.24.19.0 RDT field definitions

2.24.19.1 Column value (Variable) 00703

Definition: This field is a requested field. Fields occur in the position order defined for the query or table, (unless overridden by an optional RDF segment on a stored procedure request or virtual table query message), separated by field delimiters.

2.24.20 SPR - stored procedure request definition segment

The SPR segment is used to issue queries using stored procedure calls. Refer to the functional chapters for the lists of HL7-defined stored procedure names, input parameters and output tables.

Figure 2-27. SPR attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	32	ST	O			00696	Query Tag
2	1	ID	R		0106	00697	Query/Response Format Code
3	60	CE	R			00704	Stored Procedure Name
4	256	QIP	O	Y		00705	Input Parameter List

2.24.20.0 SPR field definitions

2.24.20.1 Query tag (ST) 00696

Definition: This field may be valued by the initiating system to identify the query, and may be used to match response messages to the originating query. If it is valued, the responding system is required to echo it back as the first field in the query acknowledgment segment (QAK). This field differs from *MSA-2-message control ID* in that its value remains constant for each message (i.e., all continuation messages) associated with the query, whereas *MSA-2-message control ID* may vary with each continuation message, since it is associated with each individual message, not the query as a whole.

2.24.20.2 Query/response format code (ID) 00697

Definition: This field refers to *HL7 table 0106 - Query/response format code* for valid values.

Table 0106 - Query/response format code

Value	Description
D	Response is in display format
R	Response is in record-oriented format
T	Response is in tabular format

2.24.20.3 Stored procedure name (CE) 00704

Components: <identifier (ID)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ID)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the name of the stored procedure that is to be executed. Values for this field are defined in the function-specific chapters of this specification; site-specific stored procedure names begin with the letter “Z.”

2.24.20.4 Input parameter list (QIP) 00705

Components: <segment field name (ST)> ^ <value1 (ST) & value2 (ST) & value3 (ST) ...>

Definition: This field contains the list of parameter names and values to be passed to the stored procedure, in the form “<segment field name> ^ <value1& value2 & value3 ...>.” A single valued parameter contains only a single subcomponent in the second component: thus no subcomponent delimiters are needed (e.g., <segment field name> ^ <value>). A simple list of values (i.e., a one-dimensional array) may be passed instead of a single value by separating each value with the subcomponent delimiter: “<segment field name> ^ <value1& value2 &...>.” Refer to Section 2.24.16.4, “EQL query statement (ST) 00710 for segment field naming conventions.

2.24.21 ERQ - event replay query segment

The ERQ segment is used to issue queries where the desired response is formatted as an event replay response message. This enables the querying application to request detailed event data from an application that supports this feature, such that it may no longer be necessary for it to capture and store all event information at the time of the original trigger event.

Figure 2-28. ERQ attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	32	ST	O			00696	Query Tag
2	60	CE	R			00706	Event Identifier
3	256	QIP	O	Y		00705	Input Parameter List

2.24.21.0 ERQ field definitions

2.24.21.1 Query tag (ST) 00696

Definition: This field may be valued by the initiating system to identify the query, and may be used to match response messages to the originating query. If it is valued, the responding system is required to echo it back as the first field in the query acknowledgment segment (QAK). This field differs from *MSA-2-message control ID* in that its value remains constant for each message (i.e., all continuation messages) associated with the query, whereas *MSA-2-message control ID* may vary with each continuation message, since it is associated with each individual message, not the query as a whole.

2.24.21.2 Event identifier (CE) 00706

Components: <identifier (ID)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ID)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the HL7 event identifier corresponding to the original trigger event. Its contents dictate the format of the response message. Hence, a value of “A04” in this field indicates a request for the data associated with the “register a patient” trigger event. The ERP response message returns the contents of the “register a patient” message defined in Chapter 3. If more than one match is found, the ERP returns repeating groups of the segments defined by the “A04” message.

2.24.21.3 Input parameter list (QIP) 00705

Components: <segment field name (ST)> ^ <value1 (ST) & value2 (ST) & value3 (ST)...>

Definition: This field contains the list of parameter names and values to be passed to the responding system, in the form “<segment field name> ^ <value1 & value2 & value3 ...>.” A single valued parameter contains only a single subcomponent in the second component: thus no subcomponent delimiters are needed (e.g., <segment field name> ^ <value>). A simple list of values (i.e., a one-dimensional array) may be passed instead of a single value by separating each value with the subcomponent delimiter: “<segment field name> ^ <value1&value2 &...>.” Refer to Section 2.24.16.4, “EQL query statement (ST) 00710,” for segment field name definition conventions.

For example, a value of “@PID.19^123-45-6789” could be combined with the A04 event identifier to request patient registration data for the patient with the social security number 123-45-6789.

2.24.22 QAK- query acknowledgment segment

The QAK segment contains information sent with responses to a query. Although the QAK segment is required in the responses to the enhanced queries (see section 2.19), it may appear as an optional segment placed after the (optional) ERR segment in any query response (message) to any original mode query.

Figure 2-29. QAK attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	32	ST	C			00696	Query Tag
2	2	ID	O		0208	00708	Query Response Status

2.24.22.0 QAK field definitions

2.24.22.1 Query tag (ST) 00696

Definition: This field may be valued by the initiating system to identify the query, and may be used to match response messages to the originating query. If it is valued, the responding system is required to echo it back as the first field in the query acknowledgment segment (QAK). This field differs from *MSA-2-message control ID* in that its value remains constant for each message (i.e., all continuation messages) associated with the query, whereas *MSA-2-message control ID* may vary with each continuation message, since it is associated with each individual message, not the query as a whole. *QAK-1-Query tag* is not conditional on the presence of the *QRD-1-Query ID* field in the original mode queries: in the original mode queries *QAK-1-Query tag* is not used.

2.24.22.2 Query response status (ID) 00708

Definition: This field allows the responding system to return a precise response status. It is especially useful in the case where no data is found that matches the query parameters, but where there is also no error. It is defined with *HL7 table 0208 - Query response status*.

Table 0208 - Query response status

Value	Description
OK	Data found, no errors (this is the default)
NF	No data found, no errors
AE	Application error
AR	Application reject

2.24.23 Miscellaneous HL7 tables used across all chapters

2.24.23.1 Yes/no indicator table

Table 0136 - Yes/no indicator

Value	Description
Y	Yes
N	No

2.25 SAMPLE CONTROL AND QUERY MESSAGES

2.25.1 General acknowledgment

LAB acknowledges the message that ADT sent identified as ZZ9380. (LAB and ADT, the sending and receiving system IDs, are site-defined.) Both systems are associated with the same FACILITY, 767543.

There is no trigger event for an acknowledgment, so the second component of *MSH-9-message type* is not present. The component separator may be present there, but need not be. The **AA** code in the MSA segment indicates that the message was accepted by the application.

```
MSH|^~\&|LAB|767543|ADT|767543|19900314130405||ACK^|XX3657|P|2.1<cr>
MSA|AA|ZZ9380<cr>
```

2.25.2 Error return

The **AR** code in MSA indicates that the application rejected the message for functional reasons. The optional ERR segment includes here that the 16th field of the PID segment with the SET ID value of 1 had an error which was defined by the locally-established code X3L. The optional text message UNKNOWN COUNTY CODE in the link is designed to help programmers and support personnel while reviewing message logs.

```
MSH|^~\&|LAB|767543|ADT|767543|199003141304-0500||ACK^|XX3657|P|2.1<cr>
MSA|AR|ZZ9380|UNKNOWN COUNTY CODE<cr>
ERR|PID^1^16^X3L<cr>
```

2.25.3 Sequence number: initial message

The sender initiates the link with a message that has no functional content. The sequence number is 0. The message type and event code are not used.

```
MSH|^~\&|ADT|767543|LAB|767543|199003141304-0500||^|XX3657|P|2.1|0<cr>
```

The responder uses a general acknowledgment. The expected sequence number is 1.

```
MSH|^~\&|LAB|767543|ADT|767543|199003141304-0500||ACK^|ZZ9380|P|2.1<cr>
MSA|AA|XX3657||1<cr>
```

2.25.4 Query examples

2.25.4.1 Original mode query with display-oriented response

Query for all lab results on patient #12233. The query is made at 11:00 a.m., 9/11/87. The Query anticipates an immediate display-oriented response.

```
MSH|^~\&|ICU||LAB01|||QRY^Q01|MSG00001|P|2.3<cr>
QRD|198709111012|D|I|4387|||20^LI|12233|RES|ALL<cr>
```

The response to the above query might look like the following:

```
MSH|^~\&|LAB01||ICU|||DSR|ZXT23461|P|2.3<cr>
MSA|AA|MSG00001P<cr>
QRD|198709111012|D|I|4387|||20^LI|12233|RES|ALL<cr>
DSP|||RESULTS FOR PATIENT#12233 SMITH, JOHN H. 09/11/87<cr>
DSP|||SPECIMEN#H85 COLLECTED 09/11/87 /07/0/0<cr>
DSP<cr>
DSP|||ELECTROLYTES<cr>
DSP|||SODIUM 140 [135-148] MEQ/L STAT<cr>
DSP|||POTASSIUM 4.0 [3.5-5.0] MEQ/L STAT<cr>
DSP|||CHLORIDE 89 [95-111] MEQ/L STAT<cr>
DSP|||CO2 20 [20-30] MEQ/L STAT<cr>
DSP|||LB<cr>
DSP|||CBC<cr>
DSP|||HEMOGLOBIN [13.5-18.0]<cr>
DSP|||HEMATOCRIT 45 [40-54] %<cr>
```

```

DSP|||RED CELL COUNT  5.0 [4.6-6.2]  M/MMB<cr>
DSP|||MCHC              32 [32-36]    G/DL<cr>
DSP|||MCH               28 [26-32]    PG<cr>
DSP|||MCV               85 [81-101]    FL<cr>
DSP|||WHITE CELL CNT  7.5 [5.0-10.0]  K/MMB<cr>
DSP|||LB<cr>
DSP|||SPECIMEN#B24    COLLECTED 9/10/87<cr>
DSC|12333H85;12<cr>

```

A continuation query would echo back the contents of *DSC-1-continuation pointer* as follows:

```

MSH|^~\&|ICU|LAB01|||QRY^Q01|MSG00003|P|2.3<cr>
QRD|198709111012|D|I|4387|||20^LI|12233|RES|ALL<cr>
DSC|12333H85;12<cr>

```

The following response shows that there is no further data by leaving *DSC-1-continuation pointer* not present. This could be done by sending the DSC segment with no data, but the example does the same thing by totally omitting the DSC segment.

```

MSH|^~\&|LAB01||ICU|||DSR|ZXT23469|P|2.1<cr>
MSA|AA|MSG00003|<cr>
QRD|198709111012|D|I|4387|||20^LI|12233|RES|ALL<cr>
DSP|||RESULTS FOR PATIENT#12233  SMITH, JOHN H. 09/11/87<cr>
DSP|||SPECIMEN#H85 COLLECTED 09/10/87 /07/0/0<cr>
DSP<cr>
DSP|||ELECTROLYTES<cr>
DSP|||SODIUM           136 [135-148]  MEQ/L  STAT<cr>
DSP|||POTASSIUM        4.2 [3.5-5.0]  MEQ/L  STAT<cr>
DSP|||CHLORIDE         91 [95-111]    MEQ/L  STAT<cr>
DSP|||CO2              25 [20-30]    MEQ/L  STAT<cr>
DSP|||LB<cr>

```

2.25.4.2 Enhanced mode query examples

Note: For illustration purposes, these examples assume that the following are defined in the ADT chapter:

- The VQQ (using SQL) and EQQ selection criteria
- The virtual table named PID, representing the PID segment as a "virtual table"
- The stored procedure named PID_QRY_01

This section includes embedded query language (using SQL), virtual table and stored procedure query examples with tabular response.

The following examples illustrate a query for the last and first names, address, social security number and date of birth of patients whose last name is "Evans." The fields comprising the query and response are identified by their HL7 segment field names. Where a field is composed of components, the particular component is identified with a ".n" suffix (e.g., the patient last name is the first component of the patient name field (*PID-5-Patient Name*), and therefore is identified as "@PID.5.1."

The following examples illustrate this query expressed as an SQL select statement, as a virtual table query and as a stored procedure call

2.25.4.2.1 Embedded query language query

```
MSH|^~\|CLINIC|CENTRAL-REG|||EQQ|MSG00001|P|2.3.1<cr>
EQL|TAG001|T|SQL_PID_QRY_01|SELECT @PID.5.1,@PID.5.2,@PID.11.1,@PID.11.2,
    @PID.11.3,@PID.11.4,@PID.11.5,@PID.19,@PID.7
FROM PID WHERE @PID.5.1='EVANS' <cr>
```

2.25.4.2.2 Virtual table query

```
MSH|^~\|CLINIC|CENTRAL-REG|||VQQ|MSG00001|P|2.3.1<cr>
VTQ|TAG001|T|VTQ_PID_QRY_01|PID|@PID.5.1^EQ^EVANS<cr>
RDF|9|@PID.5.1^ST^20~@PID.5.2^ST^20~@PID.11.1^ST^30~@PID.11.2^ST^30~@PID.11.3^ST^20~@
PID.11.4^ST^2~@PID.11.5^ST^5~@PID.19^ST^11~@PID.7^TS^8<cr>
```

2.25.4.2.3 Stored procedure request

```
MSH|^~\|CLINIC|CENTRAL-REG|||SPQ|MSG00001|P|2.3.1<cr>
SPR|TAG0001|T|SPR_PID_QRY_01|@PID.5.1^EVANS<cr>
RDF|9|@PID.5.1^ST^20~@PID.5.2^ST^20~@PID.11.1^ST^30~@PID.11.2^ST^30~@PID.11.3^ST^20~@
PID.11.4^ST^2~@PID.11.5^ST^5~@PID.19^ST^11~@PID.7^TS^8<cr>
```

2.25.4.2.4 The response to the above queries might look like the following:

```
MSH|^~\|CENTRAL-REG|CLINIC|||TBR|MSG99001|P|2.3.1<cr>
MSA|AA|MSG00001<cr>
QAK|TAG0001|OK<cr>
RDF|9|@PID.5.1^ST^20~@PID.5.2^ST^20~@PID.11.1^ST^30~@PID.11.2^ST^30~@PID.11.3^ST^20~@
PID.11.4^ST^2~@PID.11.5^ST^5~@PID.19^ST^11~@PID.7^TS^8<cr>
RDT|Evans|Aaron|105 Maple St. ||Lancaster|PA|19786|156-96-2542|19520809<cr>
RDT|Evans|Bart|166 Norwood Ln. ||Hershey|PA|19987|765-58-4615|19701217<cr>
RDT|Evans|Beth|15 Elmwood Ct. |Apt. 15|Gap|PA|19724|58-96-7619|19401119<cr>
RDT|Evans|Carolyn|903 Diane Circle||Phoenixville|PA|19460|156-96-2542|19620324<cr>
DSC|00005<cr>
```

For each of the above queries, a continuation query would echo back the contents of *DSC-1-continuation pointer*, as shown in the following examples:

2.25.4.2.5 Embedded query language continuation query

```
MSH|^~\|CLINIC|CENTRAL-REG|||EQQ|MSG00002|P|2.3.1<cr>
EQL|TAG001|T|SQL_PID_QRY_01|SELECT @PID.5.1,@PID.5.2,@PID.11.1,@PID.11.2,
    @PID.11.3,@PID.11.4,@PID.11.5,@PID.19,@PID.7
FROM PID WHERE @PID.5.1='EVANS' <cr>
DSC|00005<cr>
```

2.25.4.2.6 Virtual table query continuation query

```
MSH|^~\|CLINIC|CENTRAL-REG|||VQQ|MSG00002|P|2.3.1<cr>
VTQ|TAG001|T|VTQ_PID_QRY_01|PID|@PID.5.1^EQ^EVANS<cr>
RDF|9|@PID.5.1^ST^20~@PID.5.2^ST^20~@PID.11.1^ST^30~@PID.11.2^ST^30~@PID.11.3^ST^20~@
PID.11.4^ST^2~@PID.11.5^ST^5~@PID.19^ST^11~@PID.7^TS^8<cr>
DSC|00005<cr>
```

2.25.4.2.7 Stored procedure request query continuation query

```
MSH|^~\|CLINIC|CENTRAL-REG|||SPQ|MSG00002|P|2.3.1<cr>
SPR|TAG0001|T|SPR_PID_QRY_01|@PID.5.1^EVANS<cr>
```

```
RDF|9|@PID. 5. 1^ST^20~@PID. 5. 2^ST^20~@PID. 11. 1^ST^30~@PID. 11. 2^ST^30~@PID. 11. 3^ST^20~@
PID. 11. 4^ST^2~@PID. 11. 5^ST^5~@PID. 19^ST^11~@PID. 7^TS^8<cr>
DSC|00005<cr>
```

2.25.4.2.8 Tabular response showing no further data

This response shows that there is no further data by leaving the continuation pointer not present. This could be done by sending the DSC segment ID with no data, but the example does the same thing by totally omitting the DSC segment

```
MSH|^~\|CENTRAL- REG| |CLINIC| | |TBR|MSG00003|P|2. 3. 1<cr>
MSA|AA|MSG00002<cr>
QAK|TAG0001|OK<cr>
RDF|9|@PID. 5. 1^ST^20~@PID. 5. 2^ST^20~@PID. 11. 1^ST^30~@PID. 11. 2^ST^30~@PID. 11. 3^ST^20~@
PID. 11. 4^ST^2~@PID. 11. 5^ST^5~@PID. 19^ST^11~@PID. 7^TS^8<cr>
RDT|Evans|William|609 N. 3rd St. | |Manheim|PA|19898|169- 03- 9872|19290726<cr>
RDT|Evans|Zachary|111 North Ln. | |Lancaster|PA|19987|539- 43- 8725|19340926<cr>
```

2.25.4.2.9 Event replay query example

Suppose that from the table of “Evans,” Carolyn Evans is selected and the querying application now needs detailed ADT information about her. It can issue another query for this information using the event replay query (EQQ).

```
MSH|^~\|CLINIC| |CENTRAL- REG| | |RQQ|MSG00004|P|2. 3<cr>
ERQ|TAG0002|A04|@PID. 19^ST^11^156- 96- 2542<cr>
```

2.25.4.2.10 Event replay response example

The response is returned as an Event Replay Response, which is the HL7 ADT patient registration message corresponding to event code A04, prefixed by the MSH, MSA and ERQ segments:

```
MSH|^~\|CLINIC| |CENTRAL- REG| | |ERP|MSG00005|P|2. 3. 1<cr>
MSA|AA|MSG00004<cr>
ERQ|TAG0002|A04|@PID. 19^ST^11^156- 96- 2542<cr>
QAK|TAG0002|OK<cr>
EVN|A04|199405151259| |<cr>
PID| |2- 68708- 5|253763|EVANS^CAROLYN| |19620324|F| |903 Diane
Circle^^PHOENIXVILLE^PA^19460| (610) 555- 1212| (610) 555- 1212| |S|C| |156- 96- 2542| |<cr>
NK1| |EVANS^RICHARD|SPOUSE|903Diane Circle^^PHOENIXVILLE^
PA^19460| (610) 555- 1212|<cr>
PV1| |E|EMERG| | |0148^ADDISON^JAMES<cr>
.. etc
```

Error responses to the above queries might look like the following:

2.25.4.2.11 Embedded query language (EQL) , virtual table, and stored procedure error response

```
MSH|^~\|CENTRAL- REG| |CLINIC| | |TBR|MSG99001|P|2. 3. 1<cr>
MSA|AE|MSG00001| | |^REQUESTED TABLE "PID" IS UNKNOWN<cr>
QAK|TAG0001|AE<cr>
```

2.25.4.2.12 Event replay error response

```
MSH|^~\|CENTRAL- REG| |CLINIC| | |ERP|MSG00005|P|2. 3<cr>
MSA|AE|MSG00004| | |^REQUESTED EVENT TYPE "A04" NOT SUPPORTED ON THIS SYSTEM<cr>
```

QAK|TAG0002|AE<cr>

2.25.5 Master file update examples: with original and enhanced acknowledgment protocol

This example shows the lab system using the Master Files specification to send two update test dictionary entries to an ICU system. The OM1 (observation dictionary) segment, currently under development by HL7 and ASTM, carries the dictionary information. Several varieties of acknowledgment are shown. The choice of acknowledgment mode is site-specific.

2.25.5.1 Original mode example:

```
MSH|^~\&|LABxxx|ClinLAB|ICU||19910918060544||MFN^M03|MSGID002|P|2.2
MFI|LABxxx^Lab Test Dictionary^L|UPD|||AL
MFE|MUP|199109051000|199110010000|12345^WBC^L
OMI|...
MFE|MUP|199109051015|199110010000|6789^RBC^L
OMI|...
```

Original mode acknowledgment of the HL7 message according to MFI Response Level Code of AL.

```
MSH|^~\&|ICU||LABxxx|ClinLAB|19910918060545||MFK|MSGID99002|P|2.2
MSA|AA|MSGID002
MFI|LABxxx^Lab Test Dictionary^L|UPD|||MFAA
MFA|MUP|199110010000|199110010040|S|12345^WBC^L
MFA|MUP|199110010000|199110010041|S|6789^RBC^L
```

2.25.5.2 Enhanced mode example

2.25.5.2.1 Initial message with accept acknowledgment

```
MSH|^~\&|LABxxx|ClinLAB|ICU||19910918060544||MFN^M03|MSGID002|P|2.2|||AL|AL
MFI|LABxxx^Lab Test Dictionary^L|UPD|||AL
MFE|MUP|199109051000|199110010000|12345^WBC^L
OMI|...
MFE|MUP|199109051015|199110010000|6789^RBC^L
OMI|...
```

```
MSH|^~\&|ICU||LABxxx|ClinLAB|19910918060545||MSA|MSGID99002|P|2.2
MSA|CA|MSGID002
```

2.25.5.2.2 Application acknowledgment message

```
MSH|^~\&|ICU||LABxxx|ClinLAB|19911001080504||MFK|MSGID5002|P|2.2|||AL|
MSA|AA|MSGID002
MFI|LABxxx^Lab Test Dictionary^L|UPD|||MFAA
MFA|MUP|199109051000|199110010040|S|12345^WBC^L
MFA|MUP|199109051015|199110010041|S|6789^RBC^L

MSH|^~\&|LABxxx|ClinLAB|ICU||19911001080507||ACK|MSGID444|P|2.2
MSA|CA|MSGID5002
```

2.25.5.3 Delayed application acknowledgment

Note: If the MFN message in Section 2.25.5.2 had not required an application acknowledgment at the message level (i.e., the application acknowledgment code of the MSH segment = NE), the (Master Files Chapter defined) MFD message could be used to provide a delayed application level acknowledgment not tied to the original MFN message.

The following example includes an acknowledgment for an MFE segment not in the original message. This additional MFE was sent via another MFN message.

2.25.5.3.1 Initial message with accept acknowledgment

```
MSH|^~\&|LABxxx|C|inLAB|ICU||19910918060544||MFN^M03|MSGID002|P|2.2|||AL|NE
MFI|LABxxx^Lab Test Dictionary^L|UPD|||AL
MFE|MUP|199109051000|199110010000|12345^WBC^L
OMI|...
MFE|MUP|199109051015|199110010000|6789^RBC^L
OMI|...
```

```
MSH|^~\&|ICU||LABxxx|C|inLAB|19910918060545||MSA|MSGID99002|P|2.2
MSA|CA|MSGID002
```

2.25.5.3.2 Delayed application acknowledgment

```
MSH|^~\&|ICU||LABxxx|C|inLAB|19911001080504||MFD|MSGID65002|P|2.2|||AL|
MFI|LABxxx^Lab Test Dictionary^L|UPD|||MFAA
MFA|MUP|199109051000|199110010040|S|12345^WBC^L
MFA|MUP|199109051015|199110010041|S|6789^RBC^L
MFA|MUP|199109051025|199110010041|S|4339^HGB^L

MSH|^~\&|LABxxx|C|inLAB|ICU||19911001080507||ACK|MSGID444|P|2.2
MSA|CA|MSGID65002
```

2.26 OUTSTANDING ISSUES

The following items are being discussed in the Control/Query technical committee for addition to future versions of HL7:

- 1) Rationalization and clarification of event structures.
- 2) Creation of a network server for HL7 tables so that updates to them can be made public immediately, rather than waiting until the publication of the next version of the Standard.
- 3) Clarification of semantics of HL7 tables and tables referenced by the CE datatype.
- 4) Adding the ability to refer to a conformance specification to the MSH segment.
- 5) Consideration of security. There are in general two types: application level security, which is partially addressed by the *security* field in the MSH segment. The second type, network security, needs to be addressed in the HL7 Implementation Guide. There are several commercially available encryption-based approaches to network level security.
- 6) Reviewing network management messages for possible upgrade requirements.
- 7) Creation of Implementation Technology Specifications (ITSs: encoding rules equivalents) for Version 3.
- 8) Creation of additions to the v 2.3 Enhanced Query Paradigm, and specification of query functionality for version 3.

Patient Administration

Chapter Chair/Editor

Michael Hawver
Eclipsys Corporation

Chapter Chair/Editor

Freida B. Hall
HBO & Company

3.1 PURPOSE

The Patient Administration transaction set provides for the transmission of new or updated demographic and visit information about patients. Since virtually any system attached to the network requires information about patients, the Patient Administration transaction set is one of the most commonly used.

Generally, information is entered into a Patient Administration system and passed to the nursing, ancillary and financial systems either in the form of an unsolicited update or a response to a record-oriented query.

This chapter defines the transactions that occur at the seventh level, that is, the abstract messages. The examples included in this chapter were constructed using the HL7 Encoding Rules.

3.2 TRIGGER EVENTS AND MESSAGE DEFINITIONS

Each trigger event is listed below, along with the applicable form of the message exchange. The notation used to describe the sequence, optionality, and repetition of segments is described in Chapter 2, Section 2.11, “Chapter Formats for Defining HL7 Messages.”

The trigger events that follow are all served by the ADT unsolicited update and the ACK response.

In the following trigger event descriptions, the term “admitted” patient will be used instead of “inpatient” to indicate any patient classes that are assigned to a patient bed for at least a few hours. “Non-admitted” patients will be used instead of “outpatients” to indicate any patient classes that are not assigned to a bed, but rather to an exam room or another type of encounter room or clinic waiting room.

We recognize that different hospital systems use different definitions of the terms “inpatient,” “outpatient,” “emergency room,” and “recurring patient classes,” or handle these patients differently. Therefore, the trigger events are not defined as specific to any patient class. The patient class for any visit related information must be specified in *PVI-2-patient class* in order to enable each system to handle the transaction properly. This means that both the event and the patient class must be checked in order to determine how to handle the transaction. If a certain patient class can sometimes be assigned to a bed and sometimes not, for example, “observation patients,” then *PVI-3-assigned patient location* must also be checked.

In order to accommodate non-admitted patient events without using the same trigger events as those for admitted patients, we would need an entirely new set of non-admitted patient events. If we do that, disparate systems would still have a hard time agreeing about whether certain patient classes should use the admitted patient events or the non-admitted patient events, because of the differences between how admitted and non-admitted patients are defined and handled.

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Both admitted and non-admitted patient events are transmitted using most of the same events. The meaning or interpretation of those events will depend upon the patient class.

The information that is included in any of these trigger event transactions can be more than the minimum necessary to communicate the event. Any of the fields can be used that are in the segments listed for the message. As many or as few fields can be used as are agreed upon during implementation. However, please note that when the contents of a field change for a field that is not necessarily related to the trigger event, it is a matter for implementation negotiation as to whether the receiving systems can capture this changed data.

In order to alleviate this ambiguity, we recommend (but do not require) that the A08 (update patient information) transaction be used to update fields that are not necessarily related to any of the other trigger events. For example, if a Patient Administration system allows the patient's medical service and attending doctor to be changed in the transfer function, the Patient Administration system should send two HL7 messages. It should send an A02 (transfer a patient) event to reflect the location change, followed by an A08 (update patient information) event to reflect the change in the medical service and the attending doctor.

3.2.1 ADT/ACK - admit/visit notification (event A01)

An A01 event is intended to be used for "Admitted" patients only. An A01 event is sent as a result of a patient undergoing the admission process which assigns the patient to a bed. It signals the beginning of a patient's stay in a healthcare facility. Normally, this information is entered in the primary Patient Administration system and broadcast to the nursing units and ancillary systems. It includes short stay and John Doe admissions. For example, an A01 event can be used to notify: the pharmacy system that a patient has been admitted and may be legitimately prescribed drugs; the nursing system that the patient has been admitted and needs a care plan prepared; the finance system of the start of the billing period; the dietary system that a new patient has been installed and requires dietary services; the laboratory, pathology, and radiology systems that a patient has been admitted and is entitled to receive services; the clinical repository that an admission has taken place for the EMR (electronic medical record).

When an account's start and end dates span a period greater than any particular visit, the P01 (add patient account) event should be used to transmit the opening of an account. The A01 event can notify systems of the creation of an account as well as notify them of a patient's arrival in the healthcare facility. In order to create a new account without notifying of patient's arrival, use the P01 event.

<u>ADT^A01</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
[{ NK1 }]	Next of Kin /Associated Parties	3
PV1	Patient Visit	3
[PV2]	Patient Visit - Additional Info.	3
[{ DB1 }]	Disability Information	3
[{ OBX }]	Observation/Result	7
[{ AL1 }]	Allergy Information	3
[{ DG1 }]	Diagnosis Information	6
[DRG]	Diagnosis Related Group	6
[{ PR1	Procedures	6
[{ROL}}	Role	12
}]		
[{ GT1 }]	Guarantor	6
[
[{ IN1	Insurance	6
[{ IN2 }	Insurance Additional Info.	6
[{ IN3 }]	Insurance Add'l Info - Cert.	6
]		
]		
[ACC]	Accident Information	6
[UB1]	Universal Bill Information	6
[UB2]	Universal Bill 92 Information	6

<u>ACK^A01</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.2 ADT/ACK - transfer a patient (event A02)

An A02 event is issued as a result of the patient changing his or her assigned physical location.

The fields included when this message is sent should be the fields pertinent to communicate this event. When other important fields change, it is recommended that the A08 (update patient information) event be used in addition. If the transfer function of your Patient Administration system allows demographics to change at the same time as the transfer (for example an address change), we recommend (but do not require) sending two messages (an A02 followed by an A08). This A02 event can be used with admitted and non-admitted patients.

The new patient location should appear in *PV1-3-assigned patient location* while the old patient location should appear in *PV1-6-prior patient location*. For example, an A02 event can be used to notify: laboratory, radiology, pathology that the patient has changed location and test results should be redirected; pharmacy that drugs should be redirected for the patient; dietary that the meals should be delivered to a different location; the clinical repository that a transfer has taken place for the EMR.

If the patient is going to a temporary location (such as the O/R, X-RAY, LIMBO, the HALLWAY) it is recommended that the A09 (patient departing-tracking) and A10 (patient arriving-tracking) events be used instead of A02. It is recommended that A02 be used only for a real change in the census bed in the Patient Administration system.

<u>ADT^A02</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
PV1	Patient Visit	3
[PV2]	Patient Visit - Additional Info.	3
[{ DB1 }]	Disability Information	3
[{ OBX }]	Observation/Result	7

<u>ACK^A02</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.3 ADT/ACK - discharge/end visit (event A03)

An A03 event signals the end of a patient's stay in a healthcare facility. It signals that the patient's status has changed to "discharged" and that a discharge date has been recorded. The patient is no longer in the facility. The patient's location prior to discharge should be entered in *PV1-3-assigned patient location*.

An A03 event can be sent to notify: the pharmacy that the patient's stay has ended and that entitlement to drugs has changed accordingly; the nursing system that the patient has been discharged and that the care plan can be completed; the finance system that the patient billing period has ended; and/or the clinical repository that discharge has taken place for the EMR.

For non-admitted patients, an A03 event signals the end of a patient's visit to a healthcare facility. It could be used to signal the end of a visit for a one-time or recurring outpatient who is not assigned to a bed. It

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could also be used to signal the end of a visit to the Emergency Room. *PV1-45-discharge date and time* can be used for the visit end date/time.

When an account's start and end dates span a period greater than any particular visit, the P06 (end account) event should be used to transmit information about the closing of an account. To indicate that a patient has expired, use an A03 event with the *PID-29-patient death date and time* and *PID-30-patient death indicator* filled in.

The fields included when this message is sent should be the fields pertinent to communicate this event. When other important fields change, it is recommended that the A08 (update patient information) event be used in addition.

<u>ADT^A03</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
PV1	Patient Visit	3
[PV2]	Patient Visit - Additional Info.	3
[{ DB1 }]	Disability Information	3
[{ DG1 }]	Diagnosis Information	6
[DRG]	Diagnosis Related Group	6
[{ PR1	Procedures	6
[{ROL}]	Role	12
}]		
[{ OBX }]	Observation/Result	7

<u>ACK^A03</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.4 ADT/ACK - register a patient (event A04)

An A04 event signals that the patient has arrived or checked in as a one-time, or recurring outpatient, and is not assigned to a bed. One example might be its use to signal the beginning of a visit to the Emergency Room. Note that some systems refer to these events as outpatient registrations or emergency admissions. *PV1-44-admit date/time* is used for the visit start date/time.

<u>ADT^A04</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
[{ NK1 }]	Next of Kin /Associated Parties	3
PV1	Patient Visit	3
[PV2]	Patient Visit - Additional Info.	3
[{ DB1 }]	Disability Information	3
[{ OBX }]	Observation/Result	7
[{ AL1 }]	Allergy Information	3
[{ DG1 }]	Diagnosis Information	6
[DRG]	Diagnosis Related Group	6
[{ PR1	Procedures	6
[{ROL}]	Role	12
}]		
[{ GT1 }]	Guarantor	6
[
{ IN1	Insurance	6
[IN2]	Insurance Additional Info.	6
[{IN3}]	Insurance Add'l Info - Cert.	6
}		
]		

[ACC]	Accident Information	6
[UB1]	Universal Bill Information	6
[UB2]	Universal Bill 92 Information	6

<u>ACK^A04</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.5 ADT/ACK - pre-admit a patient (event A05)

An A05 event is sent when a patient undergoes the pre-admission process. During this process, episode-related data is collected in preparation for a patient's visit or stay in a healthcare facility. For example, a pre-admit may be performed prior to inpatient or outpatient surgery so that lab tests can be performed prior to the surgery. This event can also be used to pre-register a non-admitted patient.

<u>ADT^A05</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
[{ NK1 }]	Next of Kin /Associated Parties	3
PV1	Patient Visit	3
[PV2]	Patient Visit - Additional Info.	3
[{ DB1 }]	Disability Information	3
[{ OBX }]	Observation/Result	7
[{ AL1 }]	Allergy Information	3
[{ DG1 }]	Diagnosis Information	6
[DRG]	Diagnosis Related Group	6
[{ PR1	Procedures	6
[{ROL}]	Role	12
}]		
[{ GT1 }]	Guarantor	6
[
{ IN1	Insurance	6
[IN2]	Insurance Additional Info.	6
[{ IN3 }]	Insurance Add'l Info - Cert.	6
}		
]		
[ACC]	Accident Information	6
[UB1]	Universal Bill Information	6
[UB2]	Universal Bill 92 Information	6

<u>ACK^A05</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.6 ADT/ACK - change an outpatient to an inpatient (event A06)

An A06 event is sent when a patient who was present for a non-admitted visit is being admitted after an evaluation of the seriousness of the patient's condition. This event changes a patient's status from non-admitted to admitted. The new patient location should appear in *PV1-3-assigned patient location*, while the old patient location (if different) should appear in *PV1-6-prior patient location*. The new patient class should appear in *PV1-2-patient class*.

It will be left to implementation negotiation to determine whether disparate systems merely change the patient class, or close and open a new account. The current active account number should appear in *PID-18-patient account number*; the prior account number can be included optionally in *MRG-3-prior patient ac-*

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count number. This arrangement is not intended to be a type of merge, but the MRG segment is used here for *MRG-3-prior patient account number.*

The fields included when this message is sent should be the fields pertinent to communicate this event. When other important fields change, it is recommended that the A08 (update patient information) event be used in addition.

<u>ADT^A06</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
[MRG]	Merge Information	3
[{ NK1 }]	Next of Kin /Associated Parties	3
PV1	Patient Visit	3
[PV2]	Patient Visit - Additional Info.	3
[{ DB1 }]	Disability Information	3
[{ OBX }]	Observation/Result	7
[{ AL1 }]	Allergy Information	3
[{ DG1 }]	Diagnosis Information	6
[DRG]	Diagnosis Related Group	6
[{ PR1	Procedures	6
[{ROL}]	Role	12
}]		
[{ GT1 }]	Guarantor	6
[
{ IN1	Insurance	6
[IN2]	Insurance Additional Info.	6
[{IN3}]	Insurance Add'l Info - Cert.	6
]		
]		
[ACC]	Accident Information	6
[UB1]	Universal Bill Information	6
[UB2]	Universal Bill 92 Information	6

<u>ACK^A06</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.7 ADT/ACK - change an inpatient to an outpatient (event A07)

An A07 event is sent when a patient who was admitted changes his/her status to “no longer admitted” but is still being seen for this episode of care. This event changes a patient from an “admitted” to a “non-admitted” status. The new patient location should appear in *PV1-3-assigned patient location*, while the old patient location (if different) should appear in *PV1-6-prior patient location*.

We leave it to implementation negotiation to determine whether disparate systems merely change the patient class, or close and open a new account. The current active account number should appear in field *PID-18-patient account number*; the prior account number can be included optionally in *MRG-3-prior patient account number*. This arrangement is not intended to be a type of merge. The MRG segment is only used here for *MRG-3-prior patient account number*. *PV1-19-visit number* can also be changed during this event.

The fields included when this message is sent should be the fields pertinent to communicate this event. When other important fields change, it is recommended that the A08 (update patient information) event be used in addition.

<u>ADT^A07</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3

PID	Patient Identification	3
[PD1]	Additional Demographics	3
[MRG]	Merge Information	3
[{ NK1 }]	Next of Kin /Associated Parties	3
PV1	Patient Visit	3
[PV2]	Patient Visit - Additional Info.	3
[{ DB1 }]	Disability Information	3
[{ OBX }]	Observation/Result	7
[{ AL1 }]	Allergy Information	3
[{ DG1 }]	Diagnosis Information	6
[DRG]	Diagnosis Related Group	6
[{ PR1	Procedures	6
[{ ROL }]	Role	12
}}		
[{ GT1 }]	Guarantor	6
[
{ IN1	Insurance	6
[IN2]	Insurance Additional Info.	6
[{ IN3 }]	Insurance Add'l Info - Cert.	6
]		
]		
[ACC]	Accident Information	6
[UB1]	Universal Bill Information	6
[UB2]	Universal Bill 92 Information	6

<u>ACK^A07</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.8 ADT/ACK - update patient information (event A08)

This trigger event is used when any patient information has changed but when no other trigger event has occurred. For example, an A08 event can be used to notify the receiving systems of a change of address or a name change. We recommend that the A08 transaction be used to update fields that are not related to any of the other trigger events. The A08 event can include information specific to an episode of care, but it can also be used for demographic information only.

<u>ADT^A08</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
[{ NK1 }]	Next of Kin /Associated Parties	3
PV1	Patient Visit	3
[PV2]	Patient Visit - Additional Info.	3
[{ DB1 }]	Disability Information	3
[{ OBX }]	Observation/Result	7
[{ AL1 }]	Allergy Information	3
[{ DG1 }]	Diagnosis Information	6
[DRG]	Diagnosis Related Group	6
[{ PR1	Procedures	6
[{ ROL }]	Role	12
}}		
[{ GT1 }]	Guarantor	6
[
{ IN1	Insurance	6
[IN2]	Insurance Additional Info.	6
[{ IN3 }]	Insurance Add'l Info - Cert.	6
]		
]		
[ACC]	Accident Information	6
[UB1]	Universal Bill Information	6
[UB2]	Universal Bill 92 Information	6

<u>ACK^A08</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.9 ADT/ACK - patient departing - tracking (event A09)

The A09 and A10 (patient arriving-tracking) events are used when there is a change in a patient's physical location and when this is NOT a change in the official census bed location. There are three situations that qualify as non-census location changes: (a) patient tracking, (b) the patient is in transit between locations for some time, (c) a notification of temporary location change.

Patient tracking: This can be used when the nursing application sends a "transfer" before the Patient Administration (or official census) system issues an A02 (transfer a patient) event. If the patient has left for a non-temporary location and is not in transit, then the *PV1-3-assigned patient location* must contain the new patient location, while *PV1-6-prior patient location* must contain the old patient location.

In transit: The patient's location during the time between an A09 and an A10 (patient arriving - tracking) is defined as "in transit." The A09 event is sent when a patient departs from one area of the facility for the purpose of arriving at another area, but without leaving the healthcare institution. This event is used when there is a time span during which the patient is neither at his/her old location nor at his/her new location. This process can take some time if a patient is being sent to another area in a multi-campus or multi-facility environment. The combination of an A09 and an A10 would serve the same purpose as an A02 (transfer a patient) event, except that it accounts for a gap in time required for transport between facilities. If the patient will be in transit during the time between the A09 (patient departing - tracking) event and the A10 (patient arriving - tracking) event, then *PV1-42-pending location* is used for the new location, and *PV1-11-temporary location* and *PV1-43-prior temporary location* would not be used. *PV1-6-prior patient location* should be used for the old location.

Temporary location: An A09 can also be used when the patient is being sent to a temporary location (such as the O/R, X-RAY, LIMBO, or HALLWAY). The patient may or may not return to the same assigned location after occupying the temporary location. If the patient is going to a temporary location (such as the O/R, X-RAY, LIMBO, or HALLWAY), then *PV1-11-temporary location* is used to indicate the new temporary location. If the patient is moving from one temporary location to another, then *PV1-43-prior temporary location* may also be used. *PV1-6-prior patient location* and *PV1-11-temporary location* should be used when the patient is moving from a permanent location to a temporary location.

The fields included when this message is sent should be the fields pertinent to communicate this event. When other important fields change, it is recommended that the A08 (update patient information) event be used in addition.

The DG1 segment remains in this message for backward compatibility only.

<u>ADT^A09</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
PV1	Patient Visit	3
[PV2]	Patient Visit - Additional Info.	3
[{ DB1 }]	Disability Information	3
[{ OBX }]	Observation/Result	7
[{ DG1 }]	Diagnosis Information	6

<u>ACK^A09</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.10 ADT/ACK - patient arriving - tracking (event A10)

The A10 event is sent when a patient arrives at a new location in the healthcare facility. The A09 (patient departing-tracking) and A10 events are used when there is a change in a patient's physical location and when this is NOT a change in the official census bed location. There are three varieties of these non-census location changes involving three different kinds of notification: (a) an unofficial notification of location change prior to the official notification of patient tracking, (b) the patient is in transit between locations for some time, (c) a notification of a temporary location change.

Patient tracking: If the patient is now at a non-temporary location and is not in transit, then *PV1-3-assigned patient location* must contain the new patient location and *PV1-6-prior patient location* can contain the old patient location.

In transit: This is used when there is some period of time between when the patient leaves his/her old location and when he/she arrives at the new assigned location. If the patient was in transit during the time between the A09 (patient departing-tracking) event and the A10 (patient arriving-tracking) event, then *PV1-3-assigned patient location* is used for the new location and *PV1-6-prior patient location* should be used for the old location. *PV1-11-temporary location* and *PV1-43-prior temporary location* are not used.

Temporary location: An A10 event can also be used when the patient is being transferred from a temporary location (X-RAY, O/R, LIMBO, HALLWAY) to the new assigned location. If the patient is arriving at a temporary location (such as the O/R, X-RAY, LIMBO, the HALLWAY), then *PV1-11-temporary location* would be used to indicate the new temporary location. If the patient is moving from one temporary location to another, then *PV1-43-prior temporary location* may also be used. If the patient is arriving at a permanent location from a temporary location, *PV1-3-assigned patient location* should be used for the new location, and *PV1-43-prior temporary location* should be used for the old location.

The fields included when this message is sent should be the fields pertinent to communicate this event. When other important fields change, it is recommended that the A08 (update patient information) event be used in addition. ***The DGI segment remains in this message for backward compatibility only.***

<u>ADT^A10</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
PV1	Patient Visit	3
[PV2]	Patient Visit - Additional Info.	3
[{ DB1 }]	Disability Information	3
[{ OBX }]	Observation/Result	7
[{ DG1 }]	Diagnosis Information	6

<u>ACK^A10</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.11 ADT/ACK - cancel admit / visit notification (event A11)

For “admitted” patients, the A11 event is sent when an A01 (admit/visit notification) event is canceled, either because of an erroneous entry of the A01 event, or because of a decision not to admit the patient after all.

For “non-admitted” patients, the A11 event is sent when an A04 (register a patient) event is canceled, either because of an erroneous entry of the A04 event, or because of a decision not to check the patient in for the visit after all. To cancel an A05 (pre-admit a patient) event, use the A38 (cancel pre-admit), which is new for Version 2.3 of this Standard.

The fields included when this message is sent should be the fields pertinent to communicate this event. When other important fields change, it is recommended that the A08 (update patient information) event be used in addition.

The DGI segment remains in this message for backward compatibility only.

<u>ADT^A11</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
PV1	Patient Visit	3
[PV2]	Patient Visit - Additional Info.	3
[{ DB1 }]	Disability Information	3
[{ OBX }]	Observation/Result	7
[{ DG1 }]	Diagnosis Information	6

<u>ACK^A11</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.12 ADT/ACK - cancel transfer (event A12)

The A12 event is sent when an A02 (transfer a patient) event is canceled, either because of erroneous entry of the A02 event or because of a decision not to transfer the patient after all. *PV1-3-assigned patient location* must show the location of the patient prior to the original transfer.

The fields included when this message is sent should be the fields pertinent to communicate this event. When other important fields change, it is recommended that the A08 (update patient information) even be used in addition.

The DGI segment remains in this message for backward compatibility only.

<u>ADT^A12</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
PV1	Patient Visit	3
[PV2]	Patient Visit - Additional Info.	3
[{ DB1 }]	Disability Information	3
[{ OBX }]	Observation/Result	7
[DG1]	Diagnosis Information	6

<u>ACK^A12</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.13 ADT/ACK - cancel discharge / end visit (event A13)

The A13 event is sent when an A03 (discharge/end visit) event is canceled, either because of erroneous entry of the A03 event or because of a decision not to discharge or end the visit of the patient after all. *PVI-3-assigned patient location* should reflect the location of the patient after the cancellation has been processed. Note that this location may be different from the patient's location prior to the erroneous discharge. Prior Location could be used to show the location of the patient prior to the erroneous discharge.

The fields included when this message is sent should be the fields pertinent to communicate this event. When other important fields change, it is recommended that the A08 (update patient information) event be used in addition.

<u>ADT^A13</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
[{ NK1 }]	Next of Kin /Associated Parties	3
PV1	Patient Visit	3
[PV2]	Patient Visit - Additional Info.	3
[{ DB1 }]	Disability Information	3
[{ OBX }]	Observation/Result	7
[{ AL1 }]	Allergy Information	3
[{ DG1 }]	Diagnosis Information	6
[DRG]	Diagnosis Related Group	6
[{ PR1	Procedures	6
[{ROL}]	Role	12
}]		
[{ GT1 }]	Guarantor	6
[
{ IN1	Insurance	6
[IN2]	Insurance Additional Info.	6
[{IN3}]	Insurance Add'l Info - Cert.	6
]		
]		
[ACC]	Accident Information	6
[UB1]	Universal Bill Information	6
[UB2]	Universal Bill 92 Information	6

<u>ACK^A13</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.14 ADT/ACK - pending admit (event A14)

An A14 event notifies other systems of a planned admission, when there is a reservation or when patient admission is to occur imminently. The A14 event is similar to a pre-admit, but without the implication that an account should be opened for the purposes of tests prior to admission. It is used when advanced notification of an admit is required in order to prepare for the patient's arrival.

<u>ADT^A14</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3

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[{ NK1 }]	Next of Kin /Associated Parties	3
PV1	Patient Visit	3
[PV2]	Patient Visit - Additional Info.	3
[{ DB1 }]	Disability Information	3
[{ OBX }]	Observation/Result	7
[{ AL1 }]	Allergy Information	3
[{ DG1 }]	Diagnosis Information	6
[DRG]	Diagnosis Related Group	6
[{ PR1	Procedures	6
[{ROL}]	Role	12
}}		
[{ GT1 }]	Guarantor	6
[
{ IN1	Insurance	6
[IN2]	Insurance Additional Info.	6
[{IN3}]	Insurance Add'l Info - Cert.	6
]		
[ACC]	Accident Information	6
[UB1]	Universal Bill Information	6
[UB2]	Universal Bill 92 Information	6

<u>ACK^A14</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.15 ADT/ACK - pending transfer (event A15)

An A15 event notifies other systems of a plan to transfer a patient to a new location when the patient has not yet left the old location. It is used when advanced notification of a transfer is required in order to prepare for the patient's location change. For example, this transaction could be sent so that orderlies will be on hand to move the patient or so that dietary services can route the next meal to the new location.

The fields included when this message is sent should be the fields pertinent to communicate this event. When other important fields change, it is recommended that the A08 (update patient information) event be used in addition.

The DG1 segment remains in this message for backward compatibility only.

<u>ADT^A15</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
PV1	Patient Visit	3
[PV2]	Patient Visit - Additional Info.	3
[{ DB1 }]	Disability Information	3
[{ OBX }]	Observation/Result	7
[{ DG1 }]	Diagnosis Information	6

<u>ACK^A15</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.16 ADT/ACK - pending discharge (event A16)

An A16 event notifies other systems of a plan to discharge a patient when the patient has not yet left the healthcare facility. It is used when advanced notification of a discharge is required in order to prepare for

the patient's change in location. For example, it is used to notify the pharmacy of the possible need for discharge drugs or to notify psychotherapy of the possible need for post-discharge appointments.

The fields included when this message is sent should be the fields pertinent to communicate this event. When other important fields change, it is recommended that the A08 (update patient information) event be used in addition.

<u>ADT^A16</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
PV1	Patient Visit	3
[PV2]	Patient Visit - Additional Info.	3
[{ DB1 }]	Disability Information	3
[{ OBX }]	Observation/Result	7
[{ DG1 }]	Diagnosis Information	6
[DRG]	Diagnosis Related Group	6

<u>ACK^A16</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.17 ADT/ACK - swap patients (event A17)

The A17 is used when it is decided that two patients will exchange beds. The patient ID and visit data are repeated for the two patients changing places. See Section 3.5.1, "Swapping a patient," for a discussion of issues related to implementing this trigger event. When other important fields change, it is recommended that the A08 (update patient information) event be used in addition.

<u>ADT^A17</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient (1) Identification	3
[PD1]	Additional Demographics	3
PV1	Patient (1) Visit	3
[PV2]	Patient (1) Visit - Additional Info.	3
[{ DB1 }]	Disability Information	3
[{ OBX }]	Observation/Result (1)	7
PID	Patient (2) Identification	3
[PD1]	Additional Demographics	3
PV1	Patient (2) Visit	3
[PV2]	Patient (2) Visit - Additional Info.	3
[{ DB1 }]	Disability Information	3
[{ OBX }]	Observation/Result (2)	7

<u>ACK^A17</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.18 ADT/ACK - merge patient information (event A18)

Event A18 is being retained for backward compatibility. The A18 event is used to merge current and previous patient identification numbers: *PID-3-patient identifier list*, *PID-2-patient ID*, *PID-4-alternate patient ID-PID*, and *PID-18-patient account number*. This procedure is required, for example, when a previous patient is registered under a new patient identification number because of an error, or because there was insufficient time to determine the actual patient identification number. The merge event occurs when a de-

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cision is made to combine the information under either the new or the old identifier(s). We recommend that events A34 (merge patient information-patient ID only), A35 (merge patient information-account number only), A36 (merge patient information-patient ID & account number), A39 (merge person-patient ID), A40 (merge patient-patient identifier list), A41 (merge account-patient account number), and A42 (merge visit-visit number) be utilized in place of the A18 event whenever possible.

The PID segment contains the surviving patient ID information. The MRG segment contains the non-surviving information.

This merge event is non-specific in that, as a result of the merge, several patient identifiers may or may not have changed. For sites requiring (or desiring) greater specificity with regard to this type of message, new events (A34 (merge patient information-patient ID only), A35 (merge patient information-account number only), A36 (merge patient information-patient ID & account number), A39 (merge person-patientID), A40 (merge patient-patient identifier list), A41 (merge account-patient account number) and A42 (merge visit-visit number)) are now available as alternatives. See Section 3.5.2, "Merging patient/person information," for a discussion of issues related to implementing patient merge events.

<u>ADT^A18</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
MRG	Merge Information	3
PV1	Patient Visit	3

<u>ACK^A18</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.19 QRY/ADR - patient query (event A19)

The following trigger event is served by QRY (a query from another system) and ADR (a response from an Patient Administration system.)

Another application determines a need for Patient Administration data about a patient and sends a query to the Patient Administration system. The Who Filter in the QRD can identify the patient or account number upon which the query is defined and can contain a format code of "R" (record-oriented). If the query is based on the Patient ID and there are data associated with multiple accounts, the problem of which account data should be returned becomes an implementation issue. The ADT event-type segment, if included in the response, describes the last event for which the Patient Administration system initiated an unsolicited update.

<u>QRY^A19</u>	<u>Patient Query</u>	<u>Chapter</u>
MSH	Message Header	2
QRD	Query Definition	2
[QRF]	Query Filter	2

<u>ADR^A19</u>	<u>ADT Response</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2
[QAK]	Query Acknowledgement	2
QRD	Query Definition	2
[QRF]	Query Filter	2
{		
[EVN]	Event Type	3

PID	Patient Identification	3
[PD1]	Additional Demographics	3
[{NK1}]	Next of Kin /Associated Parties	3
PV1	Patient Visit	3
[PV2]	Patient Visit - Additional Info.	3
[{ DB1 }]	Disability Information	3
[{OBX}]	Observation/Result	7
[{AL1}]	Allergy Information	3
[{DG1}]	Diagnosis Information	6
[DRG]	Diagnosis Related Group	6
[{PR1	Procedures	6
[{ROL}]	Role	12
}]		
[{GT1}]	Guarantor	6
[
{		
IN1	Insurance	6
[IN2]	Insurance Additional Info.	6
[{IN3}]	Insurance Add'l Info - Cert.	6
}		
]		
[ACC]	Accident Information	6
[UB1]	Universal Bill Information	6
[UB2]	Universal Bill Information	6
}		
[DSC]	Continuation Pointer	2

3.2.19.1 A19 usage notes

In addition to single-patient responses, the ADT record-oriented query/response needs to support responses containing multiple patients for the following query types (by subject filter): return census for a nursing unit (ANU), return patients matching a name search (APN), and return patients for a given physician (APP).

For multiple patient responses, additional values for *QRD-9-what subject filter* may be used, such as:

IP	Inpatient
OP	Outpatient
DC	Discharged

For the ANU subject filter, the Patient Administration systems response must have some method for conveying the fact that some beds are empty (as well as for returning the data for all patients in the occupied beds). This method will function as follows:

- a) Bed Full
Regular { [EVN], PID, PV1 } segment group for each patient with *PV1-40-bed status* value of “O” occupied.
- b) Bed Empty
In this case, all fields in the corresponding EVN, PID, and PV1 segments are null except for the following fields in the PV1 segment.
 - * *PV1-3-assigned patient location* contains the new bed location information
 - * *PV1-40-bed status* contains one of the following values: U (unoccupied), H (housekeeping), or C (closed).

3.2.20 ADT/ACK - bed status update (event A20)

Certain nursing/census applications need to be able to update the Patient Administration system’s bed status. The following is the associated record layout:

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<u>ADT^A20</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
NPU	Non-Patient Update	3

<u>ACK^A20</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.21 ADT/ACK - patient goes on a "leave of absence (event A21)

An A21 event is sent to notify systems that an admitted patient has left the healthcare institution temporarily. It is used for systems in which a bed is still assigned to the patient, and it puts the current admitted patient activities on hold. For example, it is used to notify dietary services and laboratory systems when the patient goes home for the weekend.

The fields included when this message is sent should be the fields pertinent to communicate this event. When other important fields change, it is recommended that the A08 (update patient information) event be used in addition.

<u>ADT^A21</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
PV1	Patient Visit	3
[PV2]	Patient Visit - Additional Info.	3
[{ DB1 }]	Disability Information	3
[{ OBX }]	Observation/Result	7

<u>ACK^A21</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.22 ADT/ACK - patient returns from a "leave of absence (event A22)

An A22 event is sent to notify systems that an admitted patient has returned to the healthcare institution after a temporary "leave of absence." It is used for systems in which a bed is still assigned to the patient, and it takes their current admitted patient activities off of "hold" status. For example, it is used to notify dietary services and laboratory systems when the patient returns from a weekend trip to his/her home.

The fields included when this message is sent should be the fields pertinent to communicate this event. When other important fields change, it is recommended that the A08 (update patient information) event be used in addition.

<u>ADT^A22</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
PV1	Patient Visit	3
[PV2]	Patient Visit - Additional Info.	3
[{ DB1 }]	Disability Information	3
[{ OBX }]	Observation/Result	7

<u>ACK^A22</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.23 ADT/ACK - delete a patient record (event A23)

The A23 event is used to delete visit or episode-specific information from the patient record. For example, it is used to remove old data from a database that cannot hold all historical patient visit data. When an event was entered erroneously, use one of the cancel transactions. This event can be used to purge account-level data while retaining the person in the database.

<u>ADT^A23</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
PV1	Patient Visit	3
[PV2]	Patient Visit - Additional Info.	3
[{ DB1 }]	Disability Information	3
[{ OBX }]	Observation/Result	7

<u>ACK^A23</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.24 ADT/ACK - link patient information (event A24)

The A24 event is used when the first PID segment needs to be linked to the second PID segment and when both patient identifiers identify the same patient. Linking two or more patients does not require the actual merging of patient information; following a link event, the affected patient data records should remain distinct. For example, this event could be used in a hospital network environment in which there are multiple campuses and in which records need to be linked. For example, hospital A, hospital B, and hospital C would each keep their own records on a patient, but an A24 link event would be sent to a corporate-wide MPI to enable the coupling of ID information with the corporate ID number. It is used for corporate data repositories, etc. This event is not meant to link mothers and babies since a field exists (*PID-21-mother's identifier*) for that purpose. See Section 3.5.3, "Patient record links," for a discussion of issues related to implementing patient link messages and MPI issues.

This event can also be used to link two patient identifiers when a patient changes from inpatient to outpatient, or vice versa. This event can also be used to link two visits of the same patient.

The fields included when this message is sent should be the fields pertinent to communicate this event. When other important fields change, it is recommended that the A08 (update patient information) event be used in addition.

<u>ADT^A24</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient (1) Identification	3
[PD1]	Patient (1) Additional Demographics	3
[PV1]	Patient (1) Visit	3
[{ DB1 }]	Disability Information	3
PID	Patient (2) Identification	3
[PD1]	Patient (2) Additional Demographics	3
[PV1]	Patient (2) Visit	3
[{ DB1 }]	Disability Information	3

<u>ACK^A24</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.25 ADT/ACK - cancel pending discharge (event A25)

The A25 event is sent when an A16 (pending discharge) event is canceled, either because of erroneous entry of the A16 event or because of a decision not to discharge the patient after all.

The fields included when this message is sent should be the fields pertinent to communicate this event. When other important fields change, it is recommended that the A08 (update patient information) event be used in addition.

<u>ADT^A25</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
PV1	Patient Visit	3
[PV2]	Patient Visit - Additional Info.	3
[{ DB1 }]	Disability Information	3
[{ OBX }]	Observation/Result	7

<u>ACK^A25</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.26 ADT/ACK - cancel pending transfer (event A26)

The A26 event is sent when an A15 (pending transfer) event is canceled, either because of erroneous entry of the A15 event or because of a decision not to transfer the patient after all.

The fields included when this message is sent should be the fields pertinent to communicate this event. When other important fields change, it is recommended that the A08 (update patient information) event be used in addition.

<u>ADT^A26</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
PV1	Patient Visit	3
[PV2]	Patient Visit - Additional Info.	3
[{ DB1 }]	Disability Information	3
[{ OBX }]	Observation/Result	7

<u>ACK^A26</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.27 ADT/ACK - cancel pending admit (event A27)

The A27 event is sent when an A14 (pending admit) event is canceled, either because of erroneous entry of the A14 event or because of a decision not to admit the patient after all.

The fields included when this message is sent should be the fields pertinent to communicate this event. When other important fields change, it is recommended that the A08 (update patient information) event be used in addition.

<u>ADT^A27</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
PV1	Patient Visit	3
[PV2]	Patient Visit - Additional Info.	3
[{ DB1 }]	Disability Information	3
[{ OBX }]	Observation/Result	7

<u>ACK^A27</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.28 ADT/ACK - add person information (event A28)

The purpose of this and the three following messages is to allow sites with multiple systems and respective master patient databases to communicate activity related to a person regardless of whether that person is currently a patient on each system. Each system has an interest in the database activity of the others in order to maintain data integrity across an institution. Though they are defined within the ADT message set, these messages differ in that they are not patient-specific. To a certain registry, the person may be a person of interest, a potential future patient, or a potential guarantor. For example, these events can be used to maintain an MPI (master patient index), a cancer registry, members of a managed care plan, an HIV database, etc.

These events should not replace the use of the A01 (admit/visit notification), A03 (discharge/end visit), A04 (register a patient), A08 (update patient information), etc., events. They are not intended to be used for notification of real-time Patient Administration events. Visit information may be included but is not required. These events are primarily for demographic data, but optional historical non-demographic data may be sent as well.

The person whose data is being sent should be identified in the PID segment using the *PID-2-patient ID*, even when the person is not a patient and may be a potential guarantor. An A28 establishes person identifiers, e.g., social security number, guarantor identifier, or other unique identifiers, and contains a person identifier in the *PID-2-patient ID*. The person involved may or may not have active or inactive cases associated with them. When field names and descriptions say “patient,” we must translate that to “person” for these transactions. In this manner, “person information” about a guarantor can be sent independently of the guarantor’s relation to any patient.

For example, a site with separate inpatient, outpatient and medical records systems may require that each system maintain concurrent person information. Prior to an admit, the new person is added to the master database of the inpatient system, resulting in the broadcast of a message. The outpatient system receives the message and adds the person to its database with the possibility that the person may someday become a patient in its system. The medical records system receives the message and adds the person to its database with the possibility that it will track inpatient, outpatient, or clinical data for that person. The clinical repository database or MPI receives the message to keep all potential patients and guarantors in its database.

The A28 event can be used to send everything that is known about a person. For example, it can be sent to an ICU unit (in addition to the A02 (transfer a patient) event) when a patient is transferred to the ICU unit in order to backload all demographic information for the patient into the ICU system. An A28 (add person

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information) or A31 (update person information) can also be used for backloading MPI information for the person, or for backloading person and historical information.

In addition to adding a person to a database, the delete, update, and merge messages work in a similar manner to maintain concurrent person information. It is left up to site-specific negotiations to decide how much data must be transmitted or re-transmitted when a person becomes a patient.

<u>ADT^A28</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
[{ NK1 }]	Next of Kin /Associated Parties	3
PV1	Patient Visit	3
[PV2]	Patient Visit - Additional Info.	3
[{ DB1 }]	Disability Information	3
[{ OBX }]	Observation/Result	7
[{ AL1 }]	Allergy Information	3
[{ DG1 }]	Diagnosis Information	6
[DRG]	Diagnosis Related Group	6
[{ PR1	Procedures	6
[{ROL}]	Role	12
}]		
[{ GT1 }]	Guarantor	6
[
{ IN1	Insurance	6
[IN2]	Insurance Additional Info.	6
[{IN3}]	Insurance Add'l Info - Cert.	6
]		
]		
[ACC]	Accident Information	6
[UB1]	Universal Bill Information	6
[UB2]	Universal Bill 92 Information	6

<u>ACK^A28</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.29 ADT/ACK - delete person information (event A29)

An A29 event can be used to delete all demographic information related to a given person. This event “undoes” an A28 (add person information) event. The information from the A28 event is deleted. This event is used, for example, when adding the information was performed in error, or when another record already exists for the person, or when one wants to purge the person from the database. When this event occurs, all visit and account level data for this person is also purged.

<u>ADT^A29</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
PV1	Patient Visit	3
[PV2]	Patient Visit - Additional Info.	3
[{ DB1 }]	Disability Information	3
[{ OBX }]	Observation/Result	7

<u>ACK^A29</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.30 ADT/ACK - merge person information (event A30)

Event A30 is being retained for backward compatibility. An A30 event can be used to merge person information on an MPI. The A34 (merge patient information-patient ID only), A35 (merge patient information-account number only), A36 (merge patient information-patient ID & account number), A40 (merge patient-patient identifier list), A41 (merge account-patient account number) and A42 (merge visit-visit number) events should be used to merge patient information for a current episode. The “incorrect MRN” identified on the MRG segment (*MRG-1-prior patient identifier list*) is to be merged with the “correct MRN” identified on the PID segment (*PID-3-patient identifier list*). The “incorrect MRN” then no longer exists. All PID data associated with the “correct MRN” are treated as updated information.

The MRNs involved may or may not have active or inactive cases associated with them. Any episode of care that was previously associated with the “incorrect MRN” is now associated with the “correct MRN.” A list of these cases is not provided.

The fields included when this message is sent should be the fields pertinent to communicate this event. When other important fields change, it is recommended that the A08 (update patient information) event be used in addition.

An A30 (merge person information) is intended for merging person records without merging patient identifiers.

<u>ADT^A30</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
MRG	Merge Information	3

<u>ACK^A30</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.31 ADT/ACK - update person information (event A31)

An A31 event can be used to update person information on an MPI. It is similar to an A08 (update patient information) event, but an A08 (update patient information) event should be used to update patient information for a current episode. An A28 (add person information) or A31 can also be used for backloading MPI information for the person, or for backloading person and historical information.

<u>ADT^A31</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
[{ NK1 }]	Next of Kin /Associated Parties	3
PV1	Patient Visit	3
[PV2]	Patient Visit - Additional Info.	3
[{ DB1 }]	Disability Information	3
[{ OBX }]	Observation/Result	7
[{ AL1 }]	Allergy Information	3
[{ DG1 }]	Diagnosis Information	6
[DRG]	Diagnosis Related Group	6
[{ PR1	Procedures	6
[{ROL}]	Role	12
}]		
[{ GT1 }]	Guarantor	6
[

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{ IN1	Insurance	6
[IN2]	Insurance Additional Info.	6
[{IN3}]	Insurance Add'l Info - Cert.	6
}		
]		
[ACC]	Accident Information	6
[UB1]	Universal Bill Information	6
[UB2]	Universal Bill 92 Information	6

<u>ACK^A31</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.32 ADT/ACK - cancel patient arriving - tracking (event A32)

The A32 event is sent when an A10 (patient arriving-tracking) event is canceled, either because of erroneous entry of the A10 event or because of a decision not to receive the patient after all.

If the patient was in a non-temporary location, then the *PVI-3-assigned patient location* may contain (if known) the original patient location prior to the erroneous A10 (patient arriving-tracking) event. If the patient was in a temporary location, then *PVI-11-temporary location* may contain (if known) the original patient location prior to the erroneous A10 (patient arriving-tracking) event.

The fields included when this message is sent should be the fields pertinent to communicate this event. When other important fields change, it is recommended that the A08 (update patient information) event be used in addition.

<u>ADT^A32</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
PV1	Patient Visit	3
[PV2]	Patient Visit - Additional Info.	3
[{ DB1 }]	Disability Information	3
[{ OBX }]	Observation/Result	7

<u>ACK^A32</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.33 ADT/ACK - cancel patient departing - tracking (event A33)

The A33 event is sent when an A09 (patient departing-tracking) event is canceled, either because of erroneous entry of the A09 event or because of a decision not to send the patient after all.

If the patient was in a non-temporary location, then *PVI-3-assigned patient location* must contain the original patient location prior to the erroneous A09 (patient departing-tracking) event. If the patient was in a temporary location, then *PVI-11-temporary location* must contain the original patient location prior to the erroneous A09 (patient departing-tracking) event.

The fields included when this message is sent should be the fields pertinent to communicate this event. When other important fields change, it is recommended that the A08 (update patient information) event be used in addition.

<u>ADT^A33</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
PV1	Patient Visit	3
[PV2]	Patient Visit - Additional Info.	3
[{ DB1 }]	Disability Information	3
[{ OBX }]	Observation/Result	7

<u>ACK^A33</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.34 ACK/ADT - merge patient information - patient ID only (event A34)

Event A34 is being retained for backward compatibility. Only PID-3-patient identifier list has changed as a result of the merge. See Section 3.5.2, “Merging patient/person information,” for a discussion of issues related to the implementation of merge messages.

An A34 (merge patient information-patient ID only) event is intended for merging or changing patient identifiers. It would be used to change patient identifiers on all of this patient’s existing accounts.

<u>ADT^A34</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
MRG	Merge Information	3

<u>ACK^A34</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error Information	2

3.2.35 ADT/ACK - merge patient information - account number only (event A35)

Event A35 is being retained for backward compatibility. Only the patient account number has changed as a result of the merge. See Section 3.5.2, “Merging patient/person information,” for a discussion of issues related to the implementation of merge messages.

An A35 (merge patient information-account number only) event is intended for merging or changing an account number only.

<u>ADT^A35</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
MRG	Merge Information	3

<u>ACK^A35</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.36 ADT/ACK - merge patient information - patient ID & account number (event A36)

Event A36 is being retained for backward compatibility. Both the patient identification-internal and the patient account number have changed as a result of the merge. See Section 3.5.2, “Merging patient/person information,” for a discussion of issues related to the implementation of merge messages.

<u>ADT^A36</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
MRG	Merge Information	3

<u>ACK^A36</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.37 ADT/ACK - unlink patient information (event A37)

The A37 event unlinks two PID segments previously linked with an A24 (link patient information) event.

<u>ADT^A37</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient (1) Identification	3
[PD1]	Additional Demographics	3
[PV1]	Patient (1) Visit	3
[{DB1}]	Disability Information	3
PID	Patient (2) Identification	3
[PD1]	Additional Demographics	3
[PV1]	Patient (2) Visit	3
[{DB1}]	Disability Information	3

<u>ACK^A37</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.38 ADT/ACK - cancel pre-admit (event A38)

The A38 event is sent when an A05 (pre-admit a patient) event is canceled, either because of erroneous entry of the A05 event or because of a decision not to pre-admit the patient after all.

The fields included when this message is sent should be the fields pertinent to communicate this event. When other important fields change, it is recommended that the A08 (update patient information) event be used in addition.

<u>ADT^A38</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
PV1	Patient Visit	3
[PV2]	Patient Visit - Additional Info.	3
[{DB1}]	Disability Information	3
[{OBX}]	Observation/Result	7

[{ DG1 }]	Diagnosis Information	6
[DRG]	Diagnosis Related Group	6

<u>ACK^A38</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.39 ADT/ACK - merge person - patient ID (event A39)

Event A39 is being retained for backward compatibility. A merge has been done at the external identifier level. That is, two *PID-2-patient ID* identifiers have been merged into one.

An A39 event is used to signal a merge of records for a person that was incorrectly filed under two different *PID-2-patient IDs*. The “incorrect source patient ID” identified in the *MRG segment (MRG-4-prior patient ID)* is to be merged with the required “correct target patient ID” identified in the *PID segment (PID-2-patient ID)*. The “incorrect source patient ID” would then logically never be referenced in future transactions. It is noted that some systems may still physically keep this “incorrect identifier” for audit trail purposes or other reasons associated with database index implementation requirements.

Since this event is a merge at the *PID-2-patient ID* identifier level, *PID-3-patient identifier list* and *MRG-1-prior patient identifier list* are not required.

The patient IDs involved in identifying the persons may or may not be patients, who may or may not have accounts, which may or may not have visits. An A39 (merge person-patient ID) event is intended for merging person records without merging other subordinate identifiers. Any other subordinate identifiers that were previously associated with the “incorrect source patient ID” are now associated with the “correct target patient ID.” Specification of these other subordinate identifiers is not required.

This event and the message syntax do, however, allow for the specification of “new subordinate identifiers” (in addition to the *PID-2-patient ID* identifier). For those environments that may require changes to these other subordinate identifiers because of an A39 (merge person-patient ID), it is required that the old and new identifiers be a “tightly coupled” pair.

See sections 3.5.2 “Merging patient/person information” and 3.5.2.1.2 “Merge,” for a discussion of issues related to the implementation of merge messages.

All data associated with the “correct target patient ID” are treated as updated information.

<u>ADT^A39</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
{ PID	Patient Identification	3
[PD1]	Additional Demographics	3
MRG	Merge Information	3
[PV1]	Patient Visit	3
}		

<u>ACK^A39</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.40 ADT/ACK - merge patient - patient identifier list (event A40)

A merge has been done at the internal identifier level. That is, two *PID-3-patient identifier list* identifiers have been merged into one.

An A40 event is used to signal a merge of records for a patient that was incorrectly filed under two different identifiers. The “incorrect source identifier” identified in the MRG segment (*MRG-1-prior patient identifier list*) is to be merged with the required “correct target identifier” of the same “identifier type code” component identified in the PID segment (*PID-3-patient identifier list*). The “incorrect source identifier” would then logically never be referenced in future transactions. It is noted that some systems may still physically keep this “incorrect identifier” for audit trail purposes or other reasons associated with database index implementation requirements.

The identifiers involved in identifying the patients may or may not have accounts, which may or may not have visits. An A40 (merge patient-patient identifier list) event is intended for merging patient records without merging other subordinate identifiers. Any other subordinate identifiers that were previously associated with the “incorrect source identifier” are now associated with the “correct target identifier.” Specification of these other subordinate identifiers is not required.

This event and the message syntax do, however, allow for the specification of any other “new subordinate identifiers” (in addition to the *PID-3-patient identifier list* identifier). For those environments that may require changes to these other subordinate identifiers because of the A40 (merge patient-patient identifier list) event, it is required that the old and new identifiers be a “tightly coupled” pair.

Each superior identifier associated with this internal identifier level (PID-2 and MRG-4) should have the same value in both the PID and MRG segments.

See Sections 3.5.2 “Merging patient/person information” and 3.5.2.1.2 “Merge,” for a discussion of issues related to the implementation of merge messages. All data associated with the “correct target identifier” are treated as updated information.

<u>ADT^A40</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
{ PID	Patient Identification	3
[PD1]	Additional Demographics	3
MRG	Merge Information	3
[PV1]	Patient Visit	3
}		

<u>ACK^A40</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.41 ADT/ACK - merge account - patient account number (event A41)

A merge has been done at the account identifier level. That is, two *PID-18-patient account number* identifiers have been merged into one.

An A41 event is used to signal a merge of records for an account that was incorrectly filed under two different account numbers. The “incorrect source patient account number” identified in the MRG segment (*MRG-3-prior patient account number*) is to be merged with the “correct target patient account number” identified in the PID segment (*PID-18-patient account number*). The “incorrect source patient account number” would then logically never be referenced in future transactions. It is noted that some systems may

still physically keep this “incorrect identifier” for audit trail purposes or other reasons associated with database index implementation requirements.

The patient account numbers involved may or may not have visits. An A41 (merge account-patient account number) is intended for merging account records without merging other subordinate identifiers. Any other subordinate identifiers that were previously associated with the “incorrect source account number” are now associated with the required “correct target account number.” Specification of these other subordinate identifiers is not required.

This event and the message syntax do, however, allow for the specification of any other “new subordinate identifiers” (in addition to the *PID-18-patient account number* identifier). For those environments that may require changes to these other subordinate identifiers because of this A41 (merge account-patient account number) event, it is required that the old and new identifiers be a “tightly coupled” pair.

Each superior identifier associated with this account identifier level should have the same value in both the PID and MRG segments.

See Sections 3.5.2 “Merging patient/person information” and 3.5.2.1.2 “Merge,” for a discussion of issues related to the implementation of merge messages. All data associated with the “correct target account number” are treated as updated information.

<u>ADT^A41</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
{ PID	Patient Identification	3
[PD1]	Additional Demographics	3
MRG	Merge Information	3
[PV1]	Patient Visit	3
}		

<u>ACK^A41</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.42 ADT/ACK - merge visit - visit number (event A42)

A merge has been done at the visit identifier level. That is, two *PVI-19-visit number* identifiers have been merged into one.

An A42 event is used to signal a merge of records for a visit that was incorrectly filed under two different visit numbers. The “incorrect source visit number” identified in the MRG *segment (MRG-5-prior visit number)* is to be merged with the required “correct target visit number” identified in the PV1 segment (*PVI-19-visit number*). The “incorrect source visit number” would then logically never be referenced in future transactions. It is noted that some systems may still physically keep this “incorrect identifier” for audit trail purposes or other reasons associated with database index implementation requirements.

An A42 (merge visit-visit number) event is intended for merging visit records without merging other identifiers. Any other identifiers that were previously associated with the “incorrect source visit number” are now associated with the “correct target visit number.”

Each superior identifier associated with this visit identifier level should have the same value in the PID and MRG segments, or the MRG and PV1 segments, as appropriate.

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See Sections 3.5.2 “Merging patient/person information” and 3.5.2.1.2 “Merge,” for a discussion of issues related to the implementation of merge messages. All data associated with the “correct target visit number” are treated as updated information.

<u>ADT^A42</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
{ PID	Patient Identification	3
[PD1]	Additional Demographics	3
MRG	Merge Information	3
[PV1]	Patient Visit	3
}		

<u>ACK^A42</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.43 ADT/ACK - move patient information - patient identifier list (event A43)

A move has been done at the internal identifier level. That is, the *PID-3-patient identifier list* associated with one external identifier (*PID-2-patient ID*) has been moved to another external identifier.

An A43 event is used to signal a move of records identified by the *MRG-1-prior patient identifier list* from the “incorrect source external identifier” identified in the MRG segment (*MRG-4-prior patient ID*) to the “correct target external identifier” identified in the PID segment (*PID-2-patient ID*).

The identifiers involved in identifying the patient to be moved (*MRG-1-prior patient identifier list*) may or may not have accounts, which may or may not have visits. In any case, all subordinate data sets associated with the identifier in *MRG-1-prior patient identifier list* are moved along with the identifier, from the “incorrect source patient ID” (*MRG-4-prior patient ID*) to the “correct target patient ID” (*PID-2-patient ID*).

No identifiers subordinate to the identifier (account number, visit number, alternate visit ID) are valued in this message. Specification of these other subordinate identifiers is not required.

This event and the message syntax do, however, allow for the specification of a “new identifier” (*PID-3-patient identifier list*), which may be application and/or implementation specific and therefore require site negotiation.

All of the identifiers superior to the patient identifier list should be valued in both the MRG segment and the PID segment. In this message, the *PID-2-patient ID* is superior to the internal id.

See Sections 3.5.2 “Merging patient/person information” and 3.5.2.1.3, “Move,” for a discussion of issues related to the implementation of move messages.

The fields included when this message is sent should be the fields pertinent to communicate this event. When demographic data in other fields change, it is recommended that the A08 (update patient information) event be used in conjunction with this message. However, all PID data associated with the “correct target identifier” (*PID-3-patient identifier list*) are treated as updated information.

<u>ADT^A43</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
{ PID	Patient Identification	3
[PD1]	Additional Demographics	3
MRG	Merge Information	3
}		

<u>ACK^A43</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.44 ADT/ACK - move account information - patient account number (event A44)

A move has been done at the account identifier level. That is, a *PID-18-patient account number* associated with one internal identifier (*PID-3-patient identifier list*) has been moved to another internal identifier.

An A44 event is used to signal a move of records identified by the *MRG-3-prior patient account number* from the “incorrect source internal identifier” identified in the MRG segment (*MRG-1-prior patient identifier list*) to the “correct target internal identifier” identified in the PID segment (*PID-3-patient identifier list*).

The account number involved in identifying the account to be moved (*MRG-3-prior patient account number*) may or may not have visits. In any case, all subordinate data sets associated with the account number in *MRG-3-prior patient account number* are moved along with the account number, from the “incorrect source internal” ID (*MRG-1-prior patient identifier list*) to the “correct target internal” ID (*PID-3-patient identifier list*).

No identifiers subordinate to the account number (visit number, alternate visit ID) are valued in this message.

This event and the message syntax do, however, allow for the specification of a “new identifier” (*PID-18-patient account number*), which may be application and/or implementation-specific and therefore require site negotiation.

All of the identifiers superior to the account number should be valued in both the MRG segment and the PID segment. In this message, the *PID-3-patient identifier list* and the *PID-2-patient ID* are superior to the account number.

See Sections 3.5.2 “Merging patient/person information” and 3.5.2.1.3 “Move,” for a discussion of issues related to the implementation of move messages.

The fields included when this message is sent should be the fields pertinent to communicate this event. When demographic data in other fields change, it is recommended that the A08 (update patient information) event be used in conjunction with this message. However, all PID data associated with the “account number” are treated as updated information.

<u>ADT^A44</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
{ PID	Patient Identification	3
[PD1]	Additional Demographics	3
MRG	Merge Information	3
}		

<u>ACK^A44</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.45 ADT/ACK - move visit information - visit number (event A45)

A move has been done at the visit identifier level. That is, a *PVI-19-visit number* or *PVI-50-alternate visit ID* associated with one account identifier (*PID-18-patient account number*) has been moved to another account identifier.

An A45 event is used to signal a move of records identified by the *MRG-5-prior visit number* or the *MRG-6-prior alternate visit ID* from the “incorrect source account identifier” identified in the MRG segment (*MRG-3-prior patient account number*) to the “correct target account identifier” identified in the PID segment (*PID-18-patient account number*).

This event and the message syntax do allow for the specification of “new identifiers” (*PVI-19-visit number*, or *PVI-50-alternate visit ID*), which may be application and/or implementation-specific and therefore require site negotiation.

All of the identifiers superior to the visit number or alternate visit ID should be valued in both the MRG segment and the PID segment. In this message, the account number, *PID-3-patient identifier list* and *PID-2-patient ID* are superior to the visit number and alternate visit ID.

See Sections 3.5.2 “Merging patient/person information,” and 3.5.2.1.3 “Move,” for a discussion of issues related to the implementation of move messages. The fields included when this message is sent should be the fields pertinent to communicate this event. When demographic data in other fields change, it is recommended that the A08 (update patient information) event be used in conjunction with this message. However, all PID data associated with the “correct target visit ID” are treated as updated information.

<u>ADT^A45</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
{ MRG	Merge Information	3
PVI	Patient Visit	3
}		

<u>ACK^A45</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.46 ADT/ACK - change patient ID (event A46)

With HL7 v2.3.1, event A46 is being retained for backward compatibility, corresponding with *PID-2-patient ID*, which is also retained for backward compatibility. Event A47 (change patient identifier list) should be used instead. A change has been done at the external identifier level. That is, a *PID-2-patient ID* has been found to be incorrect and has been changed.

An A46 event is used to signal a change of an incorrectly assigned *PID-2-patient ID* value. The “incorrect source patient ID” value is stored in the MRG segment (*MRG-4-prior patient ID*) and is to be changed to the “correct target patient ID” value stored in the PID segment (*PID-2-patient ID*).

The patient ID involved in identifying the person may or may not represent a patient, who may or may not have accounts, which may or may not have visits. An A46 (change patient ID) event is intended for changing the value of the external identifier without affecting other subordinate identifiers. Any other subordinate identifiers that were previously associated with the “incorrect source patient ID” are now associated with the “correct target patient ID.” Specification of these other subordinate identifiers is not required to be provided.

This event and the message syntax do, however, allow for the specification of “new subordinate identifiers” (in addition to the *PID-2-patient ID* identifier). For those environments that may require changes to these other subordinate identifiers because of this A46 (change patient ID) event, it is required that the old and new identifiers be a “tightly coupled” pair.

Since this event is a change at the *PID-2-patient ID* identifier level, *PID-3-patient identifier list* and *MRG-1-prior patient identifier list* are not required.

See Sections 3.5.2, “Merging patient/person information,” and 3.5.2.1.4 “Change identifier,” for a discussion of issues related to the implementation of change messages.

The fields included when this message is sent should be the fields pertinent to communicate this event. When demographic data in other fields change, it is recommended that the A31 (update person information) event be used in conjunction with this message. However, all PID data associated with the new External ID are treated as updated information.

<u>ADT^A46</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
MRG	Merge Information	3

<u>ACK^A46</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.47 ADT/ACK - change patient identifier list (event A47)

A change has been done at the internal identifier level. That is, a single *PID-3-patient identifier list* value has been found to be incorrect and has been changed.

An A47 event is used to signal a change of an incorrectly assigned *PID-3-patient identifier list* value. The “incorrect source identifier” value is stored in the MRG segment (*MRG-1-prior patient identifier list*) and is to be changed to the “correct target patient ID” value stored in the PID segment (*PID-3-patient identifier list*).

The identifier involved in identifying the patient may or may not have accounts, which may or may not have visits. An A47 (change patient identifier list) event is intended for changing the value of the internal identifier without affecting other subordinate identifiers. Any other subordinate identifiers that were previously associated with the “incorrect source identifier” are now associated with the “correct target identifier.” Specification of these other subordinate identifiers is not required.

This event and the message syntax do, however, allow for the specification of “new subordinate identifiers” (in addition to the *PID-3-patient identifier list* identifier). For those environments that may require changes to these other subordinate identifiers because of this A47 (change patient identifier list) event, it is required that the old and new identifiers be a “tightly coupled” pair.

Each superior identifier associated with this internal identifier level should have the same value in both the PID-2 and MRG-4 segments.

See Sections 3.5.2, “Merging patient/person information,” and 3.5.2.1.4, “Change identifier,” for a discussion of issues related to the implementation of change messages.

The fields included when this message is sent should be the fields pertinent to communicate this event. When demographic data in other fields change, it is recommended that the A08 (update patient information) event be used in conjunction with this message. However, all PID data associated with the “correct target identifier” are treated as updated information.

<u>ADT^A47</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
MRG	Merge Information	3

<u>ACK^A47</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.48 ADT/ACK - change alternate patient ID (event A48)

With HL7 v.2.3.1, event A48 is being retained for backward compatibility, corresponding with *PID-4-alternate Patient ID-PID*, which is also retained for backward compatibility. Event A47 (change patient identifier list) should be used instead. A change has been done at the alternate patient identifier level. That is, a *PID-4-alternate patient ID-PID* has been found to be incorrect and has been changed.

An A48 event is used to signal a change of an incorrectly assigned alternate patient identifier value. The “incorrect source alternate patient ID” value is stored in the MRG segment (*MRG-2-prior alternate patient ID*) and is to be changed to the “correct target alternate patient ID” value stored in the PID segment (*PID-4-alternate patient ID-PID*).

The alternate patient ID involved in identifying the patient may or may not have accounts, which may or may not have visits. An A48 (change alternate patient ID) event is intended for changing the value of the alternate patient identifier without affecting other subordinate identifiers. Any other subordinate identifiers that were previously associated with the “incorrect source alternate patient ID” are now associated with the “correct target alternate patient ID.” Specification of these other subordinate identifiers is not required.

This event and the message syntax do, however, allow for the specification of “new subordinate identifiers” (in addition to the *PID-4-alternate patient ID-PID* identifier). For those environments that may require changes to these other subordinate identifiers because of this A48 (change alternate patient ID) event, it is required that the old and new identifiers be a “tightly coupled” pair.

Each superior identifier associated with this alternate patient identifier level should have the same value in both the PID and MRG segments.

See Sections 3.5.2, “Merging patient/person information,” and 3.5.2.1.4, “Change identifier,” for a discussion of issues related to the implementation of change messages

The fields included when this message is sent should be the fields pertinent to communicate this event. When demographic data in other fields change, it is recommended that the A08 (update patient information) event be used in conjunction with this message. However, all PID data associated with the “correct target alternate ID” are treated as updated information.

<u>ADT^A48</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
MRG	Merge Information	3

<u>ACK^A48</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.49 ADT/ACK - change patient account number (event A49)

A change has been done at the account identifier level. That is, a *PID-18-patient account number* has been found to be incorrect and has been changed.

An A49 event is used to signal a change of an incorrectly assigned account number value. The “incorrect source account number” value is stored in the MRG segment (*MRG-3-prior patient account number*) and is to be changed to the “correct target account number” value stored in the PID segment (*PID-18-patient account number*).

The patient account identifier involved in identifying the account may or may not have visits. An A49 (change patient account number) event is intended for changing the value of the account identifier without affecting other subordinate identifiers. Any other subordinate identifiers that were previously associated with the “incorrect source account number” are now associated with the “correct target account number”. Specification of these other subordinate identifiers is not required.

This event and the message syntax do, however, allow for the specification of “new subordinate identifiers” (in addition to the *PID-18-patient account number* identifier). For those environments that may require changes to these other subordinate identifiers because of this A49 (change patient account number) event, it is required that the old and new identifiers be a “tightly coupled” pair.

Each superior identifier associated with this account identifier level should have the same value in both the PID and MRG segments.

See Sections 3.5.2, “Merging patient/person information,” and 3.5.2.1.4, “Change identifier,” for a discussion of issues related to the implementation of change messages.

The fields included when this message is sent should be the fields pertinent to communicate this event. When demographic data in other fields change, it is recommended that the A08 (update patient information) event be used in conjunction with this message. However, all PID data associated with the “correct target account number” are treated as updated information.

<u>ADT^A49</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
MRG	Merge Information	3

<u>ACK^A49</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error Information	2

3.2.50 ADT/ACK - change visit number (event A50)

A change has been done at the visit identifier level. That is, a *PVI-19-visit number* has been found to be incorrect and has been changed.

An A50 event is used to signal a change of an incorrectly assigned visit number value. The “incorrect source visit number” value is stored in the MRG segment (*MRG-5-prior visit number*) and is to be changed to the “correct target visit number” value stored in the PV1 segment (*PV1-19-visit number*).

Each superior identifier associated with this visit number identifier level should have the same value in both the PID and MRG segments.

See Sections 3.5.2, “Merging patient/person information,” and 3.5.2.1.4, “Change identifier,” for a discussion of issues related to the implementation of change messages.

The fields included when this message is sent should be the fields pertinent to communicate this event. When demographic data in other fields change, it is recommended that the A08 (update patient information) event be used in conjunction with this message. However, all PV1 data associated with the “Visit Number” are treated as updated information.

<u>ADT^A50</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
MRG	Merge Information	3
PV1	Patient Visit	3

<u>ACK^A50</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.2.51 ADT/ACK - change alternate visit ID (event A51)

A change has been done at the alternate visit identifier level. That is, a *PV1-50-alternate visit ID* has been found to be incorrect and has been changed.

An A51 event is used to signal a change of an incorrectly assigned alternate visit ID value. The “incorrect source alternate visit ID” value is stored in the MRG segment (*MRG-6-prior alternate visit ID*) and is to be changed to the “correct target alternate visit ID” value stored in the PV1 segment (*PV1-50-alternate visit ID*).

Each superior identifier associated with this alternate visit identifier level should have the same value in both the PID and MRG segments.

See Sections 3.5.2, “Merging patient/person information,” and 3.5.2.1.4, “Change identifier,” for a discussion of issues related to the implementation of change messages.

The fields included when this message is sent should be the fields pertinent to communicate this event. When demographic data in other fields change, it is recommended that the A08 (update patient information) event be used in conjunction with this message. However, all PV1 data associated with the “correct target alternate visit number” are treated as updated information.

<u>ADT^A51</u>	<u>ADT Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
MRG	Merge Information	3
PV1	Patient Visit	3

<u>ACK^A51</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

3.3 MESSAGE SEGMENTS

3.3.1 EVN - event type segment

The EVN segment is used to communicate necessary trigger event information to receiving applications. Valid event types for all chapters are contained in *HL7 table 0003 - Event type*.

Figure 3-1. EVN attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	3	ID	B		0003	00099	Event Type Code
2	26	TS	R			00100	Recorded Date/Time
3	26	TS	O			00101	Date/Time Planned Event
4	3	IS	O		0062	00102	Event Reason Code
5	60	XCN	O	Y	0188	00103	Operator ID
6	26	TS	O			01278	Event Occurred

3.3.1.0 EVN field definitions

3.3.1.1 Event type code (ID) 00099

Definition: ***This field has been retained for backward compatibility only.*** We recommend using the second component (trigger event) of *MSH-9-message type* to transmit event type code information. This field contains the events corresponding to the trigger events described in this section, e.g., admission, transfer, or registration. Refer to Chapter 2, *HL7 table 0003 - Event type* for valid values.

3.3.1.2 Recorded date/time (TS) 00100

Definition: Most systems will default to the system date/time when the transaction was entered, but they should also permit an override.

3.3.1.3 Date/time planned event (TS) 00101

Definition: This field contains the date/time that the event is planned. We recommend that the *PV2-8-expected admit date/time* and *PV2-9-expected discharge date/time* be used whenever possible.

3.3.1.4 Event reason code (IS) 00102

Definition: This field contains the reason for this event (e.g., patient request, physician order, census management, etc.). Refer to *user-defined table 0062 - Event reason* for suggested values.

User-defined Table 0062 - Event reason

Value	Description
01	Patient request
02	Physician order
03	Census management

3.3.1.5 Operator ID (XCN) 00103

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code(ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field identifies the individual responsible for triggering the event. *User-defined table 0188 - Operator ID* is used as the HL7 identifier for the user-defined table of values for this field.

3.3.1.6 Event occurred (TS) 01278

Definition: This field contains the date/time that the event actually occurred. For example, on a transfer (A02 (transfer a patient)), this field would contain the date/time the patient was actually transferred. On a cancellation event, this field should contain the date/time that the event being canceled occurred.

3.3.2 PID - patient identification segment

The PID segment is used by all applications as the primary means of communicating patient identification information. This segment contains permanent patient identifying and demographic information that, for the most part, is not likely to change frequently.

Figure 3-2. PID attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	SI	O			00104	Set ID - PID
2	20	CX	B			00105	Patient ID
3	20	CX	R	Y		00106	Patient Identifier List
4	20	CX	B	Y		00107	Alternate Patient ID - PID
5	48	XPN	R	Y		00108	Patient Name
6	48	XPN	O	Y		00109	Mother's Maiden Name
7	26	TS	O			00110	Date/Time of Birth
8	1	IS	O		0001	00111	Sex
9	48	XPN	O	Y		00112	Patient Alias
10	80	CE	O	Y	0005	00113	Race
11	106	XAD	O	Y		00114	Patient Address
12	4	IS	B		0289	00115	County Code
13	40	XTN	O	Y		00116	Phone Number - Home
14	40	XTN	O	Y		00117	Phone Number - Business
15	60	CE	O		0296	00118	Primary Language

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
16	80	CE	O		0002	00119	Marital Status
17	80	CE	O		0006	00120	Religion
18	20	CX	O			00121	Patient Account Number
19	16	ST	B			00122	SSN Number - Patient
20	25	DLN	O			00123	Driver's License Number - Patient
21	20	CX	O	Y		00124	Mother's Identifier
22	80	CE	O	Y	0189	00125	Ethnic Group
23	60	ST	O			00126	Birth Place
24	1	ID	O		0136	00127	Multiple Birth Indicator
25	2	NM	O			00128	Birth Order
26	80	CE	O	Y	0171	00129	Citizenship
27	60	CE	O		0172	00130	Veterans Military Status
28	80	CE	O		0212	00739	Nationality
29	26	TS	O			00740	Patient Death Date and Time
30	1	ID	O		0136	00741	Patient Death Indicator

3.3.2.0 PID field definitions

3.3.2.1 Set ID - PID (SI) 00104

Definition: This field contains the number that identifies this transaction. For the first occurrence of the segment, the sequence number shall be one, for the second occurrence, the sequence number shall be two, etc.

3.3.2.2 Patient ID (CX) 00105

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility (HD)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: ***This field has been retained for backward compatibility only.*** With HL7 v2.3.1, the arbitrary term of “external ID” has been removed from the name of this field. The repetition, assigning authority, facility, and identifier type code attributes of *PID-3-patient identifier list* allow for distinctive identifier representation. This field remains for systems with a negotiated understanding of “external.” It is recommended to use *PID-3-patient identifier list* for all patient identifiers.

When used for backward compatibility, this field is valued when the patient is from another institution, outside office, etc., and the identifier used by that institution can be shown in this field. This may be a number that multiple disparate corporations or facilities share. Refer to *HL7 table 0061 - Check digit scheme* in Chapter 2.

3.3.2.3 Patient identifier list (CX) 00106

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility (HD)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

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Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the list of identifiers (one or more) used by the facility to uniquely identify a patient (e.g., medical record number, billing number, birth registry, national unique individual identifier, etc.). Refer to *HL7 table 0061 - Check digit scheme* for valid values. With HL7 v2.3.1, the arbitrary term of “internal ID” has been removed from the name of this field for clarity.

3.3.2.4 Alternate patient ID - PID (CX) 00107

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility (HD)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: ***This field has been retained for backward compatibility only.*** It is recommended to use *PID-3-patient identifier list* for all patient identifiers. When used for backward compatibility, this field contains the alternate, temporary, or pending optional patient identifier to be used if needed - or additional numbers that may be required to identify a patient. This field may be used to convey multiple patient IDs when more than one exist for a patient. Possible contents might include a visit number, a visit date, or a Social Security Number.

3.3.2.5 Patient name (XPN) 00108

Components: <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <name type code (ID)> ^ <name representation code (ID)>

Definition: This field contains the legal name of the patient. All other names for the patient should be sent in *PID-9-patient alias*. Therefore, the name type code in this field should be “L - Legal.” Refer to *HL7 table 0200 - Name type* for valid values. Repetition of this field is allowed for representing the same name in different character sets. Please refer to the PN data type.

3.3.2.6 Mother's maiden name (XPN) 00109

Components: <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <name type code (ID)> ^ <name representation code (ID)>

Definition: This field contains the family name under which the mother was born (i.e., before marriage). It is used to distinguish between patients with the same last name.

3.3.2.7 Date/time of birth (TS) 00110

Definition: This field contains the patient's date and time of birth.

3.3.2.8 Sex (IS) 00111

Definition: This field contains the patient's sex. Refer to *user-defined table 0001 - Sex* for suggested values.

User-defined Table 0001 - Sex

Value	Description
F	Female
M	Male
O	Other
U	Unknown

3.3.2.9 Patient alias (XPN) 00112

Components: <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <name type code (ID)> ^ <name representation code (ID)>

Definition: This field contains the name(s) by which the patient has been known at some time. Refer to *HL7 table 0200 - Name type* for valid values.

3.3.2.10 Race (CE) 00113

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field refers to the patient's race. *User-defined table 0005 - Race* is used as the HL7 identifier or the user-defined table of values for this field. The second triplet of the CE data type for race (alternate identifier, alternate text, and name of alternate coding system) is reserved for governmentally assigned codes.

3.3.2.11 Patient address (XAD) 00114

Components: <street address (ST)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code (ST)> ^ <country (ID)> ^ <address type (ID)> ^ <other geographic designation (ST)> ^ <county/parish code (IS)> ^ <census tract (IS)> ^ <address representation code (ID)>

Definition: This field contains the mailing address of the patient. Address type codes are defined by HL7; see *HL7 table 0190 - Address type*. Multiple addresses for the same person may be sent in the following sequence: The primary mailing address must be sent first in the sequence (for backward compatibility); if the mailing address is not sent, then a repeat delimiter must be sent in the first sequence.

3.3.2.12 County code (IS) 00115

Definition: ***This field has been retained for backward compatibility.*** This field contains the patient's county code. The county can now be supported in the county/parish code component of the XAD data type (*PID-11-patient address*). *User-defined table 0289 - County/parish* is used as the HL7 identifier for the user-defined table of values for this field.

3.3.2.13 Phone number - home (XTN) 00116

Components: [NNN] [(999)]999-9999 [X999999] [B999999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Definition: This field contains the patient's personal phone numbers. All personal phone numbers for the patient are sent in the following sequence. The first sequence is considered the primary number (for backward compatibility). If the primary number is not sent, then a repeat delimiter is sent in the first sequence.

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Refer to *HL7 tables 0201 - Telecommunication use code* and *0202 - Telecommunication equipment type* for valid values.

3.3.2.14 Phone number - business (XTN) 00117

Components: [NNN] [(999)]999-9999 [X99999] [B99999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Definition: This field contains the patient's business telephone numbers. All business numbers for the patient are sent in the following sequence. The first sequence is considered the patient's primary business phone number (for backward compatibility). If the primary business phone number is not sent, then a repeat delimiter must be sent in the first sequence. Refer to *HL7 tables 0201 - Telecommunication use code* and *0202 - Telecommunication equipment type* for valid values.

3.3.2.15 Primary language (CE) 00118

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the patient's primary language. HL7 recommends using ISO table 639 as the suggested values in *user-defined table 0296 - Language*.

3.3.2.16 Marital status (CE) 00119

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the patient's marital status. Refer to *user-defined table 0002 - Marital status* for suggested values.

User-defined Table 0002 - Marital status

Value	Description
A	Separated
D	Divorced
M	Married
S	Single
W	Widowed

3.3.2.17 Religion (CE) 00120

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the patient's religion, for example, Baptist, Catholic, Methodist, etc. *User-defined table 0006 - Religion* is used as the HL7 identifier for the user-defined table of values for this field..

3.3.2.18 Patient account number (CX) 00121

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility (HD)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the patient account number assigned by accounting to which all charges, payments, etc., are recorded. It is used to identify the patient's account. Refer to *HL7 table 0061 - Check digit scheme* in Chapter 2.

3.3.2.19 SSN number - patient (ST) 00122

Definition: ***This field has been retained for backward compatibility only.*** It is recommended to use *PID-3-patient identifier list* for all patient identifiers. However, in order to maintain backward compatibility, this field should also be populated. You may additionally report the SSN number in *PID-3 patient identifier list*. When used for backward compatibility, this field contains the patient's social security number. This number may also be a RR retirement number.

3.3.2.20 Driver's license number - patient (DLN) 00123

Components: <license number (ST)> ^ <issuing state, province, country (IS)> ^ <expiration date (DT)>

Definition: This field contains the patient's driver's license number. Some sites may use this number as a unique identifier of the patient. The default of the second component is the state in which the patient's license is registered.

3.3.2.21 Mother's identifier (CX) 00124

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility (HD)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field is used, for example, as a link field for newborns. Typically a patient ID or account number may be used. This field can contain multiple identifiers for the same mother. Refer to *HL7 table 0061 - Check digit scheme* as defined in Chapter 2.

3.3.2.22 Ethnic group (CE) 00125

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field further defines the patient's ancestry. *User-defined table 0189 - Ethnic group* is used as the HL7 identifier for the user-defined table of values for this field. ERISA has a published list of ethnic classifications that may be used by local agreement at a site. The second triplet of the CE data type for ethnic group (alternate identifier, alternate text, and name of alternate coding system) is reserved for governmentally assigned codes.

3.3.2.23 Birth place (ST) 00126

Definition: This field indicates the location of the patient's birth.

3.3.2.24 Multiple birth indicator (ID) 00127

Definition: This field indicates whether the patient was part of a multiple birth. Refer to *HL7 table 0136 - Yes/No indicator* as described in Chapter 2.

3.3.2.25 Birth order (NM) 00128

Definition: When a patient was part of a multiple birth, a value (number) indicating the patient's birth order is entered in this field.

3.3.2.26 Citizenship (CE) 00129

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the patient's country of citizenship. HL7 recommends using ISO table 3166 as the suggested values in *user-defined table 0171 - Citizenship*.

3.3.2.27 Veterans military status (CE) 00130

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the military status assigned to a veteran. *User-defined table 0172 - Veterans military status* is used as the HL7 identifier for the user-defined table of values for this field.

3.3.2.28 Nationality (CE) 00739

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains a code that identifies the nation or national grouping to which the person belongs. This information may be different from a person's citizenship in countries in which multiple nationalities are recognized (for example, Spain: Basque, Catalan, etc.). HL7 recommends using ISO table 3166 as the suggested values in *user-defined table 0212 - Nationality*.

3.3.2.29 Patient death date and time (TS) 00740

Definition: This field contains the date and time at which the patient death occurred.

3.3.2.30 Patient death indicator (ID) 00741

Definition: This field indicates whether or not the patient is deceased. Refer to Chapter 2, *HL7 table 0136 - Yes/no indicator* for valid values.

3.3.2.31 Usage notes: PID patient identification

The assigning authority, the fourth component of the patient identifiers, is a HD data type that is uniquely associated with the assigning authority that originally assigned the number. A given institution, or group of intercommunicating institutions, should establish a list of assigning authorities that may be potential assignors of patient identification (and other important identification) numbers. The list will be one of the institution's master dictionary lists. Since third parties (other than the assignors of patient identification numbers) may send or receive HL7 messages containing patient identification numbers, the assigning

authority in the patient identification numbers may not be the same as the sending and receiving systems identified in the MSH. The assigning authority must be unique across applications at a given site. This field is required in HL7 implementations that have more than a single Patient Administration application assigning such numbers. The assigning authority and identifier type code are strongly recommended for all CX data types.

With HL7 v2.3, the nomenclature for the fourth component of the patient identifiers was changed from “assigning facility ID” to “assigning authority”. While the identifier may be unique to a given facility (for example, a medical record assigned by facility A in Hospital XYZ), the identifier might also be assigned at a system level (for example a corporate person index or enterprise number spanning multiple facilities) or by a government entity, for example a nationally assigned unique individual identifier. While a facility is usually an assigning authority, not all assigning authorities are facilities. Therefore, the fourth component is referred to as an assigning authority, but retains backward compatibility using the construct of the HD data type (see the note in section 2.8.18). Additionally, CX data types support the use of assigning facility (HD) as the sixth component.

3.3.3 PV1 - patient visit segment

The PV1 segment is used by Registration/Patient Administration applications to communicate information on a visit-specific basis. This segment can be used to send multiple-visit statistic records to the same patient account or single-visit records to more than one account. Individual sites must determine the use for this segment.

Figure 3-3. PV1 attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	SI	O			00131	Set ID - PV1
2	1	IS	R		0004	00132	Patient Class
3	80	PL	O			00133	Assigned Patient Location
4	2	IS	O		0007	00134	Admission Type
5	20	CX	O			00135	Preadmit Number
6	80	PL	O			00136	Prior Patient Location
7	60	XCN	O	Y	0010	00137	Attending Doctor
8	60	XCN	O	Y	0010	00138	Referring Doctor
9	60	XCN	O	Y	0010	00139	Consulting Doctor
10	3	IS	O		0069	00140	Hospital Service
11	80	PL	O			00141	Temporary Location
12	2	IS	O		0087	00142	Preadmit Test Indicator
13	2	IS	O		0092	00143	Re-admission Indicator
14	3	IS	O		0023	00144	Admit Source
15	2	IS	O	Y	0009	00145	Ambulatory Status
16	2	IS	O		0099	00146	VIP Indicator
17	60	XCN	O	Y	0010	00147	Admitting Doctor
18	2	IS	O		0018	00148	Patient Type
19	20	CX	O			00149	Visit Number
20	50	FC	O	Y	0064	00150	Financial Class
21	2	IS	O		0032	00151	Charge Price Indicator
22	2	IS	O		0045	00152	Courtesy Code
23	2	IS	O		0046	00153	Credit Rating
24	2	IS	O	Y	0044	00154	Contract Code
25	8	DT	O	Y		00155	Contract Effective Date
26	12	NM	O	Y		00156	Contract Amount
27	3	NM	O	Y		00157	Contract Period

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SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
28	2	IS	O		0073	00158	Interest Code
29	1	IS	O		0110	00159	Transfer to Bad Debt Code
30	8	DT	O			00160	Transfer to Bad Debt Date
31	10	IS	O		0021	00161	Bad Debt Agency Code
32	12	NM	O			00162	Bad Debt Transfer Amount
33	12	NM	O			00163	Bad Debt Recovery Amount
34	1	IS	O		0111	00164	Delete Account Indicator
35	8	DT	O			00165	Delete Account Date
36	3	IS	O		0112	00166	Discharge Disposition
37	25	CM	O		0113	00167	Discharged to Location
38	80	CE	O		0114	00168	Diet Type
39	2	IS	O		0115	00169	Servicing Facility
40	1	IS	B		0116	00170	Bed Status
41	2	IS	O		0117	00171	Account Status
42	80	PL	O			00172	Pending Location
43	80	PL	O			00173	Prior Temporary Location
44	26	TS	O			00174	Admit Date/Time
45	26	TS	O			00175	Discharge Date/Time
46	12	NM	O			00176	Current Patient Balance
47	12	NM	O			00177	Total Charges
48	12	NM	O			00178	Total Adjustments
49	12	NM	O			00179	Total Payments
50	20	CX	O		0203	00180	Alternate Visit ID
51	1	IS	O		0326	01226	Visit Indicator
52	60	XCN	O	Y	0010	01274	Other Healthcare Provider

3.3.3.0 PV1 field definitions

3.3.3.1 Set ID - PV1 (SI) 00131

Definition: This field contains the number that identifies this transaction. For the first occurrence of the segment, the sequence number shall be one, for the second occurrence, the sequence number shall be two, etc.

3.3.3.2 Patient class (IS) 00132

Definition: This field is used by systems to categorize patients by site. It does not have a consistent industry-wide definition. It is subject to site-specific variations. Refer to *user-defined table 0004 - Patient class* for suggested values.

User-defined Table 0004 - Patient class

Value	Description
E	Emergency
I	Inpatient
O	Outpatient
P	Preadmit
R	Recurring patient
B	Obstetrics

3.3.3.3 Assigned patient location (PL) 00133

Components: <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <person location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <location description (ST)>

Subcomponents of facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the patient's initial assigned location or the location to which the patient is being moved. The first component may be the nursing station for inpatient locations, or clinic, department, or home for locations other than inpatient. For canceling a transaction or discharging a patient, the current location (after the cancellation event or before the discharge event) should be in this field. If a value exists in the fifth component (location status), it supersedes the value in *PV1-40-bed status*.

3.3.3.4 Admission type (IS) 00134

Definition: This field indicates the circumstances under which the patient was or will be admitted. Refer to *user-defined Table 0007 - Admission type* for suggested values.

User-defined Table 0007 - Admission type

Value	Description
A	Accident
E	Emergency
L	Labor and Delivery
R	Routine

3.3.3.5 Preadmit number (CX) 00135

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility (HD)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field uniquely identifies the patient's pre-admit account. Some systems will continue to use the pre-admit number as the billing number after the patient has been admitted. ***For backward compatibility, a ST data type can be sent;*** however HL7 recommends use of the CX data type, like the account number, for new implementations. The assigning authority and identifier type code are strongly recommended for all CX data types.

3.3.3.6 Prior patient location (PL) 00136

Components: <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <person location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <location description (ST)>

Subcomponents of facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the prior patient location if the patient is being transferred. The old location is null if the patient is new. If a value exists in the fifth component (location status), it supersedes the value in *PV1-40-bed status*.

3.3.3.7 Attending doctor (XCN) 00137

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code(ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the attending physician information. Multiple names and identifiers for the same physician may be sent. The field sequences are not used to indicate multiple attending doctors. The legal name must be sent in the first sequence. If the legal name is not sent, then a repeat delimiter must be sent in the first sequence. Depending on local agreements, either ID or the name may be absent in this field. *User-defined table 0010 - Physician ID* is used as the HL7 identifier for the user-defined table values for this field.

3.3.3.8 Referring doctor (XCN) 00138

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code(ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the referring physician information. Multiple names and identifiers for the same physician may be sent. The field sequences are not used to indicate multiple referring doctors. The legal name must be sent in the first sequence. If the legal name is not sent, then a repeat delimiter must be sent in the first sequence. Depending on local agreements, either the ID or the name may be absent from this field. Refer to *user-defined table 0010 - Physician ID* for suggested values.

3.3.3.9 Consulting doctor (XCN) 00139

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code(ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the consulting physician information. The field sequences are used to indicate multiple consulting doctors. Depending on local agreements, either the ID or the name may be absent from this field. *User-defined table 0010 - Physician ID* is used as the HL7 identifier for the user-defined table of values for this field.

3.3.3.10 Hospital service (IS) 00140

Definition: This field contains the treatment or type of surgery that the patient is scheduled to receive. It is a required field with trigger events A01 (admit/visit notification), A02 (transfer a patient), A14 (pending admit), A15 (pending transfer). *User-defined table 0069 - Hospital service* is used as the HL7 identifier for the user-defined table of values for this field.

3.3.3.11 Temporary location (PL) 00141

Components: <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <person location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <location description (ST)>

Subcomponents of facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains a location other than the assigned location required for a temporary period of time (e.g., OR). If a value exists in the fifth component (location status), it supersedes the value *in PVI-40-bed status*.

3.3.3.12 Preadmit test indicator (IS) 00142

Definition: This field indicates whether the patient must have pre-admission testing done in order to be admitted. *User-defined table 0087 - Pre-admit test indicator* is used as the HL7 identifier for the user-defined table of values for this field.

3.3.3.13 Re-admission indicator (IS) 00143

Definition: This field indicates that a patient is being re-admitted to the facility and gives the circumstances. We suggest using “**R**” for readmission or else null. Refer to *user-defined table 0092 - Re-admission indicator* for suggested values.

3.3.3.14 Admit source (IS) 00144

Definition: This field indicates where the patient was admitted. Refer to *user-defined table 0023 - Admit source* for suggested values. This field is used on UB92 FL19. The UB codes listed as examples are not an exhaustive or current list; refer to a UB specification for additional information.

Note: The official title of UB is “National Uniform Billing Data Element Specifications.” Most of the codes added came from the UB-92 specification, but some came from the UB-82.

User-defined Table 0023 - Admit source

Value	Description
1	Physician referral
2	Clinic referral
3	HMO referral
4	Transfer from a hospital
5	Transfer from a skilled nursing facility
6	Transfer from another health care facility
7	Emergency room
8	Court/law enforcement

Value	Description
9	Information not available

3.3.3.15 Ambulatory status (IS) 00145

Definition: This field indicates any permanent or transient handicapped conditions. Refer to *user-defined table 0009 - Ambulatory status* for suggested entries.

User-defined Table 0009 - Ambulatory status

Value	Description
A0	No functional limitations
A1	Ambulates with assistive device
A2	Wheelchair/stretchers bound
A3	Comatose; non-responsive
A4	Disoriented
A5	Vision impaired
A6	Hearing impaired
A7	Speech impaired
A8	Non-English speaking
A9	Functional level unknown
B1	Oxygen therapy
B2	Special equipment (tubes, IVs, catheters)
B3	Amputee
B4	Mastectomy
B5	Paraplegic
B6	Pregnant

3.3.3.16 VIP indicator (IS) 00146

Definition: This field identifies the type of VIP. *User-defined table 0099 - VIP indicator* is used as the HL7 identifier for the user-defined table of values for this field.

3.3.3.17 Admitting doctor (XCN) 00147

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code(ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the admitting physician information. Multiple names and identifiers for the same physician may be sent. The field sequences are not used to indicate multiple admitting doctors. The

legal name must be sent in the first sequence. If the legal name is not sent, then a repeat delimiter must be sent in the first sequence. By local agreement, the name or ID may be absent in this field. *User-defined table 0010 - Physician ID* is used as the HL7 identifier for the user-defined table of values for this field.

3.3.3.18 Patient type (IS) 00148

Definition: This field contains site-specific values that identify the patient type. *User-defined table 0018 - Patient type* is used as the HL7 identifier for the user-defined table of values for this field.

3.3.3.19 Visit number (CX) 00149

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility (HD)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: **For backward compatibility**, a NM data type may be sent, but HL7 recommends that new implementations use the CX data type. This field contains the unique number assigned to each patient visit. The assigning authority and identifier type code are strongly recommended for all CX data types.

3.3.3.20 Financial class (FC) 00150

Components: <financial class (IS)> ^ <effective date (TS)>

Definition: This field contains the financial class(es) assigned to the patient for the purpose of identifying sources of reimbursement. *User-defined table 0064 - Financial class* is used as the HL7 identifier for the user-defined table of values for this field.

3.3.3.21 Charge price indicator (IS) 00151

Definition: This field contains the code used to determine which price schedule is to be used for room and bed charges. *User-defined table 0032 - Charge/price indicator* is used as the HL7 identifier for the user-defined table of values for this field.

3.3.3.22 Courtesy code (IS) 00152

Definition: This field indicates whether the patient will be extended certain special courtesies. *User-defined table 0045 - Courtesy code* is used as the HL7 identifier for the user-defined table of values for this field.

3.3.3.23 Credit rating (IS) 00153

Definition: This field contains the user-defined code to determine past credit experience. *User-defined table 0046 - Credit rating* is used as the HL7 identifier for the user-defined table of values for this field.

3.3.3.24 Contract code (IS) 00154

Definition: This field identifies the type of contract entered into by the facility and the guarantor for the purpose of settling outstanding account balances. *User-defined table 0044 - Contract code* is used as the HL7 identifier for the user-defined table of values for this field.

3.3.3.25 Contract effective date (DT) 00155

Definition: This field contains the date that the contract is to start or started.

3.3.3.26 Contract amount (NM) 00156

Definition: This field contains the amount to be paid by the guarantor each period according to the contract.

3.3.3.27 Contract period (NM) 00157

Definition: This field specifies the duration of the contract for user-defined periods.

3.3.3.28 Interest code (IS) 00158

Definition: This field indicates the amount of interest that will be charged the guarantor on any outstanding amounts. *User-defined table 0073 - Interest rate code* is used as the HL7 identifier for the user-defined table of values for this field.

3.3.3.29 Transfer to bad debt code (IS) 00159

Definition: This field indicates that the account was transferred to bad debts and gives the reason. *User-defined table 0110 - Transfer to bad debt code* is used as the HL7 identifier for the user-defined table of values for this field.

3.3.3.30 Transfer to bad debt date (DT) 00160

Definition: This field contains the date that the account was transferred to a bad debt status.

3.3.3.31 Bad debt agency code (IS) 00161

Definition: ***This field can be used as a ST type for backward compatibility.*** This field uniquely identifies the bad debt agency to which the account was transferred. This code is site defined. One possible implementation would be to edit against a table such as *user-defined table 0021 - Bad debt agency code*; however, this is not required.

3.3.3.32 Bad debt transfer amount (NM) 00162

Definition: This field contains the amount that was transferred to a bad debt status.

3.3.3.33 Bad debt recovery amount (NM) 00163

Definition: This field contains the amount recovered from the guarantor on the account.

3.3.3.34 Delete account indicator (IS) 00164

Definition: This field indicates that the account was deleted from the file and gives the reason. *User-defined table 0111 - Delete account code* is used as the HL7 identifier for the user-defined table of values.

3.3.3.35 Delete account date (DT) 00165

Definition: This field contains the date that the account was deleted from the file.

3.3.3.36 Discharge disposition (IS) 00166

Definition: This field contains the disposition of the patient at time of discharge (i.e., discharged to home, expired, etc.). *Refer to user-defined table 0112 - Discharged disposition* for suggested values. This field is used on UB92 FL22. The UB codes listed as examples are not an exhaustive or current list; refer to a UB specification for additional information.

User-defined Table 0112 - Discharge disposition

Value	Description
01	Discharged to home or self care (routine discharge)
02	Discharged/transferred to another short term general hospital for inpatient care
03	Discharged/transferred to skilled nursing facility (SNF)
04	Discharged/transferred to an intermediate care facility (ICF)
05	Discharged/transferred to another type of institution for inpatient care or referred for outpatient services to another institution
06	Discharged/transferred to home under care of organized home health service organization
07	Left against medical advice or discontinued care
08	Discharged/transferred to home under care of Home IV provider
09	Admitted as an inpatient to this hospital
10	Discharge to be defined at state level, if necessary
11	Discharge to be defined at state level, if necessary
12	Discharge to be defined at state level, if necessary
13	Discharge to be defined at state level, if necessary
14	Discharge to be defined at state level, if necessary
15	Discharge to be defined at state level, if necessary
16	Discharge to be defined at state level, if necessary
17	Discharge to be defined at state level, if necessary
18	Discharge to be defined at state level, if necessary
19	Discharge to be defined at state level, if necessary
20	Expired
21	Expired to be defined at state level, if necessary
22	Expired to be defined at state level, if necessary
23	Expired to be defined at state level, if necessary
24	Expired to be defined at state level, if necessary
25	Expired to be defined at state level, if necessary

Value	Description
26	Expired to be defined at state level, if necessary
27	Expired to be defined at state level, if necessary
28	Expired to be defined at state level, if necessary
29	Expired to be defined at state level, if necessary
30	Still patient or expected to return for outpatient services
31	Still patient to be defined at state level, if necessary
32	Still patient to be defined at state level, if necessary
33	Still patient to be defined at state level, if necessary
34	Still patient to be defined at state level, if necessary
35	Still patient to be defined at state level, if necessary
36	Still patient to be defined at state level, if necessary
37	Still patient to be defined at state level, if necessary
38	Still patient to be defined at state level, if necessary
39	Still patient to be defined at state level, if necessary
40	Expired at home
41	Expired in a medical facility; e.g., hospital, SNF, ICF, or free standing hospice
42	Expired - place unknown

3.3.3.37 Discharged to location (CM) 00167

Components: <discharge location (IS)> ^ <effective date (TS)>

Definition: This field indicates a facility to which the patient was discharged. *User-defined table 0113 - Discharged to location* is used as the HL7 identifier for the user-defined table of values for this field.

3.3.3.38 Diet type (CE) 00168

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field indicates a special diet type for a patient. *User-defined table 0114 - Diet type* is used as the HL7 identifier for this field

3.3.3.39 Servicing facility (IS) 00169

Definition: This field is used in a multiple facility environment to indicate the facility with which this visit is associated. *User-defined table 0115 - Servicing facility* is used as the HL7 identifier for the user-defined table of values for this field.

An optional fourth component, the facility ID, may be valued in each individual location field in PV1, instead of placing it here.

3.3.3.40 Bed status (IS) 00170

Definition: ***This field has been retained for backward compatibility only.*** This field contains the status of the bed. Refer to *user-defined table 0116 - Bed status* for suggested values.

User-defined Table 0116 - Bed status

Value	Description
C	Closed
H	Housekeeping
O	Occupied
U	Unoccupied
K	Contaminated
I	Isolated

An optional fifth component, location status, may be valued in each individual location field in PV1, instead of placing it here.

3.3.3.41 Account status (IS) 00171

Definition: This field contains the account status. *User-defined table 0117 - Account status* is used as the HL7 identifier for the user-defined table of values for this field.

3.3.3.42 Pending location (PL) 00172

Components: <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <person location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <location description (ST)>

Subcomponents of facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field indicates the point of care, room, bed, facility ID, and bed status to which the patient may be moved. The first component may be the nursing station for inpatient locations, or the clinic, department, or home for locations other than inpatient. If a value exists in the fifth component (location status), it supersedes the value in *PV1-40-bed status*.

3.3.3.43 Prior temporary location (PL) 00173

Components: <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <person location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <location description (ST)>

Subcomponents of facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field is used to reflect the patient's temporary location (such as the OR or X-RAY) prior to a transfer from a temporary location to an actual location, or from a temporary location to another temporary location. The first component may be the nursing station for inpatient locations, or the clinic, department, or home for locations other than inpatient. If a value exists in the fifth component (location status), it supersedes the value in *PV1-40-bed status*.

3.3.3.44 Admit date/time (TS) 00174

Definition: This field contains the admit date/time. It is to be used if the event date/time is different than the admit date and time, i.e., a retroactive update. This field is also used to reflect the date/time of an outpatient/emergency patient registration.

3.3.3.45 Discharge date/time (TS) 00175

Definition: This field contains the discharge date/time. It is to be used if the event date/time is different than the discharge date and time, that is, a retroactive update. This field is also used to reflect the date/time of an outpatient/emergency patient discharge.

3.3.3.46 Current patient balance (NM) 00176

Definition: This field contains the visit balance due.

3.3.3.47 Total charges (NM) 00177

Definition: This field contains the total visit charges.

3.3.3.48 Total adjustments (NM) 00178

Definition: This field contains the total adjustments for visit.

3.3.3.49 Total payments (NM) 00179

Definition: This field contains the total payments for visit.

3.3.3.50 Alternate visit ID (CX) 00180

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility (HD)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the alternative, temporary, or pending optional visit ID number to be used if needed. Refer to *HL7 table 0061 - Check digit scheme*, as defined in Chapter 2, for valid values. Refer to *user-defined table 0203 - Identifier type* for suggested values. The assigning authority and identifier type code are strongly recommended for all CX data types.

3.3.3.51 Visit indicator (IS) 01226

Definition: This field specifies the level on which data are being sent. It is the indicator used to send data at two levels, visit and account. HL7 recommends sending an 'A' or no value when the data in the message are at the account level, or 'V' to indicate that the data sent in the message are at the visit level. Refer to *user-defined table 0326 - Visit indicator* for suggested values.

User-defined Table 0326 - Visit indicator

Value	Description
A	Account level (default)
V	Visit level

3.3.3.52 Other healthcare provider (XCN) 01274

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code(ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the other healthcare providers (e.g., Nurse care practitioner, midwife, physician assistant). Multiple healthcare providers can be sent. Depending on local agreements, either the ID or the name may be absent from this field. Use values in *user-defined table 0010 - Physician ID* for first component.

3.3.3.53 PV1 usage notes

The facility ID, the optional fourth component of each patient location field, is a HD data type that is uniquely associated with the facility containing the location. A given institution, or group of intercommunicating institutions, should establish a list of facilities that may be potential assignors of patient locations. The list will be one of the institution's master dictionary lists. Since third parties other than the assignors of patient locations may send or receive HL7 messages containing patient locations, the facility ID in the patient location may not be the same as that implied by the sending and receiving systems identified in the MSH. The facility ID must be unique across facilities at a given site. This field is required for HL7 implementations that have more than a single facility with bed locations, since the same <point of care> ^ <room> ^ <bed> combination may exist at more than one facility.

3.3.4 PV2 - patient visit - additional information segment

The PV2 segment is a continuation of visit-specific information contained on the PV1 segment.

Figure 3-4. PV2 attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	80	PL	C	Y	0129	00181	Prior Pending Location
2	60	CE	O			00182	Accommodation Code
3	60	CE	O			00183	Admit Reason
4	60	CE	O			00184	Transfer Reason
5	25	ST	O		0130	00185	Patient Valuables
6	25	ST	O			00186	Patient Valuables Location
7	2	IS	O			00187	Visit User Code
8	26	TS	O			00188	Expected Admit Date/Time
9	26	TS	O			00189	Expected Discharge Date/Time
10	3	NM	O			00711	Estimated Length of Inpatient Stay
11	3	NM	O			00712	Actual Length of Inpatient Stay

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SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
12	50	ST	O	Y		00713	Visit Description
13	90	XCN	O			00714	Referral Source Code
14	8	DT	O			00715	Previous Service Date
15	1	ID	O		0136	00716	Employment Illness Related Indicator
16	1	IS	O		0213	00717	Purge Status Code
17	8	DT	O			00718	Purge Status Date
18	2	IS	O		0214	00719	Special Program Code
19	1	ID	O		0136	00720	Retention Indicator
20	1	NM	O			00721	Expected Number of Insurance Plans
21	1	IS	O		0215	00722	Visit Publicity Code
22	1	ID	O		0136	00723	Visit Protection Indicator
23	90	XON	O	Y		00724	Clinic Organization Name
24	2	IS	O		0216	00725	Patient Status Code
25	1	IS	O		0217	00726	Visit Priority Code
26	8	DT	O			00727	Previous Treatment Date
27	2	IS	O		0112	00728	Expected Discharge Disposition
28	8	DT	O			00729	Signature on File Date
29	8	DT	O			00730	First Similar Illness Date
30	80	CE	O		0218	00731	Patient Charge Adjustment Code
31	2	IS	O		0219	00732	Recurring Service Code
32	1	ID	O		0136	00733	Billing Media Code
33	26	TS	O			00734	Expected Surgery Date & Time
34	1	ID	O		0136	00735	Military Partnership Code
35	1	ID	O		0136	00736	Military Non-Availability Code
36	1	ID	O		0136	00737	Newborn Baby Indicator
37	1	ID	O		0136	00738	Baby Detained Indicator

3.3.4.0 PV2 field definitions

3.3.4.1 Prior pending location (PL) 00181

Components: <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <person location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <location description (ST)>

Subcomponents of facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field is required for cancel pending transfer (A27 (cancel pending admit)) messages. In all other events it is optional.

3.3.4.2 Accommodation code (CE) 00182

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field indicates the specific patient accommodations for this visit. *User-defined table 0129 - Accommodation code* is used as the HL7 identifier for the user-defined table for values for this field.

3.3.4.3 Admit reason (CE) 00183

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the short description of the reason for patient admission.

3.3.4.4 Transfer reason (CE) 00184

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the short description of the reason for a patient location change.

3.3.4.5 Patient valuables (ST) 00185

Definition: This field contains the short description of patient valuables checked in during admission.

3.3.4.6 Patient valuables location (ST) 00186

Definition: This field indicates the location of the patient's valuables.

3.3.4.7 Visit user code (IS) 00187

Definition: This field further categorizes a patient's visit with respect to an individual institution's needs (e.g., teaching flag = TE, indicating the patient is a teaching case). *User-defined table 0130 - Visit user code* is used as the HL7 identifier or the user-defined table of values for this field.

3.3.4.8 Expected admit date/time (TS) 00188

Definition: This field contains the date and time that the patient is expected to be admitted. This field is also used to reflect the date/time of an outpatient/emergency patient registration.

3.3.4.9 Expected discharge date/time (TS) 00189

Definition: This field contains the date and time that the patient is expected to be discharged. This is a non-event related date used by ancillaries to determine more accurately the projected workloads. This field is also used to reflect the anticipated discharge date/time of an outpatient/emergency patient, or an inpatient.

3.3.4.10 Estimated length of inpatient stay (NM) 00711

Definition: This field specifies the estimated days of inpatient stays.

3.3.4.11 Actual length of inpatient stay (NM) 00712

Definition: This field contains the actual days of inpatient stays. The actual length of the inpatient stay may not be calculated from the admission and discharge dates because of possible leaves of absence.

3.3.4.12 Visit description (ST) 00713

Definition: This field contains a brief user-defined description of the visit.

3.3.4.13 Referral source (XCN) 00714

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code(ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the name and the identification numbers of the person or organization that made the referral. This person/organization is not the same as the referring doctor. For example, Joe Smith referred me to the Clinic (or to Dr. Jones at the Clinic).

3.3.4.14 Previous service date (DT) 00715

Definition: This field contains the date of previous service for the same recurring condition. This may be a required field for billing certain illnesses (e.g., accident related) to a third party.

3.3.4.15 Employment illness related indicator (ID) 00716

Definition: This field specifies whether a patient's illness was job-related. Refer to Chapter 2, *HL7 table 0136 - Yes/no indicator* for valid values.

3.3.4.16 Purge status code (IS) 00717

Definition: This field contains the purge status code for the account. It is used by the application program to determine purge processing. Refer to *user-defined table 0213 - Purge status* for suggested values.

User-defined table 0213 - Purge status

Value	Description
P	Marked for purge. User is no longer able to update the visit.
D	The visit is marked for deletion and the user cannot enter new data against it.
I	The visit is marked inactive and the user cannot enter new data against it.

3.3.4.17 Purge status date (DT) 00718

Definition: This field contains the date on which the data will be purged from the system.

3.3.4.18 Special program code (IS) 00719

Definition: This field designates the specific health insurance program for a visit required for healthcare reimbursement. Examples include Child Health Assistance, Elective Surgery Program, Family Planning, etc. *User-defined table 0214 - Special program codes* is used as the HL7 identifier for the user-defined table of values for this field.

3.3.4.19 Retention indicator (ID) 00720

Definition: This field allows the user to control the financial and demographic purge processes at the visit. It is used to preserve demographic and financial data on specific, high priority visits. Refer to Chapter 2, *HL7 table 0136 - Yes/no indicator* for valid values.

3.3.4.20 Expected number of insurance plans (NM) 00721

Definition: This field contains the number of insurance plans that may provide coverage for this visit.

3.3.4.21 Visit publicity code (IS) 00722

Definition: This field contains a user-defined code indicating what level of publicity is allowed (e.g., No Publicity, Family Only) for a specific visit. *User-defined table 0215 - Publicity code* is used as the HL7 identifier for the user-defined table of values for this field. Refer to *PD1-11- publicity code* for the patient level publicity code.

3.3.4.22 Visit protection indicator (ID) 00723

Definition: This field identifies the person's protection that determines, in turn, whether access to information about this person should be kept from users who do not have adequate authority for a specific visit. Refer to Chapter 2, *HL7 table 0136 - Yes/no indicator* for valid values. Refer to *PD1-12- protection indicator* for the patient level protection indicator.

3.3.4.23 Clinic organization name (XON) 00724

Components: <organization name (ST)> ^ <organization name type code (ID)> ^ <ID number (ID)> ^ <check digit (NM)> ^ < check digit scheme (ID)> ^ <assigning authority (HD)> ^ <identifier type code (ID)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the organization name or sub-unit and identifier that is associated with the (visit) episode of care. For example, the Allergy or Oncology Clinic within the facility might be named.

3.3.4.24 Patient status code (IS) 00725

Definition: This field indicates the status of the episode of care: for instance, Active Inpatient vs. Discharged Inpatient. Refer to *user defined table 0216 - Patient status* for suggested values.

3.3.4.25 Visit priority code (IS) 00726

Definition: This field contains the priority of the visit, e.g., whether the admission is an emergency, elective, or urgent. Refer to *user defined table 0217 - Visit priority* for suggested values.

3.3.4.26 Previous treatment date (DT) 00727

Definition: This field contains the date that the patient last had treatment for any condition prior to this visit. In the case of a prior hospital visit, it is likely to be the previous discharge date.

3.3.4.27 Expected discharge disposition (IS) 00728

Definition: This field describes what the patient's disposition is expected to be at the end of the visit. Refer to *user-defined table 0112 - Discharged disposition* for suggested values.

3.3.4.28 Signature on file date (DT) 00729

Definition: This field contains the date on which a signature was obtained for insurance billing purposes.

3.3.4.29 First similar illness date (DT) 00730

Definition: This field is used to determine if the patient has a pre-existing condition.

3.3.4.30 Patient charge adjustment code (CE) 00731

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains a user-defined code that indicates which adjustments should be made to this patient's charges. *User-defined table 0218 - Charge adjustment* is used as the HL7 identifier for the user-defined table of values for this field. This field is the same as *GT1-26-guarantor charge adjustment code*.

3.3.4.31 Recurring service code (IS) 00732

Definition: This field indicates whether the treatment is continuous. *User-defined table 0219 - Recurring service* is used as the HL7 identifier for the user-defined table of values for this field.

3.3.4.32 Billing media code (ID) 00733

Definition: This field indicates if the account is to be rejected from tape billing. Refer to Chapter 2, *HL7 table 0136 - Yes/no indicator* for valid values.

3.3.4.33 Expected surgery date and time (TS) 00734

Definition: This field contains the date and time on which the surgery is expected to occur.

3.3.4.34 Military partnership code (ID) 00735

Definition: This field indicates that a military facility has contracted with a non-military facility for the use of its services. Refer to Chapter 2, *HL7 table 0136 - Yes/no indicator* for valid values.

3.3.4.35 Military non-availability code (ID) 00736

Definition: This field indicates whether a patient has permission to use a non-military facility for treatment. Refer to Chapter 2, *HL7 table 0136 - Yes/no indicator* for valid values.

3.3.4.36 Newborn baby indicator (ID) 00737

Definition: This field indicates whether the patient is a baby. Refer to Chapter 2, *HL7 table 0136 - Yes/no indicator* for valid values.

3.3.4.37 Baby detained indicator (ID) 00738

Definition: This field indicates if the baby is detained after the mother's discharge. Refer to Chapter 2, *HL7 table 0136 - Yes/no indicator* for valid values.

3.3.5 NK1 - next of kin / associated parties segment

The NK1 segment contains information about the patient's other related parties. Any associated parties may be identified. Utilizing *NK1-I-set ID*, multiple NK1 segments can be sent to patient accounts.

If a person or organization fulfills multiple contact roles, for example, a person is an emergency contact and a next of kin, it is recommended to send a NK1 segment for each contact role (field 7).

Figure 3-5. NK1 attributes

SEQ	LEN	DT	OPT	R P/#	TBL#	ITEM#	ELEMENT NAME
1	4	SI	R			00190	Set ID - NK1
2	48	XPN	O	Y		00191	Name
3	60	CE	O		0063	00192	Relationship
4	106	XAD	O	Y		00193	Address
5	40	XTN	O	Y		00194	Phone Number
6	40	XTN	O	Y		00195	Business Phone Number
7	60	CE	O		0131	00196	Contact Role
8	8	DT	O			00197	Start Date
9	8	DT	O			00198	End Date
10	60	ST	O			00199	Next of Kin / Associated Parties Job Title
11	20	JCC	O		0327/ 0328	00200	Next of Kin / Associated Parties Job Code/Class
12	20	CX	O			00201	Next of Kin / Associated Parties Employee Number
13	90	XON	O	Y		00202	Organization Name - NK1
14	80	CE	O		0002	00119	Marital Status
15	1	IS	O		0001	00111	Sex
16	26	TS	O			00110	Date/Time of Birth
17	2	IS	O	Y	0223	00755	Living Dependency
18	2	IS	O	Y	0009	00145	Ambulatory Status
19	80	CE	O	Y	0171	00129	Citizenship
20	60	CE	O		0296	00118	Primary Language
21	2	IS	O		0220	00742	Living Arrangement
22	80	CE	O		0215	00743	Publicity Code
23	1	ID	O		0136	00744	Protection Indicator
24	2	IS	O		0231	00745	Student Indicator
25	80	CE	O		0006	00120	Religion
26	48	XPN	O	Y		00109	Mother's Maiden Name
27	80	CE	O		0212	00739	Nationality
28	80	CE	O	Y	0189	00125	Ethnic Group
29	80	CE	O	Y	0222	00747	Contact Reason
30	48	XPN	O	Y		00748	Contact Person's Name
31	40	XTN	O	Y		00749	Contact Person's Telephone Number
32	106	XAD	O	Y		00750	Contact Person's Address
33	32	CX	O	Y		00751	Next of Kin/Associated Party's Identifiers
34	2	IS	O		0311	00752	Job Status
35	80	CE	O	Y	0005	00113	Race

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SEQ	LEN	DT	OPT	R P/#	TBL#	ITEM#	ELEMENT NAME
36	2	IS	O		0295	00753	Handicap
37	16	ST	O			00754	Contact Person Social Security Number

3.3.5.0 NK1 field definitions

3.3.5.1 Set ID - NK1 (SI) 00190

Definition: This field contains the number that identifies this transaction. For the first occurrence of the segment, the sequence number shall be one, for the second occurrence, the sequence number shall be two, etc.

3.3.5.2 Name (XPN) 00191

Components: <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <name type code (ID)> ^ <name representation code (ID)>

Definition: This field contains the name of the next of kin or associated party. Multiple names for the same person are allowed, but the legal name must be sent in the first sequence. If the legal name is not sent, then the repeat delimiter must be sent in the first sequence. Refer to Chapter 2 for the name type code table.

3.3.5.3 Relationship (CE) 00192

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the actual personal relationship that the next of kin/associated party has to the patient. *User-defined table 0063 - Relationship* is used as the HL7 identifier for the user-defined table for values for this field. Examples might include: brother, sister, mother, father, friend, spouse, emergency contact, employer, etc.

3.3.5.4 Address (XAD) 00193

Components: <street address (ST)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code (ST)> ^ <country (ID)> ^ <address type (ID)> ^ <other geographic designation (ST)> ^ <county/parish code (IS)> ^ <census tract (IS)> ^ <address representation code (ID)>

Definition: This field contains the address of the next of kin/associated party. Multiple addresses are allowed for the same person. The mailing address must be sent in the first sequence. If the mailing address is not sent, then the repeat delimiter must be sent in the first sequence.

3.3.5.5 Phone number (XTN) 00194

Components: [NNN] [(999)]999-9999 [X99999] [B99999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Definition: This field contains the telephone number of the next of kin/associated party. Multiple phone numbers are allowed for the same person. The primary telephone number must be sent in the first sequence. If the primary telephone number is not sent, then the repeat delimiter must be sent in the first sequence. Refer to Chapter 2 for suggested telecommunication use and equipment type codes.

3.3.5.6 Business phone number (XTN) 00195

Components: [NNN] [(999)]999-9999 [X99999] [B99999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Definition: This field contains the business telephone number of the next of kin/associated party. Multiple phone numbers are allowed for the same person. The primary business telephone number must be sent in the first sequence. If the primary business telephone number is not sent, then the repeat delimiter must be sent in the first sequence. Refer to Chapter 2 for suggested telecommunication use and equipment type codes.

3.3.5.7 Contact role (CE) 00196

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field indicates the specific relationship role (next of kin, employer, emergency contact, etc.). *User-defined table 0131 - Contact role* is used as the HL7 identifier for the user-defined table of values for this field. This field specifies the role that the next of kin/associated parties plays with regard to the patient. Examples might include an employer, emergency contact, next of kin, insurance company, state agency, federal agency, etc.

3.3.5.8 Start date (DT) 00197

Definition: This field contains the start date of the contact role.

3.3.5.9 End date (DT) 00198

Definition: This field contains the end date of the contact role.

3.3.5.10 Next of kin / associated parties job title (ST) 00199

Definition: This field contains the title of the next of kin/associated parties at their place of employment. However, if the contact role is the patient's employer, this field contains the title of the patient at their place of employment.

3.3.5.11 Next of kin / associated parties job code/class (JCC) 00200

Components: <job code (IS)> ^ <employee classification (IS)>

Definition: This field contains the employer's job code and the employee classification used for the next of kin/associated parties at their place of employment. However, if the contact role is the patient's employer, this field contains the job code/class of the patient at their place of employment. *User-defined tables 0327 - Job code* and *0328 - Employee classification* are used as the HL7 identifiers for the user-defined tables of values for these fields.

Note: The JCC data element appears in other segments as ITEM# 00786 (GT1-50, IN2-47, STF-19). It is assigned a different ITEM# in the NK1 segment because the element name and usage is variable. For example the job code/class can be for the patient's employer, or for an associated party's employment information.

3.3.5.12 Next of kin / associated parties employee number (CX) 00201

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility (HD)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: ***For backward compatibility, the ST data type can be sent; however HL7 recommends that the CX data type be used for new implementations.*** This field contains the number that the employer assigns to the employee that is acting as next of kin/associated parties. However, if the contact role is the patient's employer, this field contains the employee number of the patient at their place of employment. The assigning authority and identifier type code are strongly recommended for all CX data types.

3.3.5.13 Organization name - NK1 (XON) 00202

Components: <organization name (ST)> ^ <organization name type code (ID)> ^ <ID number (ID)> ^ <check digit (NM)> ^ <check digit scheme (ID)> ^ <assigning authority (HD)> ^ <identifier type code (ID)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the name of the organization that serves as a next of kin/associated party or as the next of kin of the patient. This field may also be used to communicate the name of the organization at which the associated party works. Multiple names for the same organization may be sent. If multiple names are sent, the legal name must be sent in the first sequence. If the legal name is not sent, then a repeat delimiter must be sent in the first sequence.

3.3.5.14 Marital status (CE) 00119

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the next of kin/associated party's marital status. Refer to *user-defined table 0002 - Marital status* for suggested values.

3.3.5.15 Sex (IS) 00111

Definition: This field contains the next of kin/associated party's sex. Refer to *user-defined table 0001 - Sex* for suggested values.

3.3.5.16 Date/time of birth (TS) 00110

Definition: This field contains the next of kin/associated party's birth date and time.

3.3.5.17 Living dependency (IS) 00755

Definition: This field identifies specific living conditions (e.g., spouse dependent on patient, walk-up) that are relevant to an evaluation of the patient's healthcare needs. This information can be used for discharge

planning. Examples might include Spouse Dependent, Medical Supervision Required, Small Children Dependent. This field repeats because, for example, “spouse dependent” and “medical supervision required” can apply at the same time. Refer to *user-defined table 0223 - Living dependency* for suggested values.

3.3.5.18 Ambulatory status (IS) 00145

Definition: This field identifies the transient rate of mobility for the next of kin/associated party. Refer to *user-defined table 0009 - Ambulatory status* for suggested values.

3.3.5.19 Citizenship (CE) 00129

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the code to identify the next of kin/associated party’s citizenship. HL7 recommends using ISO 3166 as the suggested values in *user-defined table 0171 - Citizenship*.

3.3.5.20 Primary language (CE) 00118

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field identifies the next of kin/associated party’s primary speaking language. HL7 recommends using ISO 639 as the suggested values in *user-defined table 0296 - Language*.

3.3.5.21 Living arrangement (IS) 00742

Definition: This field identifies the situation that the associated party lives in at his/her residential address. Refer to *user-defined table 0220 - Living arrangement* for suggested values. Examples of living arrangements might include Alone, Family, Institution, etc.

3.3.5.22 Publicity code (CE) 00743

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field indicates what level of publicity is allowed (e.g., No Publicity, Family Only) for the next of kin/associated party. *User-defined table 0215 - Publicity code* is used as the HL7 identifier for the user-defined table of values for this field.

3.3.5.23 Protection indicator (ID) 00744

Definition: This field identifies that next of kin/associated party’s protection that determines, in turn, whether access to information about this person should be kept from users who do not have adequate authority. Refer to Chapter 2, *HL7 table 0136 - Yes/no indicator* for valid values.

3.3.5.24 Student indicator (IS) 00745

Definition: This field identifies whether the next of kin/associated party is currently a student or not, and whether the next of kin/associated party is a full- or a part-time student. This field does not indicate the degree (high school, college) of the student or the field of study. Refer to *user-defined table 0231 - Student status* for suggested values.

3.3.5.25 Religion (CE) 00120

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field indicates the type of religion practiced by the next of kin/associated party. *User-defined table 0006 - Religion* is used as the HL7 identifier for the user-defined table of values for this field.

3.3.5.26 Mother's maiden name (XPN) 00109

Components: <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <name type code (ID)> ^ <name representation code (ID)>

Definition: This field indicates the maiden name of the next of kin/associated party's mother.

3.3.5.27 Nationality (CE) 00739

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field identifies the nation or national group to which the next of kin/associated party belongs. This information may be different than the person's citizenship in countries in which multiple nationalities are recognized (e.g., Spain: Basque, Catalan, etc.). *User-defined table 0212 - Nationality* is used as the HL7 identifier for the user-defined table of values for this field.

3.3.5.28 Ethnic group (CE) 00125

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the next of kin/associated party's ethnic group. ERISA has a published list of ethnic classifications that may be used by local agreement at a site. *User-defined table 0189 - Ethnic group* is used as the identifier for the user-defined table of values for this field. The second triplet of the CE data type for ethnic group (alternate identifier, alternate text, and name of alternate coding system) is reserved for governmentally assigned codes.

3.3.5.29 Contact reason (CE) 00747

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field identifies how the contact should be used (e.g., contact employer if patient is unable to work). *User-defined table 0222 - Contact reason* is used as the HL7 identifier for the user-defined table of values for this field.

3.3.5.30 Contact person's name (XPN) 00748

Components: <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <name type code (ID)> ^ <name representation code (ID)>

Definition: This field contains the names of the people to contact, depending on the value of the relationship defined in *NK1-3-relationship*. This field is typically needed when the NK1 is an organization. The legal name should be sent first in the sequence. Refer to *HL7 table 0200 - Name type* for valid values.

3.3.5.31 Contact person's telephone number (XTN) 00749

Components: [NNN] [(999)999-9999 [X999999] [B999999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Definition: This field contains the telephone numbers of the contact person depending on the value of the relationship defined in *NK1-3-relationship*. This field is typically needed when the NK1 is an organization. The primary telephone number must be sent in the first sequence. If the primary telephone number is not sent, then a repeat delimiter must be sent in the first sequence. Refer to *HL7 tables 0201 - Telecommunication use code* and *0202 - Telecommunication equipment type* for valid values.

3.3.5.32 Contact person's address (XAD) 00750

Components: <street address (ST)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code (ST)> ^ <country (ID)> ^ < address type (ID)> ^ <other geographic designation (ST)> ^ <county/parish code (IS)> ^ <census tract (IS)> ^ <address representation code (ID)>

Definition: This field contains the addresses of the contact person depending on the value of the relationship defined in *NK1-3-relationship*. This field is typically used when the NK1 is an organization. When multiple addresses are sent, the mailing address must be sent first in the sequence.

3.3.5.33 Next of kin/associated party's identifiers (CX) 00751

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility (HD)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the identifiers for the next of kin/associated party, for example, Social Security Number, driver's license, etc. The assigning authority and identifier type code are strongly recommended for all CX data types.

3.3.5.34 Job status (IS) 00752

Definition: This field identifies the next of kin/associated party's job status (full-time, part-time, permanent, etc.). *User-defined table 0311 - Job status* is used as the HL7 identifier for the user-defined table of values for this field.

3.3.5.35 Race (CE) 00113

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field identifies the race of the next of kin/associated party. ERISA has published a list of ethnic classifications that may be used by local agreement at a site. *User-defined table 0005 - Religion* is used as the HL7 identifier for the user-defined values for this field. The second triplet of the CE data type for race (alternate identifier, alternate text, and name of alternate coding system) is reserved for governmentally assigned codes.

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3.3.5.36 Handicap (IS) 00753

Definition: This field contains the code that describes an associated party's disability. *User-defined table 0295 - Handicap* is used as the HL7 identifier for the user-defined table of values for this field.

3.3.5.37 Contact person social security number (ST) 00754

Definition: This field contains the contact person's social security number. This number may also be a RR retirement number. For the Social Security number of the associated party, see *NK1-33-next of kin/associated party's identifiers*.

3.3.6 AL1 - patient allergy information segment

The AL1 segment contains patient allergy information of various types. Most of this information will be derived from user-defined tables. Each AL1 segment describes a single patient allergy.

Figure 3-6. AL1 attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	SI	R			00203	Set ID - AL1
2	2	IS	O		0127	00204	Allergy Type
3	60	CE	R			00205	Allergy Code/Mnemonic/Description
4	2	IS	O		0128	00206	Allergy Severity
5	15	ST	O	Y		00207	Allergy Reaction
6	8	DT	O			00208	Identification Date

3.3.6.0 AL1 field definitions

3.3.6.1 Set ID - AL1 (SI) 00203

Definition: This field contains the number that identifies this transaction. For the first occurrence of the segment, the sequence number shall be one, for the second occurrence, the sequence number shall be two, etc.

3.3.6.2 Allergy type (IS) 00204

Definition: This field indicates a general allergy category (drug, food, pollen, etc.). Refer to *user-defined table 0127 - Allergy type* for suggested values.

User-defined Table 0127 - Allergy type

Value	Description
DA	Drug allergy
FA	Food allergy
MA	Miscellaneous allergy
MC	Miscellaneous contraindication

3.3.6.3 Allergy code/mnemonic/description (CE) 00205

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field uniquely identifies a particular allergy. This element may conform to some external, standard coding system (that must be identified), or it may conform to local, largely textual or mnemonic descriptions.

3.3.6.4 Allergy severity (IS) 00206

Definition: This field indicates the general severity of the allergy (severe, moderate, mild, etc.). Refer to *user-defined table 0128 - Allergy severity* for suggested values.

User-defined Table 0128 - Allergy severity

Value	Description
SV	Severe
MO	Moderate
MI	Mild

3.3.6.5 Allergy reaction (ST) 00207

Definition: This field contains a short, textual description of the specific allergy reaction (convulsions, sneeze, rash, etc.).

3.3.6.6 Identification date (DT) 00208

Definition: This field contains the date that the allergy was identified.

3.3.7 NPU - bed status update segment

The NPU segment allows the updating of census (bed status) data without sending patient-specific data. An example might include changing the status of a bed from “housekeeping” to “unoccupied.”

Figure 3-7. NPU attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	80	PL	R			00209	Bed Location
2	1	IS	O		0116	00170	Bed Status

3.3.7.0 NPU field definitions

3.3.7.1 Bed location (PL) 00209

Components: <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <person location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <location description (ST)>

Subcomponents of facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the bed location that is a valid bed location.

3.3.7.2 Bed status (IS) 00170

Definition: This field contains the bed status. Refer to *user-defined table 0116 - Bed status* for suggested values.

3.3.8 MRG - merge patient information segment

The MRG segment provides receiving applications with information necessary to initiate the merging of patient data as well as groups of records. It is intended that this segment be used throughout the Standard to allow the merging of registration, accounting, and clinical records within specific applications.

Figure 3-8. MRG attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	20	CX	R	Y		00211	Prior Patient Identifier List
2	20	CX	O	Y		00212	Prior Alternate Patient ID
3	20	CX	O			00213	Prior Patient Account Number
4	20	CX	O			00214	Prior Patient ID
5	20	CX	O			01279	Prior Visit Number
6	20	CX	O			01280	Prior Alternate Visit ID
7	48	XPN	O	Y		01281	Prior Patient Name

3.3.8.0 MRG field definitions

3.3.8.1 Prior patient identifier list (CX) 00211

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility (HD)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the internal prior patient identifier. This field contains a list of potential “old” numbers to match. Only one old number can be merged with one new number in a transaction. Refer to *HL7 table 0061 - Check digit scheme* as defined in Chapter 2. The assigning authority and identifier type code are strongly recommended for all CX data types.

3.3.8.2 Prior alternate patient ID (CX) 00212

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility (HD)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: **This field has been retained for backward compatibility only.** It is recommended to use *MRG-1 prior patient identifier list* for all patient identifiers. This field contains the prior alternate patient identifier. Refer to *HL7 table 0061 - Check digit scheme* as defined in Chapter 2. The assigning authority and identifier type code are strongly recommended for all CX data types.

3.3.8.3 Prior patient account number (CX) 00213

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility (HD)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the prior patient account number. Refer to *HL7 table 0061 - Check digit scheme* as defined in Chapter 2. The assigning authority and identifier type code are strongly recommended for all CX data types.

3.3.8.4 Prior patient ID (CX) 00214

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility (HD)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: **This field has been retained for backward compatibility only.** It is recommended to use *MRG-1 prior patient identifier list* for all patient identifiers. This field contains the external prior patient identifier. Refer to *HL7 table 0061 - Check digit scheme* as defined in Chapter 2. The assigning authority and identifier type code are strongly recommended for all CX data types.

3.3.8.5 Prior visit number (CX) 01279

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility (HD)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the prior visit number. Refer to *HL7 table 0061 - Check digit scheme* as defined in Chapter 2. The assigning authority and identifier type code are strongly recommended for all CX data types.

3.3.8.6 Prior alternate visit ID (CX) 01280

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility (HD)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the prior alternate visit number. Refer to *HL7 table 0061 - Check digit scheme* as defined in Chapter 2. The assigning authority and identifier type code are strongly recommended for all CX data types.

Chapter 3: Patient Administration

3.3.8.7 Prior patient name (XPN) 01281

Components: <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <name type code (ID)> ^ <name representation code (ID)>

Definition: This field contains the prior name of the patient. This field is not used to change a patient name. Refer to Chapter 2 for the name type code table.

3.3.8.8 Segment notes: MRG merge patient information

The assigning authority, the fourth component of the patient identifiers, is an HD data type that is uniquely associated with the assigning authority that originally assigned the number. A given institution, or group of intercommunicating institutions, should establish a list of assigning authorities that may be potential assignors of patient identification (and other important identification) numbers. The list will be one of the institution's master dictionary lists. Since third parties (other than the assignors of patient identification numbers) may send or receive HL7 messages containing patient identification numbers, the assigning authority in the patient identification numbers may not be the same as those of the sending and receiving systems identified in the MSH. The assigning authority must be unique across applications at a given site. This field is required in HL7 implementations that have more than a single Patient Administration application assigning such numbers.

3.3.9 PD1 - patient additional demographic segment

The patient additional demographic segment contains demographic information that is likely to change about the patient.

Figure 3-9. PD1 attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	2	IS	O	Y	0223	00755	Living Dependency
2	2	IS	O		0220	00742	Living Arrangement
3	90	XON	O	Y		00756	Patient Primary Facility
4	90	XCN	O	Y		00757	Patient Primary Care Provider Name & ID No.
5	2	IS	O		0231	00745	Student Indicator
6	2	IS	O		0295	00753	Handicap
7	2	IS	O		0315	00759	Living Will
8	2	IS	O		0316	00760	Organ Donor
9	1	ID	O		0136	00761	Separate Bill
10	20	CX	O	Y		00762	Duplicate Patient
11	80	CE	O		0215	00743	Publicity Code
12	1	ID	O		0136	00744	Protection Indicator

3.3.9.0 PD1 field definitions

3.3.9.1 Living dependency (IS) 00755

Definition: This field identifies specific living conditions (e.g., spouse dependent on patient, walk-up) that are relevant to an evaluation of the patient's healthcare needs. This information can be used for discharge planning. Examples might include Spouse Dependent, Medical Supervision Required, Small Children Dependent. This field repeats because, for example, "spouse dependent" and "medical supervision required" can apply at the same time. Refer to *user-defined table 0223 - Living dependency* for suggested values.

3.3.9.2 Living arrangement (IS) 00742

Definition: This field identifies the situation in which the patient lives at his residential address. Examples might include Alone, Family, Relatives, Institution, etc. Refer to *user-defined table 0220 - Living arrangement* for suggested values.

3.3.9.3 Patient primary facility (XON) 00756

Components: <organization name (ST)> ^ <organization name type code (ID)> ^ <ID number (ID)> ^ <check digit (NM)> ^ <check digit scheme (ID)> ^ <assigning authority (HD)> ^ <identifier type code (ID)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the name and identifier that specifies the primary care facility selected by the patient at the time of enrollment in an HMO Insurance Plan. Multiple names and identifiers are allowed for the same facility. The legal name of the facility must be sent in the first sequence. If the legal name of the facility is not sent, then the repeat delimiter must be sent in the first sequence. See Chapter 2 regarding suggested values for organization name type codes.

3.3.9.4 Patient primary care provider name & ID no. (XCN) 00757

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the provider name and ID of the managed care primary care provider. This information is usually selected by the patient at the time of enrollment in the patient's managed care insurance plan. Multiple names are allowed for the same person. The legal name must be sent in the first sequence. If the legal name is not sent, then the repeat delimiter must be sent in the first sequence.

3.3.9.5 Student indicator (IS) 00745

Definition: This field indicates if the patient is currently a student or not, and whether the patient is a full-time or a part-time student. This field does not indicate the student's degree level (high school, college, elementary) or the student's field of study (accounting, engineering, etc.). Refer to *user-defined table 0231 - Student status* for suggested values.

3.3.9.6 Handicap (IS) 00753

Definition: This field indicates the nature of the patient's permanent handicapped condition (e.g., deaf, blind). A handicapped condition is defined as a physical or mental disability that is permanent. Transient handicapped conditions should be sent in the ambulatory status. *User-defined table 0295 - Handicap* is used as the HL7 identifier for the user-defined table of values for this field.

3.3.9.7 Living will (IS) 00759

Definition: This field indicates whether or not the patient has a living will and, if so, whether a copy of the living will is on file at the facility. If the patient does not have a living will, the value of this field indicates whether the patient was provided information on living wills. Refer to *user-defined table 0315 - Living will* for suggested values.

User-defined Table 0315 - Living will

Value	Description
Y	Yes, patient has a living will
F	Yes, patient has a living will but it is not on file
N	No, patient does not have a living will and no information was provided
I	No, patient does not have a living will but information was provided
U	Unknown

3.3.9.8 Organ donor (IS) 00760

Definition: This field indicates whether the patient wants to donate his/her organs and whether his organ donor card is on file with the organization. Refer to *user-defined table 0316 - Organ donor* for suggested values.

User-defined Table 0316 - Organ donor

Value	Description
Y	Yes, patient is a donor and card is on file
F	Yes, patient is a donor, but card is not on file
I	No, patient does not have a living will but information was provided
U	Unknown

3.3.9.9 Separate bill (ID) 00761

Definition: This field specifies that charges for this patient are to be billed separately from other patient bills with the same guarantor. (This bill is now a patient bill rather than a guarantor bill.) Refer to *HL7 table 0136 - Yes/no indicator* for valid values.

3.3.9.10 Duplicate patient (CX) 00762

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility (HD)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field indicates that a patient is the same as, or a duplicate of, another patient found on the sending system. The intent is to be informational only and no action is required by the receiver. Include the patient identifier if the sender knows an identifier for the patient. The assigning authority and identifier type code are strongly recommended for all CX data types.

3.3.9.11 Publicity code (CE) 00743

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains a user-defined code indicating what level of publicity is allowed (e.g., No Publicity, Family Only) for the patient. This code is conveyed at the patient level rather than the visit level. It is up to the application to decide processing rules for patient vs. visit-level data. *User-defined table 0215 - Publicity code* is used as the HL7 identifier for the user-defined table of values for this field. Refer to *PV2-21-visit publicity code* for visit level code.

3.3.9.12 Protection indicator (ID) 00744

Definition: This field identifies the person's protection that determines, in turn, whether access to information about this person should be kept from users who do not have adequate authority for the patient. This indicator is conveyed at the patient level rather than the visit level. It is up to the application to decide processing rules for patient vs. visit level data. Refer to Chapter 2, *HL7 table 0136 - Yes/no indicator* for valid values. Refer to *PV2-22-visit protection indicator* for visit level code.

3.3.10 DB1 - disability segment

The disability segment contains information related to the disability of a person. This segment was created instead of adding disability attributes to each segment that contains a person (to which disability may apply). This is an optional segment that can be used to send disability information about a person already defined by the Patient Administration Chapter. The disabled person code and identifier allow for the association of the disability information to the person.

Figure 3-10. DB1 attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	SI	R			01283	Set ID - DB1
2	2	IS	O		0334	01284	Disabled Person Code
3	32	CX	O	Y		01285	Disabled Person Identifier
4	1	ID	O		0136	01286	Disabled Indicator
5	8	DT	O			01287	Disability Start Date
6	8	DT	O			01288	Disability End Date
7	8	DT	O			01289	Disability Return to Work Date
8	8	DT	O			01290	Disability Unable to Work Date

3.3.10.0 DB1 field definitions

3.3.10.1 Set ID - DB1 (SI) 01283

Definition: This field contains the number that identifies this transaction. For the first occurrence of the segment, the sequence number shall be one, for the second occurrence, the sequence number shall be two, etc.

3.3.10.2 Disabled person code (IS) 01284

Definition: The value of this field indicates to which person the disability information relates in the message. For example, if the value is PT, the disability information relates to the patient. Refer to *user-defined table 0334 - Disabled person* for suggested values.

User-defined Table 0334 - Disabled person

Value	Description
PT	Patient
GT	Guarantor
IN	Insured
AP	Associated party

3.3.10.3 Disabled person identifier (CX) 01285

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility (HD)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This is the identifier (or identifiers) for the person whose disability information is sent on the segment. The assigning authority and identifier type code are strongly recommended for all CX data types.

3.3.10.4 Disability indicator (ID) 01286

Definition: This field indicates if the person's visit is a disability visit. Refer to *HL7 table 0136 - Yes/No indicator* for valid values.

3.3.10.5 Disability start date (DT) 01287

Definition: This field specifies the date the person became disabled.

3.3.10.6 Disability end date (DT) 01288

Definition: This field specifies the ending date of the person's disability.

3.3.10.7 Disability return to work date (DT) 01289

Definition: This field indicates the authorized date on which the patient can return to work for a specified disability case.

3.3.10.8 Disability unable to work date (DT) 01290

Definition: This field specifies the first date in the date span that the patient is unable to work due to disability.

3.4 EXAMPLE TRANSACTIONS

3.4.1 Admit/visit notification - event A01 (admitted patient)

MSH|^~\&|ADT1|MCM|LABADT|MCM|198808181126|SECURITY|ADT^A01|MSG00001|P|2.3.1|<cr>

```

EVN|A01|198808181123|<cr>
PID|1||PATID1234^5^MI1^ADT1^MR^MCM-123456789^^^USSA^SS||JONES^WILLIAM^A^III||1961061
5|M|C|1200 N ELM STREET^^GREENSBORO^NC^27401-1020|GL|(91-
9)379-1212|(919)271-3434|S||
PATID12345001^2^MI0^ADT1^AN^A|123456789|987654^NC|<cr>
NK1|1|JONES^BARBARA^K|W^WIFE|||NK^NEXT OF KIN<cr>
PV1|1|I|2000^2012^01|||004777^LEBAUER^SIDNEY^J.||SUR|||ADM|A0|<cr>

```

Patient William A. Jones, III was admitted on July 18, 1988 at 11:23 a.m. by doctor Sidney J. Lebauer (#004777) for surgery (SUR). He has been assigned to room 2012, bed 01 on nursing unit 2000.

The message was sent from system ADT1 at the MCM site to system LABADT, also at the MCM site, on the same date as the admission took place, but three minutes after the admit.

3.4.2 Pre-admit notification - event A05 (nonadmitted patient)

```

MSH ^MR^MCM-371-66-9256^^^USSA^SS|253763|MASSIE^JAMES^A||19560129|M||171
ZOBERLEIN^^ISHPEMING^MI^49849^""^|(900)485-5344|
(900)485-5344|S|C|10199925^^^GENHOS^AN|371-66-9256|<cr>
NK1|1|MASSIE^ELLEN|SPOUSE|171 ZOBERLEIN^^ISHPEMING^MI^49849^""^|
(900)485-5344|(900)545-1234~(900)545-1200|EC^EMERGENCY CONTACT<cr>
NK1|2|MASSIE^MARYLOU|MOTHER|300 ZOBERLEIN^^ISHPEMING^MI^49849^""^|
(900)485-5344|(900)545-1234~(900)545-1200|EC^EMERGENCY CONTACT<cr>
NK1|3<cr>
NK1|4||123 INDUSTRY WAY^^ISHPEMING^MI^49849^""^|(900)545-
1200|EM^EMPLOYER|19940605|PROGRAMMER||ACME SOFTWARE COMPANY<cr>
PV1|0||||0148^ADDISON, JAMES|0148^ADDISON, JAMES|0148^ADDISON, JAMES|AMB|||||0148^AD
DISON, JAMES|S|1400|A|||||||GENHOS|||||<cr>
PV2|||||199601101400|||||||199601101400<cr>
OBX|ST|1010.1^BODY WEIGHT|62|kg||||F<cr>
OBX|ST|1010.1^HEIGHT|190|cm||||F<cr>
DG1|1|19|BIOPSY|00<cr>
GT1|1||MASSIE^JAMES^""^""^""^""^|171 ZOBERLEIN^^ISHPEMING^MI^49849^""^|
(900)485-5344|(900)485-5344|||SE^SELF|371-66-925||||171
ZOBERLEIN^^ISHPEMING^MI^49849^""^|(900)485-5344|||||||
|||||||MOSES AUTO CLINIC<cr>
IN1|1|0|BC1|BLUE CROSS|171 ZOBERLEIN^^ISHPEMING^MI^49849^""^|
(900)485-5344|90||||50 OK<cr>
IN1|2|""^""^""^""^<cr>

```

Patient James A. Massie was pre-admitted on January 6th, 1996 for ambulatory surgery which is scheduled for January 10, 1996 at 1400. As part of the pre-admission process, he specified two emergency contacts as well as employer, insurance, and guarantor information. He also was measured and weighed. Note that the REGADT system supports the entry of four NK1 type records: first, second, and third emergency contacts and employer information. A third emergency contact was not provided for James A. Massie. However, an NK1 record must be sent to support "snapshot" mode of update. The REGADT system also supports entry of two insurance plans, one guarantor, and one diagnosis.

3.4.3 Register a patient - event A04 (nonadmitted patient)

```

MSH ^~\&|REGADT|MCM|IFENG||199112311501|ADT^A04|000001|P|2.3.1||<cr>
EVN|A04|199601101500|199601101400|01|199601101410<cr>

```

```

PID|191919^^^GENHOS^MR~371-66-
9256^^^USSA^SS|253763|MASSIE^JAMES^A|19560129|M||171
ZOBERLEIN^^^ISHPEMING^MI^49849^"^^|(900)485-5344|
(900)485-5344|S|C|10199925^^^GENHOS^AN|371-66-9256|<cr>
NK1|1|MASSIE^ELLEN|SPOUSE|171 ZOBERLEIN^^^ISHPEMING^MI^49849^"^^|
(900)485-5344|(900)545-1234~(900)545-1200|EC1^FIRST EMERGENCY CONTACT<cr>
NK1|2|MASSIE^MARYLOU|MOTHER|300 ZOBERLEIN^^^ISHPEMING^MI^49849^"^^|
(900)485-5344|(900)545-1234~(900)545-1200|EC2^SECOND EMERGENCY CONTACT<cr>
NK1|3<cr>
NK1|4||123 INDUSTRY WAY^^^ISHPEMING^MI^49849^"^^|(900)545-
1200|EM^EMPLOYER|19940605|PROGRAMMER||ACME SOFTWARE COMPANY<cr>
PV1|0|O/R||0148^ADDISON, JAMES|0148^ADDISON, JAMES|0148^ADDISON, JAMES|AMB||||0148
^ADDISON, JAMES|S|1400|A|||||||GENHOS||||199501101410|<cr>
PV2||||199601101400|||||||199601101400<cr>
OBX|ST|1010.1^BODY WEIGHT|62|kg||||F<cr>
OBX|ST|1010.1^HEIGHT|190|cm||||F<cr>
DG1|1|19|BIOPSY|00<cr>
GT1|1|MASSIE^JAMES^"^^"^^"^^"^^|171 ZOBERLEIN^^^ISHPEMING^MI^49849^"^^|
(900)485-5344|(900)485-5344||SE^SELF|371-66-925||MOSES AUTO
CLINIC|171 ZOBERLEIN^^^ISHPEMING^MI^49849^"^^|(900)485-5344|<cr>
IN1|0|0|BC1|BLUE CROSS|171 ZOBERLEIN^^^ISHPEMING^MI^49849^"^^|
(900)485-5344|90||||50 OK|<cr>
IN1|2|""|<cr>

```

Patient James A. Massie arrived at location O/R for surgery on January 10th, 1996 at 1410 for ambulatory surgery which was scheduled for January 10, 1996 at 1400. The visit event was recorded into the MCM system on January 10, 1996 at 1500. It was sent to the interface engine (IFENG) at 1501.

3.4.4 Change an outpatient to an inpatient - event A06

```

MSH|^~\&|REGADT|MCM|IFENG||199601110025|ADT^A06|000001|P|2.3.1||<cr>
EVN|A06|19960110025|01||199601102300<cr>
PID|191919^^^GENHOS^MR^FAC1~371-66-
9256^^^USSA^SS|253763|MASSIE^JAMES^A|19560129|M||171
ZOBERLEIN^^^ISHPEMING^MI^49849^"^^|(900)485-5344|
(900)485-5344|S|C|10199925^^^GENHOS^AN|371-66-9256|<cr>
NK1|1|MASSIE^ELLEN|SPOUSE|171 ZOBERLEIN^^^ISHPEMING^MI^49849^"^^|
(900)485-5344|(900)545-1234~(900)545-1200|EC1^FIRST EMERGENCY CONTACT<cr>
NK1|2|MASSIE^MARYLOU|MOTHER|300 ZOBERLEIN^^^ISHPEMING^MI^49849^"^^|
(900)485-5344|(900)545-1234~(900)545-1200|EC2^SECOND EMERGENCY CONTACT<cr>
NK1|3<cr>
NK1|4||123 INDUSTRY WAY^^^ISHPEMING^MI^49849^"^^|
(900)545-1200|EM^EMPLOYER|19940605|PROGRAMMER||ACME SOFTWARE COMPANY<cr>
PV1|I|6N^1234^A^GENHOS||0100^ANDERSON, CARL|0148^ADDISON, JAMES|SUR|||
||0148^ANDERSON, CARL|S|1400|A|||||||GENHOS||||199501102300|<cr>
OBX|ST|1010.1^BODY WEIGHT|62|kg||||F<cr>
OBX|ST|1010.1^HEIGHT|190|cm||||F<cr>
DG1|1|19|BIOPSY|00<cr>
GT1|1|MASSIE^JAMES^"^^"^^"^^"^^|171 ZOBERLEIN^^^ISHPEMING^MI^49849^"^^|

```

Patient James A. Massie was later converted to an inpatient on January 10th, 1996 at 2300 to recover from the operation. The change from outpatient to inpatient was recorded on the MCM system on January 11, 1996 at 0020. He was assigned to room 1234, bed A on unit 6N. When Patient James A. Massie was converted to an inpatient on January 10th, 1996 at 2300, his hospital service changed to SUR. His attending doctor and admitting doctors changed to Dr. Carl Anderson. As a result of the conversion, his account number changed from 10199923 to 10199925

On January 11th, 1996 at 0500, James A. Massie condition became worse due to a complication. As a result, he was transferred to the surgical ICU (SICU). The transfer was recorded on the MCM system on January 11, 1996 at 0520. He was assigned to room 0001, bed 1. When Patient James A. Massie was transferred to SICU, his hospital service changed to ICU and his attending doctor changed to Dr. George Jones.

It was determined that James A. Massie was transferred to the wrong room in the SICU. Therefore, the transfer was canceled.

05/1999

```
PV1||I|SICU^0001^02^GENHOS|||6N^1234^A^GENHOS|0100^ANDERSON, CARL|0148^ADDISON, JAMES||  
SUR|||||0148^ANDERSON, CARL|S|1400|A|||||||GENHOS|||||199501102300|<  
cr>
```

The transfer is then repeated, this time to the correct bed: bed 2 of room 0001 in the SICU.

3.4.8 Discharge patient - event A03

```
MSH|^~\&|REGADT|MCM|IFENG||199601121005||ADT^A03|000001|P|2. 3. 1|||<cr>  
EVN|A03|199601121005||01||199601121000<cr>  
PID|||191919^^^GENHOS^MR~371- 66-  
9256^^^USSSA^SS|253763|MASSIE^JAMES^A||19560129|M|||171  
ZOBERLEIN^ISHPEMING^MI^49849^"^^|(900) 485- 5344|  
(900) 485- 5344||S|C|10199925^^^GENHOS^AN|371- 66- 9256||  
|||||<cr>  
PV1||I|6N|||0100^ANDERSON, CARL|0148^ADDISON, JAMES||SUR|||||0148^ANDERSON, CARL|S|14  
00|A|||||SNF|ISH^ISHPEMING NURSING  
HOME|GENHOS|||||199601102300|199691121005<cr>
```

When James A. Massie's condition became more stable, he returned to 6N for another day (transfer not shown) and then was discharged to the Ishpeming Nursing Home.

3.5 IMPLEMENTATION CONSIDERATIONS

3.5.1 Swapping a patient

Some systems may handle this as a single function. Others may require a multiple process in which:

- patient A is assigned a temporary location
- patient B is assigned patient A's location
- patient A is assigned patient B's prior location

This three-step scenario requires three separate transfer messages instead of a single swap message. If all beds in a hospital are occupied, it may be necessary to use a dummy location.

3.5.2 Merging patient/person information

3.5.2.1 Definitions: Merge, move, and change identifier events

The term "identifier" is used throughout this section. An identifier is associated with a set (or sets) of data. For example, an identifier (*PID-3-patient identifier list*) may be a medical record number which has associated with it account numbers (*PID-18-patient account number*.) Account number (*PID-18-patient account number*) is a type of identifier which may have associated with it visit numbers (*PV1-19-visit number*).

This section addresses the events that occur usually for the purposes of correcting errors in person, patient, account, or visit identifiers. The types of errors that occur typically fall into three categories:

1) Duplicate identifier created

The registrar fails to identify an existing person, patient, account, or visit and creates a new, "duplicate" record instead of using the existing record. A "merge" operation is used to fix this type of error.

2) Incorrect identifier selected

The registrar mistakenly selects the wrong person, patient, or account and creates or attaches a patient,

account, or visit underneath the incorrect person, patient, or account. A “move” operation is used to fix this type of error.

3) **Incorrect identifier assigned**

The registrar accidentally types in the wrong new identifier for a person, patient, account, or visit. This type of mistake usually occurs when identifiers are manually assigned (not system generated). A “change identifier” operation is used to fix this type of error.

3.5.2.1.1 *Hierarchy of Identifiers*

This section was written from a perspective of one controlling MPI and does not adequately cover the implementation of peer MPIs or multiple enterprise identifiers. To avoid future problems implementers should carefully examine the inferences of multiple identifiers.

Enterprise level MPI systems may collaborate forming either peer-to-peer or hierarchical relationships. When this occurs, multiple enterprise level identifiers may be required in the context of a single HL7 message. An example of a peer-to-peer MPI relationship might be represented by a data sharing application between the Department of Veterans Affairs and the Department of Defense, where each have their own MPI. An example of a hierarchical MPI relationship might be required by the need for local, city, and state organizations to collaborate, where each have an MPI.

These events assume a hierarchy of identifiers exists between person, patient, account, and visit. The hierarchy is as follows:

Level 4 - Person (identified by *PID-2-patient ID*)

Level 3 - Patient (identified by *PID-3-patient identifier list*)

Level 2 - Account (identified by *PID-18-patient account number*)

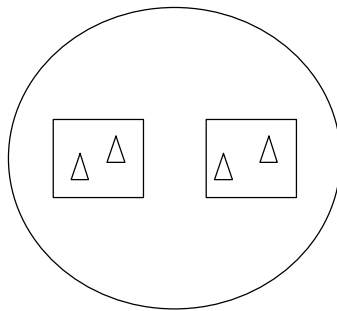
Level 1 - Visit (identified by *PVI-19-visit number*)

The visit-level identifier *PVI-19-visit number* is the lowest level identifier and is considered *subordinate* to the account-level identifier *PID-18-patient account number*.

This means that visit identifiers are defined within the context of an account identifier, and implies that visit identifiers are unique within account identifiers. Similarly, account identifiers are subordinate to, and unique within, patient identifiers; patient identifiers are subordinate to, and unique within, person identifiers.

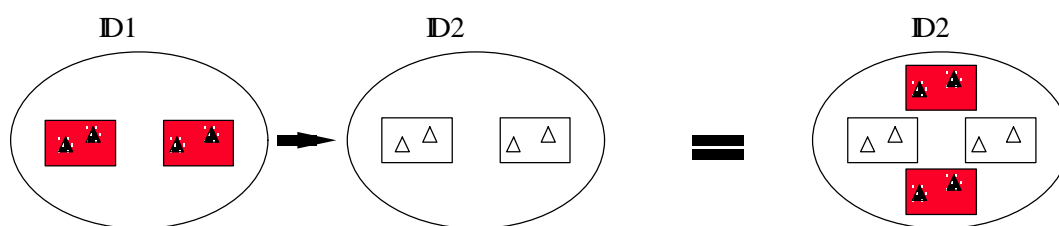
Conversely, the person-level identifier *PID-2-patient ID* is the highest level identifier and is considered *superior* to the patient-level identifiers, which are superior to the account-level identifier, which is superior to any visit-level identifiers.

Note that these events will also apply to environments in which one or more of these levels do not occur. For example, some environments may not have a person (or MPI) level, or they may not have a visit level, or they may have a visit level without an account level. The hierarchy concept is depicted graphically below. For example, Bob Kelly might be assigned an MPI number at the ABC hospital network (depicted by the circle). He may have different medical records at two hospitals within the network (depicted by the squares). Associated with each of these medical records are two accounts (depicted by the triangles). Note that the environment illustrated does not support the “visit” level, although in other implementations it might.



3.5.2.1.2 Merge

A merge event signals that two distinct records have been combined together into a single record with a single set of identifiers and data surviving at the level of the merge. All records at a level subordinate to the merged identifier are combined under the surviving record. For example, an A39 (merge person-patient ID) event would be sent to signal that two person records (identified by *MRG-4-prior patient ID* and by *PID-2-patient ID*) have been merged into a single record. All of the internal identifiers, accounts, and visits under the person record are not merged together - they are instead combined under the same person record. The following figure graphically depicts the merge event:



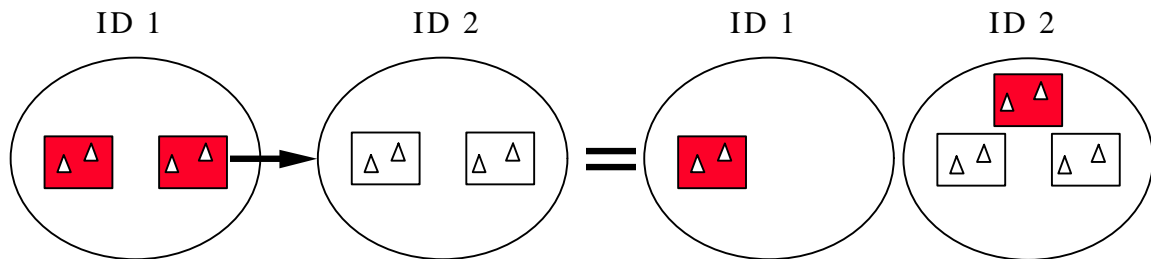
Note: It is not the intent of the merge definition to define the application or implementation specifics of how various systems or environments define, use or handle non-surviving information. "Non-surviving" in this document implies that a data set was existing in a fashion that was incorrect. Merging it into a new data set in itself implies that where there were two datasets, there is now only one. The means by which any system or environment conveys this new data set and the absence of the previous data set to the user is application specific. It is noted that some systems may still physically keep these "incorrect" datasets for audit trail or other purposes.

3.5.2.1.3 Move

A “move” involves transferring one or more datasets (identified by a subordinate identifier) *from* one superior identifier at the next hierarchical level *to* another superior identifier at the next hierarchical level, while all identifiers involved retain their original value. An exception to retaining the original identifier value may occur if any of the subordinate source identifiers already exist under the target superior identifier. In this case the identifier value may have to be renumbered in order to be uniquely identified under the target superior identifier. (Refer to Section 0, “

A45 - move visit information - visit number (repeating segment),” for an illustration of this.)

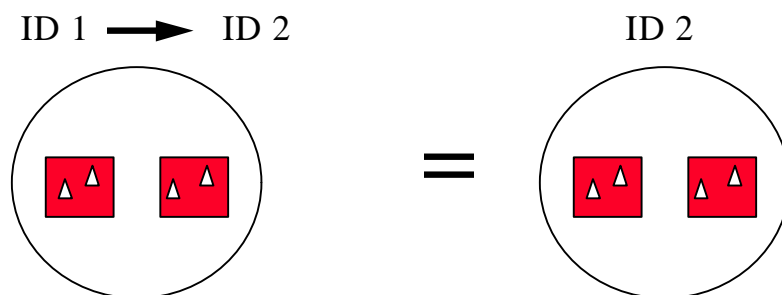
A move event signals that a patient, account, or visit has been moved from one person, patient, or account to another. All records at a subordinate level are also moved. For example, an A43 (move patient information - patient identifier list) event would be sent to signal that a medical records administrator has moved a medical record attached to an incorrect person to a correct person. The following figure graphically depicts the move event:



Note: The move event implies that all data related to the incorrect source ID and its subordinate IDs (specified in the MRG segment) will be moved to the correct target ID (specified in the PID or PV1 segment). Specifying each subordinate ID in repeating PID/MRG/PV1 sets is optional but not recommended.

3.5.2.1.4 Change identifier

A change identifier event signals that a single person, patient, account, or visit identifier has been changed. It does not reflect a merge or a move, it is simply a change of an identifier. For example, a “Change Identifier” event would be sent to signal that the registrar has changed an incorrectly assigned person identifier to a correct person identifier. The following picture graphically depicts this event:



3.5.2.1.5 Source and target identifiers

Merge, move, and change events reference target and source identifiers. The incorrect source identifier is specified in the MRG segment. The correct target identifier is identified in the PID or PV1 segment. For example, when you are changing a patient account number the source would be *MRG-3-prior patient account number*. The target is *PID-18-patient account number*.

3.5.2.1.6 Tightly coupled relationship

When patient/person identifiers are the target in merge, move, or change events, as specified in the *PID-2-patient ID*, *PID-3-patient identifier list* and *PID-4-alternate patient ID-PID*, the associated source identifiers in the *MRG-4-prior patient ID*, *MRG-1-prior patient identifier list*, and *MRG-2-prior alternate patient ID*, respectively, must be “tightly coupled.” Each event that is defined as a merge, move, or change message carries the “tightly” coupled relationship at the appropriate level in one of two ways. First, by virtue of positional placement in the sequence of identifiers, or second, by identifier type and assigning authority. The methodology used to establish the definition of “tightly coupled” relationship is determined by site negotiation. The recommended definition is by virtue of positional placement in the sequence of identifiers (pairwise). In addition, HL7 allows the use of the second definition by identifier type and assigning authority as an acceptable convention to establish a “tightly coupled” relationship. In the absence of a site negotiated definition, it is assumed that the positional placement of the identifiers is the default method.

The list of identifiers can be aligned positionally in their respective segment fields and processed by the receiving system by virtue of their order. This is sometimes referred to as an “ordered pairwise” relationship and is described further in section 3.5.2.1.7.

Alternatively, the uniqueness of the identifiers included in the message is determined by the combination of identifier type and assigning authority. It is assumed that both sending system and receiving system can inspect both of these qualifiers as a message is constructed or processed to determine the “tightly coupled” relationship between the identifiers. This can be referred to as “identifier type/assigning authority” relationship and is described further in section 3.5.2.1.8.

The pairing of identifiers between the MRG segment fields and their associated identifiers in the PID or PV1 segment are defined below:

Person		
<i>PID-2-patient ID (external ID)</i>	<i>with</i>	<i>MRG-4-prior patient ID (external ID)</i>
Patient		
<i>PID-3-patient identifier list</i>	<i>with</i>	<i>MRG-1-prior patient identifier list</i>
	<i>and by</i>	Explicit order of identifiers in the list
	<i>or by</i>	<identifier type code> and <assigning authority> field components
<i>PID-4-alternate patient ID</i>	<i>with</i>	<i>MRG-2-prior alternate patient ID</i>
Account		

<i>PID-18-patient account number</i>	<i>with</i>	<i>MRG-3-prior patient account number</i>
Visit		
<i>PVI-19-visit number</i>	<i>with</i>	<i>MRG-5-prior visit number</i>
<i>PVI-50-alternate visit ID</i>	<i>with</i>	<i>MRG-6-prior alternate visit ID</i>

3.5.2.1.7 Ordered pairwise relationship

In a strict sense, this type of relationship is characterized by a one-to-one association based on type (e.g., medical record number to medical record number, etc.) and the corresponding order of the element, and is typically found in list or set operations. However, for purposes of practical implementation, this relationship will be defined as a simple one-for-one pairing, as exists between the *PID-3-patient identifier list* and the *MRG-1-prior patient identifier list*. In other words, elements “A”, “B”, and “C” in the first list would directly correspond to elements “X”, “Y”, and “Z” in the second list. No consideration is made to the type or value of the corresponding elements, it is the explicit order of the elements which controls the association process. This scenario could be expressed as follows:

List₁ = {A,B,C}

List₂ = {X,Y,Z}

A : X
B : Y
C : Z

A second scenario may arise which deserves mention. As in the list example above, elements “A”, “B”, and “C” in the first list would “pair-up” with elements “X”, “Y”, “Z”, “Q”, “R”, and “S” in the second list. Again, no consideration is made to the type or value of the corresponding elements, it is the order and presence which controls the association process. This scenario could be expressed as follows:

List₁ = {A,B,C}

List₂ = {X,Y,Z,Q,R,S}

A : X
B : Y
C : Z
: Q
: R
: S

In the second scenario, the last three elements “Q”, “R”, and “S” are not affected and their value remains as if no association had been made.

A third scenario may arise which deserves mention. As in the list example above, elements “A”, “B”, “C”, “D”, “E”, and “F” in the first list would “pair-up” with elements “X”, “Y”, and “Z” in the second list. Again, no consideration is made to the type or value of the corresponding elements, it is the order and presence which controls the association process. This scenario could be expressed as follows:

List₁ = {A,B,C,D,E,F}

List₂ = {X,Y,Z}

A : X
B : Y
C : Z
D :
E :
F :

In the third scenario, the last three elements “D”, “E”, and “F” are not affected and their value remains the same as if no association had been made.

3.5.2.1.8 Identifier type / assigning authority relationship

As stated earlier, the uniqueness of the identifiers included in a message can be determined by the combination of identifier type (*t*) and assigning authority (*a*). It is assumed that both sending system and receiving system can inspect both of these qualifiers as a message is constructed or processed. This method is used to determine the “tightly coupled” relationship between the identifiers. The implementation of this relationship exists between the *PID-3-patient identifier list* and the *MRG-1-prior patient identifier list*. In other words, elements “B^{t2^a1}”, “C^{t3^a1}”, “D^{t4^a1}”, “A^{t1^a1}”, “E^{t5^a1}”, and “F^{t6^a1}” in the first list would be associated with elements “X^{t1^a1}”, “Y^{t2^a1}”, and “Z^{t3^a1}” in the second list. This scenario could be expressed as follows:

List₁ = {B^{t2^a1},C^{t3^a1},D^{t4^a1},A^{t1^a1},E^{t5^a1},F^{t6^a1}}

List₂ = {X^{t1^a1},Y^{t2^a1},Z^{t3^a1}}

B^{t2^a1} : Y^{t2^a1}
C^{t3^a1} : Z^{t3^a1}
D^{t4^a1} :
A^{t1^a1} : X^{t1^a1}
E^{t5^a1} :

F^{t6^a1} :

In this scenario, the three elements which do not have corresponding identifier type and assigning authority “D^{t4^a1}”, “E^{t5^a1}”, and “F^{t6^a1}” are not affected and their value remains the same as if no association had been made.

A second scenario may arise which deserves mention. In the case of identifier type and assigning authority definition, the elements “A^{t1^a1}”, “B^{t2^a1}”, and “C^{t3^a1}” in the first list would be associated with elements “X^{t4^a1}”, “Y^{t2^a1}”, “Z^{t3^a1}”, “Q^{t1^a1}”, “R^{t5^a1}”, and “S^{t6^a1}” in the second list. No consideration is made to the order of the identifiers, it is the identifier type and assigning authority of the corresponding elements which controls the association process. This scenario could be expressed as follows:

List₁ = {A^{t1^a1}, B^{t2^a1}, C^{t3^a1}}

List₂ = {X^{t4^a1}, Y^{t2^a1}, Z^{t3^a1}, Q^{t1^a1}, R^{t5^a1}, S^{t6^a1}}

A^{t1^a1} : Q^{t1^a1}
B^{t2^a1} : Y^{t2^a1}
C^{t3^a1} : Z^{t3^a1}
: X^{t4^a1}
: R^{t5^a1}
: S^{t6^a1}

In the second scenario, the three elements which do not have corresponding identifier type and assigning authority “X^{t4^a1}”, “R^{t5^a1}”, and “S^{t6^a1}” are not affected and their value remains the same as if no association had been made.

3.5.2.1.9 Global merge and move message construct versus repeating segment message constructs

A flexible message construct is provided for merge trigger events. The message construct allows for a repeating set of PID, optional PD1, MRG, and optional PV1 segments as illustrated below:

```

MSH
EVN
{  PID
    [PD1]
    MRG
    [PV1]
}
```

Trigger events support the concept of a global move or merge, where all the subordinate identifiers are moved or merged. For example, the use case for A41 (merge account-patient account number) (Section 3.5.2.2.12, “A41 - merge account - patient account number (global)”) illustrates a merge on the patient account number (*PID-18-patient account number*). All subordinate identifiers (*PV1-19-visit number*) are moved to the target *PID-18-patient account number* identifier, even though they are not specified in the message.

A repeating segment message construct supports reporting of the subordinate identifiers using the repeating segments. This is illustrated in the use case for A40 (merge patient - patient identifier list) (Section 3.5.2.2.11, “A40 - merge patient - patient identifier list (repeating segment),” A41 (merge account - patient account number) (Section 3.5.2.2.12, “A41 - merge account - patient account number (repeating segment),” and A45 (move visit information-visit number) (Section 3.5.2.2.17 “A45 - move visit information - visit number (repeating segment)”). Specifying each subordinate ID in repeating segments is optional but not recommended. This construct can be used when renumbering of identifiers is necessary as illustrated in Sections 3.5.2.2.11, “A40 - merge patient - patient identifier list (repeating segment),” 3.5.2.2.12, “A41 - merge account - patient account number (repeating segment),” and 3.5.2.2.17, “A45 - move visit information - visit number (repeating segment),” or to explicitly identify individual subordinate identifiers as illustrated in Section 3.5.2.2.17, “A45 - move visit information - visit number (repeating segment).”

3.5.2.1.10 Identifier renumbering

When renumbering of identifiers occurs, the repeating segment construct may be required in order to report identifier number changes. When renumbering occurs, the incorrect source identifier is specified in the MRG segment and the correct target identifier is reported in the PID or PV1 segment. Refer to the use case for A41 (merge account-patient account number) for an illustration.

3.5.2.1.11 Superior identifier reporting

When merging or moving subordinate numbers, the higher level, “superior” identifiers should be included in the message. For example, when merging an account where the target is *PID-18-patient account number* and the source is *MRG-3-prior patient account number*, the higher level patient identifiers (*PID-3 -patient identifier list* and *MRG-1-prior patient identifier list*) and person identifiers (*PID-2-patient ID* and *MRG-4-prior patient ID*) should also be reported in the message.

3.5.2.2 Trigger events

The intent of trigger events A18 (merge patient information), A30 (merge person information), A34 (merge patient information-patient ID only), A35 (merge patient information-account number only), A36 (merge patient information-patient ID and account number), A39 (merge person-patient ID), A40 (merge patient-patient identifier list), A41 (merge account-patient account number), A42 (merge visit-visit number), A43 (move patient information-patient identifier list), A44 (move account information-patient account number), A45 (move visit information-visit number), A46 (change patient ID), A47 (change patient identifier list), A48 (change alternate patient ID), A49 (change patient account number), A50 (change visit number), and A51 (change alternate visit ID) is to reconcile distinct sets of existing person/patient data records that have been entered under different identification numbers, either deliberately or because of errors. Ideally, following any of these trigger events, all of the person/patient data should be accessible under whatever surviving identifiers were specified in the messages. Because of substantial differences in database architectures and system-dependent data processing requirements or limitations, the exact meaning and implementation of these events must be negotiated between systems.

3.5.2.2.1 A18 - Merge patient information

This event is retained for backward compatibility. This event is non-specific and heavily dependent on implementation negotiations. Sites requiring (or desiring) greater specificity can use the following events: A40 (merge patient-patient identifier list -), A41 (merge account-patient account number), A42 (merge visit-visit number), A43 (move patient information-patient identifier list), A44 (move account information-patient account number), A45 (move visit information-visit number), A47 (change patient identifier list), A49 (change patient account number), A50 (change visit number), and A51 (change alternate visit ID).

3.5.2.2.2 A30 - Merge person information

This event is retained for backward compatibility. This event is non-specific and heavily dependent on implementation negotiations. Sites requiring (or desiring) greater specificity can use the following events: A40 (merge patient-patient identifier list), A41 (merge account-patient account number), A42 (merge visit-visit number), A43 (move patient information- patient identifier list), A44 (move account information-patient account number), A45 (move visit information-visit number), A47 (change patient identifier list), A49 (change patient account number), A50 (change visit number), and A51 (change alternate visit ID).

3.5.2.2.3 A34 - Merge patient information - patient ID only

This event is retained for backward compatibility. This event is non-specific and heavily dependent on implementation negotiations. Sites requiring (or desiring) greater specificity can use the following events: A40 (merge patient-patient identifier list), A41 (merge account-patient account number), A42 (merge visit-visit number), A43 (move patient information-patient identifier list), A44 (move account information-patient account number), A45 (move visit information-visit number), A47 (change patient identifier list), A49 (change patient account number), A50 (change visit number), and A51 (change alternate visit ID).

3.5.2.2.4 A35 - Merge patient information - account number only

This event is retained for backward compatibility. This event is non-specific and heavily dependent on implementation negotiations. Sites requiring (or desiring) greater specificity can use the following events: A40 (merge patient-patient identifier list), A41 (merge account-patient account number), A42 (merge visit-visit number), A43 (move patient information- patient identifier list), A44 (move account information-patient account number), A45 (move visit information-visit number), A47 (change patient identifier list), A49 (change patient account number), A50 (change visit number), and A51 (change alternate visit ID).

3.5.2.2.5 A36 - Merge patient information - patient ID & account number

This event is retained for backward compatibility. This event is non-specific and heavily dependent on implementation negotiations. Sites requiring (or desiring) greater specificity can use the following events: A40 (merge patient-patient identifier list), A41 (merge account-patient account number), A42 (merge visit-visit number), A43 (move patient information- patient identifier list), A44 (move account information-patient account number), A45 (move visit information-visit number), A47 (change patient identifier list), A49 (change patient account number), A50 (change visit number), and A51 (change alternate visit ID).

3.5.2.2.6 A39 - Merge person - patient ID

This event is retained for backward compatibility. This event is non-specific and heavily dependent on implementation negotiations. Sites requiring (or desiring) greater specificity can use the following events: A40 (merge patient-patient identifier list), A41 (merge account-patient account number), A42 (merge visit-visit number), A43 (move patient information- patient identifier list), A44 (move account information-patient account number), A45 (move visit information-visit number), A47 (change patient identifier list), A49 (change patient account number), A50 (change visit number), and A51 (change alternate visit ID).

3.5.2.2.7 A46 – Change patient ID

This event is retained for backward compatibility. This event is non-specific and heavily dependent on implementation negotiations. Sites requiring (or desiring) greater specificity can use the following events: A40 (merge patient-patient identifier list), A41 (merge account-patient account number), A42 (merge visit-visit number), A43 (move patient information- patient identifier list), A44 (move account information-patient account number), A45 (move visit information-visit number), A47 (change patient identifier list), A49 (change patient account number), A50 (change visit number), and A51 (change alternate visit ID).

3.5.2.2.8 A48 - Change alternate patient ID

This event is retained for backward compatibility. This event is non-specific and heavily dependent on implementation negotiations. Sites requiring (or desiring) greater specificity can use the following events: A40 (merge patient-patient identifier list), A41 (merge account-patient account number), A42 (merge visit-visit number), A43 (move patient information- patient identifier list), A44 (move account information-patient account number), A45 (move visit information-visit number), A47 (change patient identifier list), A49 (change patient account number), A50 (change visit number), and A51 (change alternate visit ID).

3.5.2.2.9 A39 - merge person - patient ID

This event is retained for backward compatibility.

A39 - Merge person - patient ID	
<p>Use Case - Enrollment information from ABC HMO is loaded to a repository system each month. Jane Smith is entered in January and assigned Enterprise Number 1 (E1). Jane marries in February and is erroneously entered as a new person under her married name, Jane Jones (E2). She has visited two healthcare facilities in the enterprise system (facility A and facility B) and has medical records (MR1 and MR2) and accounts (Accounts A and Accounts B) in both facilities. The repository database administrator detects the duplication and initiates a merge.</p>	
<p>Target: <i>PID-2-patient ID</i>. This event is a merge on <i>PID-2-patient ID</i>, since it represents the number used by disparate corporations or facilities to uniquely identify the person.</p>	
<p>Source: <i>MRG-4-prior patient ID</i></p>	
<p>Example transaction:</p> <pre>MSH ^~\& REPOSITORY ENT RSP1P8 MCM 199601051530 SEC ADT^A39 0000003 P 2.3.1<cr> EVN A39 199601051530<cr> PID E1 JONES^JANE<cr> MRG E2<cr></pre>	
Before Merge	After Merge
<div>E1</div> <div>MR1</div> <div>Accounts A</div> <div>E2</div> <div>MR2</div> <div>Accounts B</div>	<div>E1</div> <div>MR1</div> <div>Accounts A</div> <div>MR2</div> <div>Accounts B</div>
<p>Implementation Considerations: This type of merge is generally initiated by the enterprise system. Depending on the implementation arrangement with other disparate systems they may accept the merge, or, if they “own” their own medical record assignment they may use the information to initiate their own Medical Record Merge event, A40 (merge patient-internal ID), back to the enterprise.</p> <p><i>PID-3-patient identifier list</i> and <i>MRG-1-prior patient identifier list</i>) are not valued since this event is really a merge at the <i>PID-2-patient ID</i> level. All identifiers below the <i>PID-2-patient ID</i> are combined under the surviving External ID number.</p> <p>Since there could be a discrepancy in the demographic information between the two records, reconciliation may be required. Surviving and non-surviving demographic information is application and implementation specific. An A31 (update person information) event should be sent and/or negotiated as necessary to provide for implementation and application-specific needs.</p>	

Chapter 3: Patient Administration

3.5.2.2.10 A40 - merge patient - patient identifier list

A40 - Merge patient - patient identifier list	
<p>Use Case - During the admission process, the registrar does not find a record for patient Allison Smith in the ADT system and creates a new record with patient identifier MR2. Allison Smith has actually been to the healthcare facility several times in the past under her maiden name, Allison Evans with patient identifier MR1. The problem persists for a while. During that time, several more accounts are assigned to Allison under her newly created patient ID MR2. Finally, the problem is discovered and Medical Records merges her two charts together leaving patient identifier MR1. All the accounts (ACCT1, ACCT2) that were assigned to MR2 are combined under MR1 as a result.</p>	
<p>Target: <i>PID-3-patient identifier list</i> (Note: <i>PID-18-patient account number</i> is not valued; all accounts associated with MR2 are combined under MR1). To merge <i>PID-18-patient account number</i> data only, use event A41 (merge account-patient account number). To move <i>PID-18-patient account number</i> data use event A44 (move account information-patient account number).</p>	
<p>Source: <i>MRG-1-prior patient identifier list</i> (Note: <i>MRG-3-prior patient account number</i> is not valued; all accounts associated with MR2 are combined under MR1.)</p>	
<p>Example Transaction:</p> <pre>MSH ^~\& REGADT MCM RSP1P8 MCM 199601051530 SEC ADT^A40 00000003 P 2.3.1<cr> EVN A40 199601051530<cr> PID MR1^^^XYZ EVANS^ALLISON <cr> MRG MR2^^^XYZ<cr></pre>	
Before Merge	After Merge
MR1	MR1
ACCT1	ACCT1
ACCT2	ACCT2
	ACCT1
	ACCT2
<p>Implementation Considerations: This scenario exists when two medical records are established for the same person.</p> <p>Since there could be a discrepancy in the demographic information between the two records, reconciliation may be required. In the example above, the implementation allowed the older demographic information (in the PID) to survive. The demographics implied by the IDs in the MRG segment, did not survive. Surviving and non-surviving demographic information is application and implementation specific. An A08 (update patient information) event should be sent and/or negotiated as necessary to provide for implementation and application- specific needs.</p>	

3.5.2.2.11 A40 - merge patient - patient identifier list (repeating segment)

A40 - Merge patient - patient identifier list	
<p>Use Case - During the admission process, the registrar does not find a record for patient Allison Smith in the Patient Administration system and creates a new record with patient identifier MR2. Allison Smith has actually been to the healthcare facility several times in the past under her maiden name, Allison Evans with patient identifier MR1. The problem persists for a while. During that time, several more accounts are assigned to Allison under her newly created patient ID MR2. Finally, the problem is discovered and Medical Records merges her two charts together leaving patient identifier MR1. All the accounts (ACCT1, ACCT2) that were assigned to MR2 are combined under MR1 as a result. Since the account numbers are not unique, they are also renumbered.</p>	
Target: <i>PID-3-patient identifier list</i> and <i>PID-18-patient account number</i>	
Source: <i>MRG-1-prior patient identifier list</i> and <i>MRG-3-prior patient account number</i>	
<p>Example Transaction:</p> <pre> MSH ^~\& REGADT MCM RSP1P8 MCM 199601051530 SEC ADT^A40 00000003 P 2.3.1<cr> EVN A40 199601051530<cr> PID MR1^^^XYZ EVANS^ALLISON ACCT3<cr> MRG MR2^^^XYZ ACCT1<cr> PID MR1^^^XYZ EVANS^ALLISON ACCT4<cr> MRG MR2^^^XYZ ACCT2<cr> </pre>	
Before Merge	After Merge
MR1 MR2 ACCT1 ACCT1* ACCT2 ACCT2*	MR1 ACCT1 ACCT2 ACCT3* ACCT4* *accounts renumbered
<p>Implementation Considerations: This scenario exists when two medical records are established for the same person.</p> <p>If the account numbers are not unique (as implied by the After Merge example above) and renumbering of the accounts is required, you must use repeating segments as illustrated in the Example Transaction. Refer to Section 3.5.2.1.9, “Global merge and move message construct versus repeating segment message constructs,” for additional information regarding message construct.</p> <p>Since there could be a discrepancy in the demographic information between the two records, reconciliation may be required. In the example above, the implementation allowed the older demographic information (in the PID) to survive. The demographics implied by the IDs in the MRG segment, did not survive. Surviving and non-surviving demographic information is application and implementation specific. An A08 (update patient information) event should be sent and/or negotiated as necessary to provide for implementation and application specific needs.</p>	

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A41 - merge account - patient account number (global)

This event illustrates the concept of a global merge as defined in Section 3.5.2.1.9, “Global merge and move message construct versus repeating segment message constructs.”

A41 - Merge account information - patient account number	
Use Case - Mary Jones (patient identifier MR1) is a recurring outpatient at the Physical Therapy clinic at hospital XYZ with account number ACCT1. She has visited the clinic several times. When she arrives for therapy, a new registrar does not realize she already has an account and opens a new one with account number ACCT2. When the mistake is discovered, the two accounts are merged together, combining all visits under account ACCT1.	
Target: <i>PID-18-patient account number</i>	
Source: <i>MRG-3-prior patient account number</i>	
Example Transaction: MSH ^~\& REGADT MCM RSP1P8 MCM 199601051530 SEC ADT^A41 00000005 P 2.3.1<cr> EVN A41 199601051530<cr> PID MR1^^^XYZ JONES^MARY 19501010 M 123 NORTH STREET^^NY^NY^10021 (212) 111-3333 S ACCT1<cr> MRG MR1^^^XYZ ACCT2<cr>	
Before Merge	After Merge
MR1 ACCT1 96124 96126 ACCT2 96128 96130	MR1 ACCT1 96124 96126 96128 96130
Implementation Considerations: This scenario exists when two accounts are established for the same patient. The PV1 segment is not valued since this event is really a merge at the <i>PID-18-patient account number</i> level. All identifiers below the <i>PID-18-patient account number</i> are combined under the surviving Patient Account Number. Since there could be a discrepancy in the demographic information between the two records, reconciliation may be required. Surviving and non-surviving demographic information is application and implementation specific. An A08 (update patient information) event should be sent and/or negotiated as necessary to provide for implementation and application-specific needs.	

3.5.2.2.12 A41 - merge account - patient account number (repeating segment)

This event illustrates the concept of a repeating segment merge as defined in 3.5.2.1.7.

A41 - Merge account - patient account number	
<p>Use Case - Mary Jones (patient identifier MR1) is a recurring outpatient at the Physical Therapy clinic at hospital XYZ with account number ACCT1. She has visited the clinic several times. When she arrives for therapy, a new registrar does not realize she already has an account and opens a new one with account number ACCT2. When the mistake is discovered, the two accounts are merged together, combining all visits under account ACCT1.</p>	
Target: <i>PID-18-patient account number</i> and <i>PV1-19-Visit number</i>	
Source: <i>MRG-3-prior patient account number</i> and <i>MRG-5-prior visit number</i>	
<p>Example Transaction:</p> <pre> MSH ^~\& REGADT MCM RSP1P8 MCM 199601051530 SEC ADT^A41 00000005 P 2.3.1<cr> EVN A41 199601051530<cr> PID MR1^^^XYZ JONES^MARY 19501010 F 123 NORTH STREET^^NY^NY^10021 (212) 111-3333 S ACCT1<cr> MRG MR1^^^XYZ ACCT2 VISIT1<cr> PV1 1 I VISIT3<cr> PID MR1^^^XYZ JONES^MARY 19501010 F 123 NORTH STREET^^NY^NY^10021 (212) 111-3333 S ACCT1<cr> MRG MR1^^^XYZ ACCT2 VISIT2 PV1 1 I VISIT4<cr> </pre>	
Before Merge	After Merge
MR1 ACCT1 VISIT1 VISIT2 ACCT2 VISIT1* VISIT2* *Visits erroneously assigned	MR1 ACCT1 VISIT1 VISIT2 VISIT3** VISIT4** **Visits combined and renumbered as a result of merging the account
<p>Implementation Considerations: This scenario exists when two accounts and associated visits are established for the same patient.</p> <p>Repeating PID/MRG/PV1 segments report each Account Number and Visit Number effected. This construct is required since the visits are renumbered in this example.</p> <p>Since there could be a discrepancy in the demographic information between the two records, reconciliation may be required. Surviving and non-surviving demographic information is application and implementation specific. An A08 (update patient information) event should be sent and/or negotiated as necessary to provide for implementation and application-specific needs.</p>	

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3.5.2.2.13 A42 - Merge visit - visit number

A42 - Merge visit - visit number	
<p>Use Case - A42 (merge visit -visit number) - Mary Jones (patient identifier MR1) is a recurring outpatient at the Physical Therapy clinic at hospital XYZ with account number ACCT1. She has visited the clinic several times. When she arrives for therapy, two different registrars create a new visit numbers. The mistake is not discovered immediately and clinical data is recorded under both visit numbers. When the mistake is discovered, the two visits are merged together, leaving visit VISIT1.</p>	
Target: <i>PV1-19-visit number</i>	
Source: <i>MRG-5-prior visit number</i>	
<p>Example Transaction:</p> <pre>MSH ^~\& REGADT MCM RSP1P8 MCM 199601051530 SEC ADT^A42 00000005 P 2.3.1<cr> EVN A42 199601051530<cr> PID MR1^^XYZ JONES^MARY 19501010 F 123 NORTH STREET^^NY^NY^10021 (212) 111-3333 S ACCT1<cr> MRG MR1^^XYZ ACCT1 VISIT2<cr> PV1 1 I VISIT1</pre>	
Before Merge	After Merge
MR1 ACCT1 VISIT1 VISIT2	MR1 ACCT1 VISIT1
<p>Implementation Considerations: This scenario exists when two visits are established in error for the same patient and episode of care.</p>	

3.5.2.2.14 A43 - move patient information - patient identifier list

A43 - Move patient information - patient identifier list													
<p>Use Case - information from ABC HMO is loaded to a repository system each month. Jane Jones is entered in January and assigned Enterprise Number 1 (E1). Jane has visited Hospital XYZ and is assigned medical record number MR1. Jayne Jones (a different person) is also a member of ABC HMO loaded to the repository and assigned Enterprise Number E2. Jayne has visited Hospital XYZ and is assigned medical record number MR1. Jayne visits Clinic DEF where she is assigned medical record number MR2 which is erroneously associated with Jane's Enterprise Number (E1). When the error is discovered MR2 is moved from Enterprise Number E1 to E2.</p>													
Target: <i>PID-2-patient ID</i>													
Source: <i>MRG-4-prior patient ID</i>													
<p>Example transaction:</p> <pre>MSH ^~\& REPOSITORY ENT RSP1P8 MCM 199601051530 SEC ADT^A43 0000009 P 2.3.1.<cr> EVN A43 199601051530<cr> PID 1 E2 MR2^^^ABCHMD JONES^JAYNE ...<cr> MRG MR2^^^ABCHMD E1<cr></pre>													
Before Move	After Move												
<table> <tr> <td>E1</td><td>E2</td></tr> <tr> <td>MR1</td><td>MR1</td></tr> <tr> <td>MR2</td><td></td></tr> </table>	E1	E2	MR1	MR1	MR2		<table> <tr> <td>E1</td><td>E2</td></tr> <tr> <td>MR1</td><td>MR1</td></tr> <tr> <td></td><td>MR2</td></tr> </table>	E1	E2	MR1	MR1		MR2
E1	E2												
MR1	MR1												
MR2													
E1	E2												
MR1	MR1												
	MR2												
<p>Implementation Considerations: <i>PID-3-patient identifier list</i> and <i>MRG-1-prior patient identifier list</i> are the same value since the PID-3 value does not change in this scenario.</p> <p>With HL7 V2.3.1, you can report all identifiers in <i>PID-3-patient identifier list</i> and <i>MRG-1-prior patient identifier list</i>. The example above would be expressed as follows. In the following example, the <i>assigning authority</i> ENT1 represents an Enterprise and the <i>PE identifier type code</i> represents the Person's Enterprise number. The MR1 identifier is omitted from the message because it is not moved.</p> <pre>MSH ^~\& REPOSITORY ENT RSP1P8 MCM 199601051530 SEC ADT^A43 0000009 P 2.3.1.1.<cr> EVN A43 199601051530<cr> PID 1 E2^^^ENT1^PE~MR2^^^ABCHMD^MR JONES^JAYNE ...<cr> MRG E1^^^ENT1^PE~MR2^^^ABCHMD^MR . . .<cr></pre>													

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3.5.2.2.15 A44 - move account information - patient account number

A44 - Move account information - patient account number	
Use Case - During the admission process, the admitting clerk uses the Medical Record Number of William A. Jones III (MR1) instead of William A. Jones, Jr. (MR2). The Patient Administration system assigns the new admission account number ACCT2. When the mistake is discovered, account ACCT2 is moved to the correct Medical Record, MR2. The account number is not changed.	
Target: <i>PID-3-patient identifier list</i> and <i>PID-18-patient account number</i> (Note: <i>PID-18-patient account number</i> and <i>MRG-3-prior patient account number</i> will be the same since the account number does not change in this scenario).	
Source: <i>MRG-1-prior patient identifier list</i> and <i>MRG-3-prior patient account number</i> (NOTE: <i>MRG-3-prior patient account number</i> must be valued to indicate which account to move)	
Example Transaction: MSH ^~\& REGADT MCM RSP1P8 MCM 199601051530 SEC ADT^A44 00000007 P 2.3.1<cr> EVN A44 199601051530<cr> PID MR2^^^XYZ JONES^WILLIAM^A^JR 19501010 M 123 EAST STREET^^NY^NY^10021 (212) 111- 3333 S ACCT2<cr> MRG MR1^^^XYZ ACCT2<cr>	
Before Move	After Move
MR1 MR2 ACCT1 ACCT1 ACCT2	MR1 MR2 ACCT1 ACCT1 ACCT2
Implementation Considerations: This scenario exists when two medical records legitimately exist for two different people and an account is incorrectly associated with the wrong medical record number.	

3.5.2.2.16 A45 - move visit information - visit number (repeating segment)

A45 - Move visit information - visit number	
<p>Use Case -Mary Jones (patient identifier MR1) is a recurring outpatient at the Physical Therapy and Speech Therapy clinics at hospital XYZ. She is assigned a different account for each clinic; her account number for Physical Therapy is ACCT1 and her account number for Speech Therapy is X1. However, on two different occasions, the Speech Therapy registrar accidentally assigned her visits (96102 and 96104) to the Physical Therapy account. The problem is later discovered and the corresponding visits are moved to the correct account.</p>	
Target: <i>PID-18-patient account number</i> and <i>PV1-19-visit number</i> .	
Source: <i>MRG-3-prior patient account number</i> and <i>MRG-5-prior visit number</i> .	
<p>Example Transaction:</p> <pre> MSH ^~\& REGADT MCM RSP1P8 MCM 199601051530 SEC ADT^A45 00000005 P 2.3.1<cr> EVN A45 199601051530<cr> PID MR1^^^XYZ JONES^MARY 19501010 M 123 NORTH STREET^^NY^NY^10021 (212) 111-3333 S X1<cr> MRG MR1^^^XYZ ACCT1 96102<cr> PV1 0 PT 96102<cr> MRG MR1^^^XYZ ACCT1 96104<cr> PV1 0 PT 96104<cr> </pre>	
Before Move	After Move
MR1	MR1
ACCT1	ACCT1
96100	96100
96102*	X1
96104*	96101
X1	96102
96101	96103
96103	96104
96105	96105
*Visits erroneously assigned	
<p>In the above transaction/implementation, the application that generated the message assigns unique visit numbers.</p> <p>Implementation Considerations: In this scenario the repeating MRG/PV1 construct is used to indicate which visits are moved, as illustrated in the Example Transaction. <i>MRG-5-prior visit number</i> and <i>PV1-19-visit number</i> are the same values because the visit numbers do not change. Refer to Section 3.5.2.1.9, “Global merge and move message construct versus repeating segment message constructs,” for additional information regarding message construct.</p>	

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3.5.2.2.17 A45 - move visit information - visit number (repeating segment)

A45 - Move visit information - visit number	
<p>Use Case -Mary Jones (patient identifier MR1) is a recurring outpatient at the Physical Therapy and Speech Therapy clinics at hospital XYZ. She is assigned a different account for each clinic; her account number for Physical Therapy is ACCT1 and her account number for Speech Therapy is X1. However, on two different occasions, the Speech Therapy registrar accidentally assigned her visits (VISIT2 and VISIT3) to the Physical Therapy account. The problem is later discovered and the corresponding visits are moved to the correct account.</p>	
<p>Target: <i>PID-18-patient account number</i> and <i>PV1-19-visit number</i>.</p>	
<p>Source: <i>MRG-3-prior patient account number</i> and <i>MRG-5-prior visit number</i>.</p>	
<p>Example Transaction:</p> <pre> MSH ^~\& REGADT MCM RSP1P8 MCM 199601051530 SEC ADT^A45 00000005 P 2.3.1<cr> EVN A45 199601051530<cr> PID MR1^^^XYZ JONES^MARY 19501010 M 123 NORTH STREET^^NY^NY^10021 (212) 111-3333 S X1<cr> MRG MR1^^^XYZ ACCT1 VISIT2<cr> PV1 0 PT VISIT4<cr> MRG MR1^^^XYZ ACCT1 VISIT3<cr> PV1 0 PT VISIT5<cr> </pre>	
Before Move	After Move
MR1 ACCT1 VISIT1 VISIT2* VISIT3* X1 VISIT1 VISIT2 VISIT3 *Visits erroneously assigned	MR1 ACCT1 VISIT1 X1 VISIT1 VISIT2 VISIT3 VISIT4** VISIT5** **visits moved and renumbered
<p>In the above transaction/implementation, the application that generated the message allows non-unique visit numbers.</p> <p>Implementation Considerations: If Visit Numbers are not unique (as implied by the After Move example above) and renumbering of the visits is required, you must use a repeating MRG/PV1 construct as illustrated in the Example Transaction. Refer to 3.5.2.1.7, “A40-merge patient- patient identifier list,” for additional information regarding message construct.</p>	

3.5.2.2.18 A46 - change patient ID

This event is retained for backward compatibility.

A46 - Change patient ID	
<p>Use Case - The enterprise system allows manual assignment of the enterprise number. During the manual add of a person to the enterprise, an erroneous enterprise number is entered (E3) for Sally Jones. Since the correct enterprise number (E2) has not yet been assigned, no merge takes place. The <i>PID-2-patient ID</i> is simply changed.</p>	
Target: <i>PID-2-patient ID</i>	
Source: <i>MRG-4-prior patient ID</i> . This event is a change of <i>PID-2-patient ID</i> since it represents the number used by disparate corporations or facilities to uniquely identify the person.	
<p>Example Transaction:</p> <pre> MSH ^~\& REPOSITORY ENT RSP1P8 MCM 199601051530 SEC ADT^A46 000008 P 2. 3. 1<cr> EVN A46 199601051530<cr> PID E2 JONES^SALLY ... <cr> MRG E3<cr> </pre>	
Before Change	After Change
E3	E2
MR1	MR1
ACCT1	ACCT1
Implementation Considerations: This type of change is generally initiated by the enterprise system.	

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3.5.2.2.19 A47 - change patient identifier list

A47 - Change patient identifier list	
Use Case - The Medical Records Department of XYZ hospital uses a system of manual medical record number assignment. During the admission process, the registrar accidentally assigned the wrong Medical Record Number (MR2 instead of MR1) to John Meyers. Since the correct Medical Record has not yet been assigned to any patient, no merge takes place. The Patient Internal ID is simply changed.	
Target: <i>PID-3-patient identifier list</i>	
Source: <i>MRG-1-prior patient identifier list</i>	
Example Transaction: MSH ^~\& REGADT MCM RSP1P8 MCM 199601051530 SEC ADT^A47 00000002 P 2.3.1<cr> EVN A47 199601051530<cr> PID MR1^^^XYZ MEYERS^JOHN 19501010 M 987 SOUTH STREET^^NY^NY^10021 (212) 111- 3333 S ACCT1<cr> MRG MR2^^^XYZ ACCT1<cr>	
Before Change	After Change
MR2 ACCT1	MR1 ACCT1
Implementation Considerations: None.	

3.5.2.2.20 A48 - change alternate patient ID

This event is retained for backward compatibility.

A48 - Change alternate patient ID	
<p>Use Case - The Admitting Department of XYZ hospital uses a system of manual Alternate ID Number assignment. During the admission process, the registrar accidentally assigned the wrong Alternate ID Number (AL2 instead of AL1) to John Meyers. Since the correct Alternate ID Number has not yet been assigned to any patient, the Alternate ID is simply changed.</p>	
Target: <i>PID-4-alternate patient ID-PID</i>	
Source: <i>MRG-2-prior alternate patient ID</i>	
<p>Example Transaction:</p> <pre> MSH ^~\& REGADT MCM RSP1P8 MCM 199601051530 SEC ADT^A48 00000002 P 2.3.1<cr> EVN A48 199601051530<cr> PID MR1^^^XYZ AL1 MEYERS^JOHN <cr> MRG MR1^^^XYZ AL2<cr> </pre>	
Before Change	After Change
MR1	MR1
AL2	AL1
Implementation Considerations: None.	

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3.5.2.2.21 A49 - change patient account number

A49 - Change patient account number	
<p>Use Case - Patients are automatically assigned an account number by hospital XYZ's Patient Administration system at admission. However, when the Patient Administration system is down, the admitting clerk manually assigns account numbers from a pool of downtime account numbers. John Rodriguez (internal patient ID MR1) was manually assigned downtime account number ACCT1. When the Patient Administration system came back up, the admitting clerk accidentally entered the wrong account number, X1, into the system. When the problem was later discovered, the account number was changed from X1 to ACCT1.</p>	
Target: <i>PID-18-patient account number</i>	
Source: <i>MRG-3-prior patient account number</i>	
<p>Example Transaction:</p> <pre>MSH ^~\& REGADT MCM RSP1P8 MCM 199601051530 SEC ADT^A49 00000006 P 2.3.1<cr> EVN A49 199601051530<cr> PID MR1^^^XYZ RODRIGUEZ^JOHN 19501010 M 123 SOUTH STREET^^NY^NY^10021 (212) 111- 2222 S CAT ACCT1<cr> MRG MR1^^^XYZ X1<cr></pre>	
Before Change	After Change
MR1	MR1
X1	ACCT1
Implementation Considerations: None.	

3.5.2.2.22 A50 - change visit number

A50 - Change visit number	
<p>Use Case - Patients are automatically assigned a visit number by hospital XYZ's Patient Administration system at check-in. However, when the Patient Administration system is down, the admitting clerk manually assigns visit numbers from a pool of downtime numbers. John Rodriguez (internal patient ID MR1) was manually assigned downtime visit number VISIT1. When the Patient Administration system came back up, the admitting clerk accidentally entered the wrong visit number, VISIT2, into the system. When the problem was later discovered, the visit number was changed from VISIT2 to VISIT1.</p>	
Target: <i>PV1-19-visit number</i>	
Source: <i>MRG-5-prior visit number</i>	
<p>Example Transaction:</p> <pre> MSH ^~\& REGADT MCM RSP1P8 MCM 199601051530 SEC ADT^A50 00000006 P 2.3.1<cr> EVN A50 199601051530<cr> PID MR1^^^XYZ RODRIGUEZ^JOHN 19501010 M 123 SOUTH STREET^^NY^NY^10021 (212) 111- 2222 S CAT ACCT1<cr> MRG MR1^^^XYZ ACCT1 VISIT2<cr> PV1 1 0 3 99^BROWN^JERRY 0NC 1 VIP 99^BROWN^JERRY 0/P VISIT1. . . <cr> </pre>	
Before Change	After Change
MR1	MR1
ACCT1	ACCT1
VISIT2	VISIT1
Implementation Considerations: None.	

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3.5.2.2.23 A51 - change alternate visit ID

A51 - Change alternate visit ID	
<p>Use Case - Patients are automatically assigned an alternate visit number by hospital XYZ's Patient Administration system at check-in. However, when the Patient Administration system is down, the admitting clerk manually assigns alternate visit numbers from a pool of downtime numbers. John Rodriguez was manually assigned downtime alternate visit number AV1. When the Patient Administration system came back up, the admitting clerk accidentally entered the wrong alternate visit number, AV2, into the system. When the problem was later discovered, the alternate visit number was changed from AV2 to AV1.</p>	
Target: <i>PV1-50-alternate visit ID</i>	
Source: <i>MRG-6-prior alternate visit ID</i>	
<p>Example Transaction:</p> <pre>MSH ^~\& REGADT MCM RSP1P8 MCM 199601051530 SECURITY ADT^A51 00000006 P 2.3.1<cr> EVN A51 199601051530<cr> PID MR1^^^XYZ RODRIGUEZ^JOHN 19501010 M 123 SOUTH STREET^^NY^NY^10021 (212) 111- 2222 S CAT ACCT1<cr> MRG MR1^^^XYZ ACCT1 AV2<cr> PV1 1 0 3 99^BROWN^JERRY 0NC 1 VIP 99^BROWN^JERRY 0/P V1 SP A 19960902081010 AV1<cr></pre>	
Before Change	After Change
MR1	MR1
ACCT1	ACCT1
VISIT1	VISIT1
AV2	AV1
Implementation Considerations: None.	

3.5.2.2.24 Example using multiple messages

A47 - Change patient identifier list and A49 - Change patient account number	
<p>Use Case - Patients are automatically assigned Medical Records Numbers and account numbers by hospital XYZ's Patient Administration system at admission. However, when the Patient Administration system is down, the admitting clerk manually assigns account numbers and Medical Records numbers from a pool of downtime numbers. John Rodriguez was manually assigned downtime Medical Record Number MR1 and downtime account number A1. When the Patient Administration system came back up, the admitting clerk accidentally enters the wrong Medical Record Number (MR2) and account number (X1) into the system. The error occurred because she was reading from the paperwork for a different downtime admit not yet entered into the Patient Administration system. The problem is quickly discovered, and the medical record number and account number was fixed accordingly. Since the other downtime admit had not yet been entered into the Patient Administration system, no merge was required.</p>	
Target: <i>PID-3-patient identifier list</i> (Message 1) and <i>PID-18-patient account number</i> (Message 2)	
Source: <i>MRG-1-prior patient identifier list</i> (Message 1) and <i>MRG-3-prior patient account number</i> (Message 2)	
<p>Example Transaction - Message 1:</p> <pre>MSH ^~\& REGADT MCM RSP1P8 MCM 199601051530 SEC ADT^A47 00000006 P 2.3.1<cr> EVN A47 199601051530<cr> PID MR1^^^XYZ^MR RODRIGUEZ^JOHN 19501010 M 123 SOUTH STREET^^NY^NY^10021 (212) 111- 2222 S CAT X1<cr> MRG MR2^^^XYZ^MR <cr></pre> <p>Example Transaction - Message 2:</p> <pre>MSH ^~\& REGADT MCM RSP1P8 MCM 199601051530 SEC ADT^A49 00000006 P 2.3.1<cr> EVN A49 199601051530<cr> PID MR1^^^XYZ^MR RODRIGUEZ^JOHN 19501010 M 123 SOUTH STREET^^NY^NY^10021 (212) 111- 2222 S CAT ACCT1<cr> MRG MR1^^^XYZ^MR X1<cr></pre>	
Before Change	After Change
MR2	MR1
X1	ACCT1
Implementation Considerations: Message 1 (A47) changes the patient identifier list. Message 2, A49 (change patient account number) changes the account number.	

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3.5.2.2.25 Example using multiple messages

A44 - Move account information - patient account number and A49 - Change patient account number	
Use Case - During the admitting process, the admitting clerk uses the Medical Record Number of William A. Jones, III (MR1) instead of William A. Jones, Jr. (MR2). The Patient Administration system assigns the new admission account number A1. When the mistake is discovered, the account is moved to the correct Medical Record, MR2. The Patient Administration system generates a new account number as a result: number X1.	
Target: <i>PID-3-patient identifier list</i> (Message 1) and <i>PID-I8-patient account number</i> (Message 2)	
Source: <i>MRG-1-prior patient identifier list</i> (Message 1) and <i>MRG-3-prior patient account number</i> (Message 2)	
<p>Example Transaction (Message 1):</p> <pre>MSH ^~\& REGADT MCM RSP1P8 MCM 199601051530 SEC ADT^A44 00000007 P 2.3.1<cr> EVN A44 199601051530<cr> PID MR2^^^XYZ^MR JONES^WILLIAM^A^JR 19501010 M 123 EAST STREET^^NY^NY^10021 (212) 111- 3333 S ACCT1<cr> MRG MR1^^^XYZ^MR ACCT1<cr></pre> <p>Example Transaction (Message 2):</p> <pre>MSH ^~\& REGADT MCM RSP1P8 MCM 199601051530 SEC ADT^A49 00000007 P 2.3.1<cr> EVN A49 199601051530<cr> PID MR2^^^XYZ^MR JONES^WILLIAM^A^JR 19501010 M 123 EAST STREET^^NY^NY^10021 (212) 111- 3333 S X1<cr> MRG MR2^^^XYZ^MR ACCT1<cr></pre>	
Before Change	After Change
MR1 MR2 ACCT1	MR1 MR2 X1
Implementation Considerations: Message 1, A44 (move account information-patient account number), moves the account from MR1 to MR2. Message 2, A49 (change patient account number), changes the account number.	

3.5.3 Patient record links

Linking two or more patients does not require the actual merging of patient information as discussed in Section 3.5.2, “Merging patient/person information;” following a link trigger event, sets of affected patient data records should remain distinct. However, because of differences in database architectures, there may be system-dependent limitations or restrictions regarding the linking of one or more patients that must be negotiated.

There are multiple approaches for implementing MPIs. It is useful for the purpose of MPI mediation to support two types of linkage. Explicit linkage requires a message declaring a link has been made between multiple identifiers. Implicit linkage is performed when a receiving system infers the linkage from the presence of multiple identifiers present in *PID-3-patient identifier list*.

In an MPI setting, the A24 -link patient information message is preferred for transmitting an explicit link of identifiers whether they are in the same or different assigning authorities. The A37 unlink patient information message is preferred for transmitting the explicit unlinking of identifiers.

Implicit linkage of identifiers, sometimes called passive linking, has been implemented using various messages. An acknowledged method is inclusion of multiple identifiers in *PID-3-patient identifier list*, which the receiving system implicitly links. An MPI or application that makes such an implicit linkage can generate an A24 - link patient information message to explicitly notify another system of this action.

4. Order Entry

Chapter Chair/Editor:	Clement J. McDonald, MD Regenstrief Institute and Indiana University School of Medicine
Chapter Chair/Editor:	Hans Buitendijk Shared Medical Systems
Chapter Chair/Editor:	Debra Weiss The Huntington Group – a unit of IDX
Editor:	Mark Shafarman Oacis Healthcare Systems, Inc.

4.1 OVERVIEW

The Order Entry transaction set provides for the transmission of orders or information about orders between applications that capture the order, by those that fulfill the order, and other applications as needed. An order is a request for material or services, usually for a specific patient. These services include medications from the pharmacy, clinical observations (e.g., vitals, I&Os) from the nursing service, tests in the laboratory, food from dietary, films from radiology, linens from housekeeping, supplies from central supply, an order to give a medication (as opposed to delivering it to the ward), etc.

Most orders are associated with a particular patient. However, the Standard also allows a department to order from another ancillary department without regard to a patient (e.g., floor stock), as well as orders originating in an ancillary department (i.e., any application may be the placer of an order or the filler of an order).

We refer to the person or entity who places the order as the placer. We refer to the person or entity that carries out the order as the filler (producer in ASTM terminology). In the case where the person or entity that carries out the order also requests the order, this person or entity is referred to as the filler and placer of the order. The filler may also request another application to assign a filler or placer order number.

This chapter defines the transactions at the seventh level, i.e., the abstract messages. Various schemes may be used to generate the actual characters that make up the messages according to the communications environment. The HL7 Encoding Rules will be used where there is not a complete Presentation Layer. This is described in Chapter 2, Section 2.10, “Message construction rules.” The examples included in this chapter were constructed according to the HL7 Encoding Rules.

4.1.1 Preface (organization of this chapter)

This chapter describes the messages used to generate orders. Specific transaction sets have been defined for orders: a) clinical observations and diagnostic studies, b) treatments, c) diets, d) supplies, and e) other orders. This chapter is organized accordingly. The first Sections, 4.1, “OVERVIEW,” and 4.2, “ORDER MESSAGE DEFINITIONS,” present the overall structure and rationale for these messages. Section 4.3, “SEGMENTS COMMON TO ALL ORDERS,” presents the message segments that are common to all of the order entry messages. Section 4.4, “QUANTITY/TIMING (TQ) DEFINITION,” describes the quantity/timing (TQ) data type. Section 4.5, “OBSERVATION AND DIAGNOSTIC STUDY ORDERS,” to 4.8

“PHARMACY/TREATMENT ORDERS,” describes the messages for each of the major categories of orders listed above. Each section about a type of order is organized into background and overview, message structure, and message segments (that are specific to the order class in question). Special discussions of the use of fields, segments or messages, and examples are included.

Segments are introduced in order of occurrence in a message. A list of allowable values for a field is included in the body of the text, along with the field definition for easier reference.

Orders for laboratory tests, bedside monitoring, diagnostic imaging, electrocardiograms, vital signs, etc., are subsumed under the observation message set (see Section 4.5, “OBSERVATION AND DIAGNOSTIC STUDY ORDERS”). In the development of the treatment order transaction set (see Section 4.8, “PHARMACY/TREATMENT ORDERS”), the focus has been on medication treatments, but the same transaction set works well for total parenteral nutrition (TPN). There is hope that it is also sufficient for other kinds of treatment orders, such as those performed by the nursing service. But it has not yet been exercised in that context and may well need further development. The orders for dietary (see Section 4.6, “DIET ORDERS”) include all of the usual diet specifications including snacks and guest trays. Supply orders (Section 4.7, “SUPPLY ORDERS”) are different in that they often are not patient-centered (e.g., requests to stock the ward supply room).

4.1.2 Glossary

4.1.2.1 Filler:

The application responding to, i.e., performing, a request for services (orders) or producing an observation. The filler can also originate requests for services (new orders), add additional services to existing orders, replace existing orders, put an order on hold, discontinue an order, release a held order, or cancel existing orders.

4.1.2.2 Observation segment:

An OBX segment defined in Chapter 7.

4.1.2.3 Order:

A request for a service from one application to a second application. The second application may in some cases be the same; i.e., an application is allowed to place orders with itself.

4.1.2.4 Order detail segment:

One of several segments that can carry order information. Examples are OBR and RXO. Future ancillary-specific segments may be defined in subsequent releases of the Standard if they become necessary.

4.1.2.5 Placer:

The application or individual originating a request for services (order).

4.1.2.6 Placer order group:

A list of associated orders coming from a single location regarding a single patient.

4.2 ORDER MESSAGE DEFINITIONS

4.2.1 ORM - general order message (O01)

The function of this message is to initiate the transmission of information about an order. This includes placing new orders, cancellation of existing orders, discontinuation, holding, etc. ORM messages can originate also with a placer, filler, or an interested third party.

The trigger event for this message is any change to an order. Such changes include submission of new orders, cancellations, updates, patient and nonpatient-specific orders, etc.

<u>ORM^O01^ORM_O01</u>	<u>General Order Message</u>	<u>Chapter</u>
MSH	Message Header	2
[{NTE}]	Notes and Comments (for Header)	2
[
PID	Patient Identification	3
[PD1]	Additional Demographics	3
[{NTE}]	Notes and Comments (for Patient ID)	2
[PV1]	Patient Visit	3
[PV2]	Patient Visit- Additional Info	3
[{IN1}]	Insurance	6
[IN2]	Insurance Additional Info	6
[IN3]	Insurance Add'l Info - Cert.	6
}]		
[GT1]	Guarantor	6
[{AL1}]	Allergy Information	3
]		
{		
ORC	Common Order	4
[
Order Detail		4
Segment OBR, etc.		
[{NTE}]	Notes and Comments (for Detail)	2
[{DG1}]	Diagnosis	6
[
{		
OBX	Observation/Result	7
[{NTE}]	Notes and Comments (for Results)	2
}		
]		
]		
{[CTI]}	Clinical Trial Identification	7
[BLG]	Billing Segment	4
}		

4.2.1.1 ORM use notes

- The abstract message syntax for some order segments vary slightly. Please refer to the appropriate sections for specific examples: for supply orders (RQ), see Section 4.7, "SUPPLY ORDERS," for pharmacy, see Section 4.8, "PHARMACY/TREATMENT ORDERS," and for dietary orders, see Section 4.6, "DIET ORDERS."
- The segment named "Order Detail Segment" represents whichever of these order detail segment(s) is appropriate to the message, currently OBR, RQD, RQ1, RXO, ODS, ODT.
- The NTE segment(s) can be included in the ORM message in four places; in each place the NTE refers to the segment which it follows. In particular, the NTEs following the MSH refer only to the message header, the NTEs following the order detail segment apply to the service defined by that ORC and order detail segment.
- The PID segment is required if and only if new orders are being entered and they are related to a particular patient. For nonpatient-related orders the PID segment is never included.

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- e) The optional PV1 segment is present mainly to permit transmission of patient visit information such as current location with an order.
- f) The order detail segments are not required when a simple control message is being sent. For example, a hold message (*ORC-I-order control* = HD) does not require that an order segment follow it.
- g) *ORC-I-order control* is critical to the operation of both ORM and ORR messages. For example, to request cancellation of an order, one would transmit a CA in *ORC-I-order control* of the appropriate ORC. (See the definition of *ORC-I-order control*.)
- h) A method to inquire for order status in the display format is provided in Chapter 2, and uses the record format provided in Chapter 7.
- i) Each order message that defines any type of new order (*ORC-I-order control* = NW, CH, RO, or SN) requires an ORC/OBR pair to define each order to the receiving application. This also applies to any other types of orders, with the OBR being replaced by the appropriate order detail segment, as defined below. Thus two consecutive ORCs could occur if a cancel order request (needing only the order numbers) were followed by a second cancel order request. Many other examples are possible.
- j) The insurance segments (IN1, IN2, and GT1) are typically used for external fillers, e.g., reference labs, where formal ADT transactions are overly complex or not needed.

4.2.2 ORR - general order response message response to any ORM (O02)

The function of this message is to respond to an ORM message. An ORR message is the application acknowledgment to an ORM message. See Chapter 2 for a description of the acknowledgment paradigm.

In ORR the PID and ORC segments are optional, particularly in case of an error response. However, ORC segments are always required in ORR when an order detail segment is present. For example, a response ORR might include only the MSH and MSA, but if a RQ1 is present, it must be preceded by an ORC.

The function (e.g., cancel, new order) of both ORM and ORR messages is determined by the value in *ORC-I-order control*. (See the table of order control values for a complete list.)

<u>ORR^O02^ORR_O02</u>	<u>General Order Acknowledgment Message</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2
[{NTE}]	Notes and Comments (for Header)	2
[
[PID	Patient Identification	3
[{NTE}]]	Notes and Comments (for Patient ID)	2
{		
ORC	Common Order	4
[Order Detail		4
Segment] OBR, etc.		
[{NTE}]	Notes and Comments (for Detail)	2
[{CTI}]	Clinical Trial Identification	7
}		
]		

Note: ORRs for supply, pharmacy, and dietary orders all have slightly different message syntax; refer to the appropriate sections as detailed in Section 4.2.1.1, "ORM use notes," for exact details.

4.2.3 OSQ/OSR- query response for order status (Q06)

<u>OSQ^Q06</u>	<u>Order Status Query</u>	<u>Chapter</u>
MSH	Message Header	2
QRD	Query Definition	2
[QRF]	Query Filter	2
[DSC]	Continuation Pointer	2

<u>OSR^Q06</u>	<u>Order Status Response</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2
[{NTE}]	Notes and Comments (for Header)	2
QRD	Query Definition	2
[QRF]	Query Filter	2
[
[PID	Patient Identification	3
[{NTE}]	Notes and Comments (for Patient ID)	2
]		
{		
ORC	Common Order	4
[Order Detail Segment] OBR, etc.		4
[{NTE}]	Notes and Comments (for Detail)	2
[{CTI}]	Clinical Trial Identification	7
}		
]		
[DSC]	Continuation Pointer	2

4.2.3.1 Query usage notes

The QRD and QRF segments are defined in Chapter 2, Section 2.24, “Message Control Segments.”

The subject filters contained in the QRD and QRF segments describe the kind of information that is required to satisfy the request. They are defined by local agreement between the inquiring system and the ancillary system. See the Implementation Guide for detailed examples of the use of query filter fields.

The Set ID fields in the various segments (including PID) are used to count the number of segments of one kind transmitted at one level of the hierarchy.

The Query Result Level field of the QRD determines the amount of data requested. See Chapter 2, Section 2.24.4, “QRD - original style query definition segment.”

The OSQ message is a record-oriented query that has the structure as the regular QRY message. OSQ is included here for the convenience of implementors.

4.3 SEGMENTS COMMON TO ALL ORDERS

The following segments (ORC and BLG) are common to many order messages.

4.3.1 ORC - common order segment

The Common Order segment (ORC) is used to transmit fields that are common to all orders (all types of services that are requested). The ORC segment is required in the Order (ORM) message. ORC is mandatory in Order Acknowledgment (ORR) messages if an order detail segment is present, but is not required otherwise.

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If details are needed for a particular type of order segment (e.g., Pharmacy, Dietary), the ORC must precede any order detail segment (e.g., RXO, ODS). In some cases, the ORC may be as simple as the string `ORC|OK|<placer order number>|<filler order number>|<cr>`.

If details are not needed for the order, the order detail segment may be omitted. For example, to place an order on hold, one would transmit an ORC with the following fields completed: *ORC-1-order control* with a value of HD, *ORC-2-placer order number*, and *ORC-3-filler order number*.

There is some overlap between fields of the ORC and those in the order detail segments. These are described in the succeeding sections.

Figure 4-1. ORC attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	2	ID	R		0119	00215	Order Control
2	22	EI	C			00216	Placer Order Number
3	22	EI	C			00217	Filler Order Number
4	22	EI	O			00218	Placer Group Number
5	2	ID	O		0038	00219	Order Status
6	1	ID	O		0121	00220	Response Flag
7	200	TQ	O			00221	Quantity/Timing
8	200	CM	O			00222	Parent
9	26	TS	O			00223	Date/Time of Transaction
10	120	XCN	O	Y		00224	Entered By
11	120	XCN	O	Y		00225	Verified By
12	120	XCN	O	Y		00226	Ordering Provider
13	80	PL	O			00227	Enterer's Location
14	40	XTN	O	Y/2		00228	Call Back Phone Number
15	26	TS	O			00229	Order Effective Date/Time
16	200	CE	O			00230	Order Control Code Reason
17	60	CE	O			00231	Entering Organization
18	60	CE	O			00232	Entering Device
19	120	XCN	O	Y		00233	Action By
20	40	CE	O		0339	01310	Advanced Beneficiary Notice Code
21	60	XON	O	Y		01311	Ordering Facility Name
22	106	XAD	O	Y		01312	Ordering Facility Address
23	48	XTN	O	Y		01313	Ordering Facility Phone Number
24	106	XAD	O	Y		01314	Ordering Provider Address

ORC use notes

a) placer order groups

The Standard supports a mechanism to collect several orders together in a group. Most often this is used to represent an “ordering session” for a single patient.

An order group is a list of orders (ORCs) associated with an *ORC-4-placer group number*. A group is established when the placer supplies a placer group number with the original order. The order group consists of all the ORCs and order detail segments that have the same placer group number. Orders can be removed from the group using cancel, or added using the replacement or parent-child mechanisms. New orders cannot otherwise be added to the group.

b) duplicate fields

The ORC is intended to uniformly define the fields that are common to all orders (i.e., requested services). Some ORC fields are duplicated in some order detail segments (e.g., OBR, RXO). For example, *ORC-2-placer order number* has the same meaning and purpose as *OBR-2-placer order number* field. This promotes upward compatibility with past versions and ASTM.

The rule for using these fields is that the value must appear in the order detail segment if it does not appear in the ORC. However, it is recommended to transmit the field value in both places to avoid confusion.

- c) parent/child - cancel, hold, discontinue

During transmission of a request to cancel, hold, or discontinue a parent order, the request is intended to apply recursively to the parent order and all associated child orders.

For example:

- 1) An EKG application receives an order for three EKGs on successive mornings.
- 2) The EKG application creates three child orders, one for each requested EKG.
- 3) The first daily EKG has already been performed when a request is received to cancel the original parent order. (The parent is beyond the point of cancellation.)
- 4) The remaining, unperformed, children are canceled as a result of the request.

4.3.1.0 ORC field definitions

4.3.1.1 Order control (ID) 00215

Definition: Determines the function of the order segment. Refer to *HL7 table 0119 - Order control codes and their meaning* for valid entries. Very detailed explanatory notes are given at the end of this section.

This field may be considered the “trigger event” identifier for orders. The codes fall roughly into the following three categories:

- a) event request

Codes like “NW” (new order) and “CA” (cancel order request) are used to initiate an event.

- b) event acknowledgment

Codes like “OK” (order accepted) and “CR” (canceled as requested) are used to reply to the event request.

- c) event notification

Codes like “OC” (order canceled) and “OD” (order discontinued) are used to notify other applications that an event has occurred. No application reply is necessary.

Event request codes are intended to initiate an event. Event acknowledgment codes are intended to reply to an application that requested an event. Event notification codes are intended to notify another application that, e.g., the filler has performed some action on an order that the other application, e.g., the placer, needs to know.

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Fillers, placers, and other applications can use event requests, event acknowledgments, and event - notification-type trigger events interchangeably. However, certain order control codes can originate only from the filler (e.g., CR) and others can only originate from the placer (e.g., CA).

Table 0119 - Order control codes and their meaning

Value ¹	Event/Message Type	Description	Originator ²	Field Note ³
NW	O01	New order	P	I
OK	O02	Order accepted & OK	F	I
UA	O02/ORR	Unable to accept order	F	n
CA	O01	Cancel order request	P	a
OC	O01	Order canceled	F	
CR	O02	Canceled as requested	F	
UC	O02	Unable to cancel	F	b
DC	O01	Discontinue order request	P	c
OD	O01	Order discontinued	F	
DR	O02	Discontinued as requested	F	
UD	O02	Unable to discontinue	F	
HD	O01	Hold order request	P	
OH	O01	Order held	F	
UH	O02	Unable to put on hold	F	
HR	O02	On hold as requested	F	
RL	O01	Release previous hold	P	
OE	O01	Order released	F	
OR	O02	Released as requested	F	
UR	O02	Unable to release	F	
RP	O01	Order replace request	P	e,d,h
RU	O01	Replaced unsolicited	F	f,d,h
RO	O01	Replacement order	P,F	g,d,h,l
RQ	O02	Replaced as requested	F	d,e,g,h
UM	O02	Unable to replace	F	
PA	O01/ORU	Parent order	F	I
CH	O01/ORU	Child order	F,P	I
XO	O01	Change order request	P	
XX	O01	Order changed, unsol.	F	
UX	O02	Unable to change	F	
XR	O02	Changed as requested	F	
DE	O01/O02	Data errors	P,F	
RE	O01/R01	Observations to follow	P,F	j
RR	O02	Request received	P,F	k
SR	O02/Q06	Response to send order status request	F	
SS	O01	Send order status request	P	
SC	O01	Status changed	F,P	
SN	O01	Send order number	F	I
NA	O02	Number assigned	P	I

Value ¹	Event/Message Type	Description	Originator ²	Field Note ³
CN	R01	Combined result	F	m
RF	O01	Refill order request	F, P	o
AF	O02	Order refill request approval	P	p
DF	O02	Order refill request denied	P	q
FU	O01	Order refilled, unsolicited	F	r
OF	O02	Order refilled as requested	F	s
UF	O02	Unable to refill	F	t
LI		Link order to patient care problem or goal		u
UN		Unlink order from patient care problem or goal		u

Notes:

- 1 The order control value field
- 2 "F": Values originate from the filler and are not restricted to be sent only to the placer. "P": Values originate from the placer or other application with placer privileges (as agreed in interface negotiation).
- 3 See table notes below for explanation of codes.

4.3.1.1.1 Table notes for order control codes of ORC

a) CA

A cancellation is a request not to do a previously ordered service. Confirmation of the cancellation request is provided by the filler, e.g., a message with an *ORC-I-order control* value of CR.

b) UC

An unable-to-cancel code is used when the ordered service is at a point that it cannot be canceled by the filler or when local rules prevent cancellation by the filler. The use of this code is dependent on the value of *ORC-6-response flag*.

c) DC

A discontinue request code is used to stop an ongoing ordered service. It is not the same as a cancellation request, which is used in an attempt to prevent an order from happening.

d) RP, RQ, RU, RO

A replacement is the substitution of one or more orders for one or more previously ordered services.

The replaced orders are treated as though they were canceled. If and when an ordered service can be replaced are local site-specific determinations.

Use the parent/child order control codes if the site specifies that the original order must remain intact. Do not use the replacement codes under this circumstance.

For each order to be replaced, use an *ORC-I-order control* value of RP (request for a replacement going to a filler) or RU (an unsolicited replacement created by the filler) used by the filler to notify the placer and/or other systems). By local agreement, the ORC segment (with RP or RU) may be followed by its original order detail segment. The ORC segments (with RP or RU) must be followed by an ORC segment with an *ORC-I-order control* value of RO (indicating the replacement order). By local agreement, the ORC with the RO value may be followed by an order detail segment.

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For example, suppose that an ancillary application were replacing two OBR orders with three different orders. The sequence of segments would be as follows:

Figure 4-2. RU and RO usage (example)

Segment	Order Control	Comment
ORC OBR	RU	1st replaced ORC 1st replaced order's detail segment
ORC OBR	RU	2nd replaced ORC 2nd replaced order's detail segment
ORC OBR	RO	1st replacement ORC 1st replacement order's detail segment
ORC OBR	RO	2nd replacement ORC 2nd replacement order's detail segment
ORC OBR	RO	3rd replacement ORC 3rd replacement order's detail segment

Whether the OBR segments must be present is determined by the value of *ORC-6-response flag*.

The described replacement method will handle all possible cases of replacement: one-into-one, many-into-one, one-into-many, and many-into-many. If the placer sent this request to the filler with two RPs, and this was a response back from the filler to the placer, the two RUs (replaced unsolicited) would be two RQs (replaced as requested).

Figure 4-3. RQ and RO usage (example)

Segment	Order Control	Comment
ORC OBR	RQ	1st replaced ORC 1st replaced order's detail segment
ORC OBR	RQ	2nd replaced ORC 2nd replaced order's detail segment
ORC OBR	RO	1st replacement ORC 1st replacement order's detail segment
ORC OBR	RO	2nd replacement ORC 2nd replacement order's detail segment
ORC OBR	RO	3rd replacement ORC 3rd replacement order's detail segment

e) RP, RQ

The order replace request code permits the order filler to replace one or more new orders with one or more new orders, at the request of the placer application.

f) RU

The unsolicited replacement code permits the filler application to notify another application without being requested from the placer application.

g) RO, RQ

The replacement order code is sent by the filler application to another application indicating the exact replacement ordered service. It is used with the RP and RU order control codes as described above.

h) RP, RQ, RU, RO

The rules for the order numbers in ORC segments with an order control value of RO are determined by the replacement type (RP or RU).

In the case of the RU type (i.e., unsolicited replacement by the filler), the filler order number is generated as usual by the filler application. The placer order number is identical to the placer order number of the first transmitted ORC with an order control value of RU.

In the case of the RP type (i.e., a replacement request from another application to the filler), the placer order number is generated by the placer application using the procedure for new orders. The filler order number is generated by the filler application using the procedure identical for new orders.

If a replacement sequence is used in an ORU message (i.e., during results reporting), the following are the recommended segments to be used for the replacement orders:

- 1) ORC with an order control value of RO
- 2) Any OBR segments (can be replaced by any order detail segments)
- 3) Optionally followed by observation result segments (OBX)
- 4) NTE segments can appear after the OBR (or any order detail segment) or after an OBX segment as in a regular ORU message

i) PA, CH

The parent (PA) and child (CH) order control codes allow the spawning of “child” orders from a “parent” order without changing the parent (original order). One or more ORC segments with an *ORC-1-order control* value of PA are followed by one or more ORC segments with an *ORC-1-order control* value of CH. Whether OBR segments must be present is determined by the value of *ORC-6-response flag*.

For example, suppose that a microbiology culture produced two organisms and corresponding susceptibility reports. Then the sequence of segments would be as follows:

Figure 4-4. Example of two child orders

Segment	Order Control	Comment
ORC	PA	1st parent ORC
ORC	CH	1st child ORC
OBR		1st child order
ORC	CH	2nd child ORC

Segment	Order Control	Comment
OBR		2nd child order

The assignment of placer order numbers in the parent-child paradigm depends on whether the placer or filler creates the child order and in the latter case, on whether the placer supports the SN/NA transaction. If the placer creates the child orders it will assign their placer order numbers according to its usual procedures. If the filler creates the child orders there are two possibilities: each child will inherit the placer order number of its parent, or the filler will use the SN/NA transaction to request that the placer assign a placer order number. In either case, the filler application creates the filler order numbers of the children according to its usual procedures.

Whenever a child order is transmitted in a message the ORC segment's *ORC-8-parent* is valued with the parent's filler order number (if originating from the filler) and with the parent's placer order number (if originating from the filler or if originating from the placer).

The parent-child mechanism can be used to "expand" a parent order (e.g., an order for three EKGs on successive mornings).

j) RE

The observations-to-follow code is used to transmit patient-specific information with an order. An order detail segment (e.g., OBR) can be followed by one or more observation segments (OBX). Any observation that can be transmitted in an ORU message can be transmitted with this mechanism. When results are transmitted with an order, the results should immediately follow the order or orders that they support.

The following example shows the sequence of segments for three Pharmacy orders. It illustrates the use of the RE code:

Figure 4-5. RE usage (example)

Segment	Order Control	Comment
MSH PID ORC RXO	NW	First new order First order segment
ORC RXO	NW	2nd new order 2nd order segment
[ORC OBR] OBX OBX OBX OBX	RE	Patient-specific observation, optional in V 2.2 Observation OBR, optional in V 2.2 An observation segment Another observation segment Another observation segment Another observation segment
ORC RXO	NW	3rd order 3rd order segment

In this version of HL7, results can be transmitted with an order as one or more OBX segments without the necessity of including the ORC and OBR segments.

Observations can be transmitted in an ORU message without using an ORC. There are times when it is necessary to transmit information not included in the OBR segments of the ORU message. In this case, it is recommended that the ORC be included in the ORU message.

The order control value of RE is required only in ORM messages to indicate that an order is followed by observation results (OBX). The RE code is not necessary in the ORU message because it is expected that the OBR segments can be followed by observation results (OBX).

k) RR

Left in for backward compatibility. In the current version it is equivalent to an accept acknowledgment. The request-received code indicates that an order message has been received and will be processed later. The order has not yet undergone the processing that would permit a more exact response.

l) SN, NA, NW

There are three circumstances that involve requesting an order number (*ORC-2-placer order number* or *ORC-3-filler order number*):

- 1) When the filler application needs to request an *ORC-3-filler order number* from a centralized application (e.g., HIS)
- 2) When the filler application needs to request an *ORC-2-placer order number* from some other application (e.g., Order Entry)
- 3) When an application (not the filler application) wants to assign an *ORC-3-filler order number* for a new order

1) The filler application needs a centralized filler order number

SN - The send order number code provides a mechanism for the filler to request an *ORC-3-filler order number* from some centralized application (called “other” in the table below), such as a central HIS, by sending an ORM message containing an *ORC-1-order control* value of SN. This ORC has a null *ORC-3-filler order number* and an *ORC-2-placer order number* created by the filler application when the filler originates the order.

The ORM (SN type) message can be acknowledged by two methods:

- i) By an ORR message containing an *ORC-1-order control* value of OK. An unsolicited ORM message can be sent at a future time, containing an ORC with *ORC-1-order control* value of NA.
- ii) By an ORR message containing an *ORC-1-order control* value of NA as described below.

NA - The number assigned code allows the “other” application to notify the filler application of the newly-assigned filler order number. *ORC-1-order control* contains value of NA, *ORC-2-placer order number* (from the ORC with the SN value), and the newly-assigned filler order number.

Note: Both the placer order number and the filler order number have the filler's application ID.

Code	From	ORC-2-Placer Order Number	ORC-3-Filler Order Number
SN	filler application	placer order number^filler application ID	null
NA	other application	placer order number^filler application ID	filler order number^filler application ID

2) The filler application needs a placer order number

SN - The send order number code provides a mechanism for the filler application to request an *ORC-2-placer order number* from another application (called “other” in the table below) by sending an ORM message containing an *ORC-1-order control* value of SN. This ORC has a null *ORC-2-placer order number* and an *ORC-3-filler order number* created by the filler application when the filler originates the order.

The ORM (SN type) message can be acknowledged by two methods:

- i) By an ORR message containing an *ORC-1-order control* value of OK. An unsolicited ORM message can be sent at a future time, containing an *ORC-1-order control* value of NA.
- ii) By an ORR message containing an *ORC-1-order control* value of NA as described below.

NA - The number assigned code allows the “other” application to notify the filler application of the newly-assigned *ORC-2-placer order number*. The ORC contains an *ORC-1-order control* value of NA, the newly-assigned *ORC-2-placer order number*, and the *ORC-3-filler order number* (from the ORC with the SN value).

Note: The new <i>ORC-2-placer order number</i> has the placer’s application ID.
--

Code	From	ORC-2-Placer Order Number	ORC-3-Filler Order Number
SN	filler application	null	filler order number^filler application ID
NA	other application	placer order number^placer application ID	filler order number^filler application ID

3) An application wants to assign a filler order number

NW - When the application creating an order (not the filler application) wants to assign a filler order number for a new order

or

RO - (RO following an RP). In this case, the “other” application completes *ORC-3-filler order number*, using the filler application ID as the second component of the filler order number.

Code	From	ORC-2-Placer Order Number	ORC-3-Filler Order Number
NW or RO	other application to the filler	placer order number^placer application ID	filler order number^filler application ID

m) CN

The combined result code provides a mechanism to transmit results that are associated with two or more orders. This situation occurs commonly in radiology reports when the radiologist dictates a single report for two or more exams represented as two or more orders. For example, knee and hand films for a rheumatoid arthritis patient might generate a single dictation on the part of the radiologist.

When such results are reported the CN code replaces the RE code in all but the last ORC, and the results follow the last ORC and its OBR. An example follows of a single report following three ORCs:

```
MSH|...
PID|...
ORC|CN|...
OBR||A4461XA^HIS|81641^RAD|73666^Bi lateral Feet|...
```

```

ORC|CN|...
OBR|A4461XB^HIS|81642^RAD|73642^Bilateral Hand PA|...
ORC|RE|...
OBR|A4461XC^HIS|81643^RAD|73916^Bilateral Knees|...
OBX|CE|73916&IMP|Radiologist's Impression|...
OBX|CE|73642&IMP|Radiologist's Impression|...
OBX|FT|73642&GDT|Description|...

```

n) UA

An unable-to-accept code is used when a new order cannot be accepted by the filler. Possible reasons include requesting a prescription for a drug which the patient is allergic to or for an order which requires certain equipment resources which are not available such that the order cannot be filled. Note that this is different from the communication level acceptance as defined within the MSA segment.

o) RF

RF accommodates requests by both the filler or the placer. The filler may be requesting refill authorization from the placer. A placer system may be requesting a refill to be done by the filler system.

p) AF

AF is a response back from the placer authorizing a refill or quantity of refills.

q) DF

DF indicates that the placer will not authorize refills for the order. The order control code reason may be used to indicate the reason for the request denial. Some suggested values include:

AA	Patient unknown to the provider
AB	Patient never under provider care
AC	Patient no longer under provider care
AD	Patient has requested refill too soon
AE	Medication never prescribed for the patient
AF	Patient should contact provider first
AG	Refill not appropriate

Note that these values originate from the NCPDP SCRIPT Response Segment Code List Qualifiers.

r) FU

FU notifies the placer that the filler issued a refill for the order at the patient's request.

s) OF

OF directly responds to the placer system's request for a refill

t) UF

UF indicates an application level denial by the filler system to an authorized refill request.

u) LI, UN

Use only with Patient Care problems or goals, Chapter 12.

4.3.1.2 Placer order number (EI) 00216

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field is the placer application's order number.

This field is a case of the Entity Identifier data type (See Section 2.8.13, "EI - Entity Identifier"). The first component is a string that identifies an individual order (e.g., OBR). A limit of fifteen (15) characters is suggested but not required. An implementation is HL7 compliant when the number of characters for this field is increased to accommodate applications that require a greater number of characters for the Placer order number. It is assigned by the placer (ordering application). It identifies an order uniquely among all orders from a particular ordering application. The second through fourth components contain the application ID of the placing application in the same form as the HD data type (Section 2.8.18, "HD - Hierarchic designator"). The second component, namespace ID, is a user-defined coded value that will be uniquely associated with an application. A limit of six (6) characters is suggested but not required. A given institution or group of intercommunicating institutions should establish a unique list of applications that may be potential placers and fillers and assign unique application IDs. The components are separated by component delimiters.

There are three situations in which the true placer is somewhat arbitrary (and thus not unique):

- a) in *ORC-1-order control* value of RO, following an RU replacement;
- b) in *ORC-1-order control* value of CH (child orders); and
- c) in *ORC-1-order control* value of SN (send number).

See the Table Notes under *ORC-1-order control* for the details of how the *ORC-2-placer order number* is assigned in these cases.

The application ID list becomes one of the institution's master dictionary lists that is documented in Chapter 8. Since third-party applications (those other than the placer and filler of an order) can send and receive ORM and ORR messages, the placer application ID in this field may not be the same as any sending and receiving application on the network (as identified in the MSH segment).

ORC-2-placer order number is the same as *OBR-2-placer order number*. If the placer order number is not present in the ORC, it must be present in the associated OBR and vice versa. If both fields, *ORC-2-placer order number* and *OBR-2-placer order number* are valued, they must contain the same value. When results are transmitted in an ORU message, an ORC is not required, and the identifying placer order number must be present in the OBR segments.

These rules apply to the few other fields that are present in both ORC and OBR for upward compatibility (e.g., quantity/timing, parent numbers, ordering provider, and ordering call back numbers).

4.3.1.3 Filler order number (EI) 00217

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field is the order number associated with the filling application. It is a case of the Entity Identifier data type (Section 2.8.13). Its first component is a string that identifies an order detail segment (e.g., OBR). A limit of fifteen (15) characters is suggested but not required. An implementation is HL7 compliant when the number of characters for this field is increased to accommodate applications that require a greater number of characters for the Filler order number. It is assigned by the order filler (receiving) application. This string must uniquely identify the order (as specified in the order detail segment) from

other orders in a particular filling application (e.g., clinical laboratory). This uniqueness must persist over time.

The second through fourth components contain the filler application ID, in the form of the HD data type (see Section 2.8.18, “HD - hierarchic designator”). The second component is a user-defined coded value that uniquely defines the application from other applications on the network. A limit of six (6) characters is suggested but not required. The second component of the filler order number always identifies the actual filler of an order.

A given institution or group of intercommunicating institutions should establish a list of applications that may be potential placers and fillers of orders and assign each a unique application ID. The application ID list becomes one of the institution’s master dictionary lists that is documented in Chapter 8. Since third-party applications (those other than the placer and filler of an order) can send and receive ORM and ORR messages, the filler application ID in this field may not be the same as any sending and receiving application on the network (as identified in the MSH segment).

ORC-3-filler order number is the same as *OBR-3-filler order number*. If the filler order number is not present in the ORC, it must be present in the associated OBR. (This rule is the same for other identical fields in the ORC and OBR and promotes upward and ASTM compatibility.) This is particularly important when results are transmitted in an ORU message. In this case, the ORC is not required and the identifying filler order number must be present in the OBR segments.

The *filler order number (OBR-3 or ORC-3)* also uniquely identifies an order and its associated observations. For example, suppose that an institution collects observations from several ancillary applications into a common database and this common database is queried by yet another application for observations. In this case, the filler order number and placer order number transmitted by the common database application would be that of the original filler and placer, respectively, rather than a new one assigned by the common database application.

Similarly, if a third-party application, not the filler or placer, of an order were authorized to modify the status of an order (say, cancel it), the third-party application would send the filler an ORM message containing an ORC segment with *ORC-1-order control* equal to “CA” and containing the original placer order number and filler order number, rather than assign either itself.

4.3.1.4 Placer group number (EI) 00218

Components: <entity identifier (ST)> ^ <namespace (D (IS))> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field allows an order placing application to group sets of orders together and subsequently identify them. It is a case of an Entity Identifier data type (2.8.13).

The first component is a string that uniquely identifies all order groups from the given placer application. A limit of fifteen (15) characters is suggested but not required. It is assigned by the placer application and may come from the same series as the placer order number of the ORC, but this is not required.

The second through fourth components constitute a placer application ID identical to the analogous components of *ORC-2-placer order number*. Order groups and how to use them are described in detail in Section 4.3.1, “PRC - common order segment.”

4.3.1.5 Order status (ID) 00219

Definition: This field specifies the status of an order. Refer to *HL7 table 0038 - Order status* for valid entries. The purpose of this field is to report the status of an order either upon request (solicited), or when the status changes (unsolicited). It does not initiate action. It is assumed that the order status always reflects the status as it is known to the sending application at the time that the message is sent. Only the filler can originate the value of this field.

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Although *HL7 table 0038 - Order status* contains many of the same values contained in *HL7 table 0119 - Order control codes and their meaning*, the purpose is different. Order status may typically be used in a message with an *ORC-1-order control* value of SR or SC to report the status of the order on request or to any interested party at any time.

Table 0038 - Order status

Value	Description
A	Some, but not all, results available
CA	Order was canceled
CM	Order is completed
DC	Order was discontinued
ER	Error, order not found
HD	Order is on hold
IP	In process, unspecified
RP	Order has been replaced
SC	In process, scheduled

4.3.1.6 Response flag (ID) 00220

Definition: This field allows the placer (sending) application to determine the amount of information to be returned from the filler. Sometimes the requested level of response may not be possible immediately, but when it is possible, the filler (receiving) application must send the information. When the field is null, D is the default value of the field. Refer to *HL7 table 0121 - Response flag* for valid entries.

Table 0121 - Response flag

Value	Description
E	Report exceptions only
R	Same as E, also Replacement and Parent-Child
D	Same as R, also other associated segments
F	Same as D, plus confirmations explicitly
N	Only the MSA segment is returned

4.3.1.7 Quantity/timing (TQ) 00221

Components: <quantity (CQ)> ^ <interval (CM)> ^ <duration (ST)> ^ <start date/time (TS)> ^ <end date/time (TS)> ^ <priority (ST)> ^ <condition (ST)> ^ <text (TX)> ^ <conjunction (ST)> ^ <order sequencing (CM)> ^ <occurrence duration (CE)> ^ <total occurrences (NM)>

Definition: This field determines the priority, quantity, frequency, and timing of an atomic service. Order segments should be thought of as describing an atomic service. It is a composite field that is defined in detail in Section 4.4, “Quantity/Timing (TQ) Definition.”

For example, if an OBR segment describes a unit of blood, this field might request that three (3) such units be given on successive mornings. In this case *ORC-7-quantity/timing* would be “1^XQAM^X3”. *ORC-7-quantity/timing* is the same as *OBR-27-quantity/timing*.

4.3.1.8 Parent (CM) 00222

Components: <parent's placer order number (EI)> ^ <parent's filler order number (EI)>

Subcomponents of parent's placer order number: <entity identifier (ST)> & <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (IS)>

Subcomponents of parent's filler order number: <entity identifier (ST)> & <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (IS)>

Definition: This field relates a child to its parent when a parent-child relationship exists. The parent-child mechanism is described under *ORC-1-order control* notes.

The first component has the same format as *ORC-2-placer order number* (Section 4.3.1.2, “Placer order number (EI) 00216).” The second component has the same format as *ORC-3-filler order number* (Section 4.3.1.3, “Filler order number (EI) 00217).” The components of the placer order number and the filler order number are transmitted in sub-components of the two components of this field. *ORC-8-parent* is the same as *OBR-29-parent*.

4.3.1.9 Date/time of transaction (TS) 00223

Definition: This field contains the date and time the current transaction enters the ordering application. For messages creating new orders, this is the date and time the order was entered.

For other messages, this is the date and time the current transaction (e.g., cancellation) enters the sending application. This date and time is for the current transaction and is not a “replacement” time for a correction to the original order. Similarly, *ORC-10-entered by*, *ORC-11-verified by*, and *ORC-13-enterer’s location* of this segment relate to the current transaction, not the original order.

4.3.1.10 Entered by (XCN) 00224

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code(ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the identity of the person who actually keyed the request into the application. It provides an audit trail in case the request is entered incorrectly and the ancillary department needs to clarify the request. By local agreement, either the ID number or name component may be omitted.

4.3.1.11 Verified by (XCN) 00225

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code(ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the identity of the person who verified the accuracy of the entered request. It is used in cases where the request is entered by a technician and needs to be verified by a higher authority (e.g., a nurse). By local agreement, either the ID number or name component may be omitted.

4.3.1.12 Ordering provider (XCN) 00226

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code(ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

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Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the identity of the person who is responsible for creating the request (i.e., ordering physician). *ORC-12-ordering provider* is the same as *OBR-16-ordering provider*.

4.3.1.13 Enterer's location (PL) 00227

Components: <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <person location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <location description (ST)>

Subcomponents of facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field specifies the location (e.g., nurse station, ancillary service location, clinic, floor) where the person who entered the request was physically located when the order was entered. Only those subcomponents relevant to enterer's location should be valued (commonly nursing unit; facility; building; floor). The person who entered the request is defined in *ORC-10-entered by*.

4.3.1.14 Call back phone number (XTN) 00228

Components: [NNN] [(999)]999-9999 [X99999] [B99999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Definition: This field contains the telephone number to call for clarification of a request or other information regarding the order. *ORC-14-call back phone number* is the same as *OBR-17-order callback phone number*.

4.3.1.15 Order effective date/time (TS) 00229

Definition: This field contains the date/time that the changes to the request took effect or are supposed to take effect.

If *ORC-9-date/time of transaction* is after or equal to *ORC-15-order effective date/time*, the data values in the ORC and its subordinate segments took effect on the order effective date/time.

If *ORC-9-date/time of transaction* is before the time specified in *ORC-15-order effective date/time*, the data values in ORC and its subordinate segments are planned to take effect on the order effective date/time.

If *ORC-15-order effective date/time* is left blank, its value is assumed to be equal to that specified in *ORC-9-date/time of transaction* or *MSH-7-date/time of message* if the transaction date/time is blank.

In the case where the time specified in *ORC-15-order effective date/time* (for the order control code event in the same ORC segment) is different from the corresponding date/time in *ORC-7-quantity/timing*, the time specified in *ORC-15-order effective date/time* takes precedence. Thus if the ORC event is a discontinue request to the filler for a continuing order, and the order-effective date/time is prior to the end date/time of *ORC-7-quantity/timing*, the order effective date/time should take precedence. If the order identified in the ORC has children, the children which have not started should be canceled; if there is a child in process, it should be discontinued; if a child has progressed beyond the point where it can be discontinued, its status is unaffected.

4.3.1.16 Order control code reason (CE) 00230

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the explanation (either in coded or text form) of the reason for the order event described by the order control code (*HL7 table 0119*). Whereas an NTE after the order-specific segment (e.g., RXO, ORO, OBR) would provide a comment for that specific segment, the purpose of the order control code reason is only to expand on the reason for the order event.

ORC-16-order control code reason is typically not valued when *ORC-1-order control* is NW, although it could be. In the case of a canceled order, for example, this field is commonly used to explain the cancellation. A Pharmacy system that canceled a drug order from a physician because of a well documented allergy would likely report the fact of the allergy in this field.

If it canceled the order because of a drug interaction this field might contain at least the names (and codes, if needed) of the interacting substances, the text describing the interaction, and the level of severity of the interaction.

4.3.1.17 Entering organization (CE) 00231

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field identifies the organization that the enterer belonged to at the time he/she enters/maintains the order, such as medical group or department. The person who entered the request is defined in *ORC-10-entered by*.

4.3.1.18 Entering device (CE) 00232

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field identifies the physical device (terminal, PC) used to enter the order.

4.3.1.19 Action by (XCN) 00233

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code(ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the identity of the person who initiated the event represented by the corresponding order control code. For example, if the order control code is CA (cancel order request), this field represents the person who requested the order cancellation. This person is typically a care provider but may not always be the same as *ORC-12 ordering provider*.

4.3.1.20 Advanced beneficiary notice code (CE) 01310

Definition: This field indicates the status of the patient's or the patient's representative's consent for responsibility to pay for potentially uninsured services. This element is introduced to satisfy HCFA Medical Necessity requirements for outpatient services. This element indicates (a) whether the associated diagnosis codes for the service are subject to medical necessity procedures, (b) whether, for this type of service, the patient has been informed that they may be responsible for payment for the service, and (c) whether the patient agrees to be billed for this service. The values for this field are drawn from *User-defined Table 0339 – Advanced beneficiary notice code*.

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User-defined Table 0339 – Advanced beneficiary notice code

Value	Description
1	Service is subject to medical necessity procedures
2	Patient has been informed of responsibility, and agrees to pay for service
3	Patient has been informed of responsibility, and asks that the payer be billed
4	Advanced Beneficiary Notice has not been signed

4.3.1.21 Ordering facility name (XON) 01311

Components: <organization name (ST)> ^ <organization name type code (IS)> ^ <ID Number (NM)> ^ <check digit (NM)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility ID (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the name of the facility placing the order.

4.3.1.22 Ordering facility address (XAD) 01312

Components: <street address (ST)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code(ST)> ^ <country (ID)> ^ < address type (ID)> ^ <other geographic designation (ST)> ^ <county/parish code (IS)> ^ <census tract (IS)> ^ <address representation code (ID)>

Definition: This field contains the address of the facility placing the order.

4.3.1.23 Ordering facility phone number (XTN) 01313

Components: [NNN] [(999)]999-9999 [X99999] [B99999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Definition: This field contains the telephone number of the facility placing the order.

4.3.1.24 Ordering provider address (XAD) 01314

Components: <street address (ST)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code(ST)> ^ <country (ID)> ^ < address type (ID)> ^ <other geographic designation (ST)> ^ <county/parish code (IS)> ^ <census tract (IS)> ^ <address representation code (ID)>

Definition: This field contains the address of the care provider requesting the order.

4.3.2 BLG - billing segment

The BLG segment is used to provide billing information, on the ordered service, to the filling application.

Figure 4-6. BLG attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	40	CM	O		0100	00234	When to Charge
2	50	ID	O		0122	00235	Charge Type
3	100	CX	O			00236	Account ID

4.3.2.0 BLG field definitions

4.3.2.1 When to charge (CM) 00234

Components: <when to charge code (ID)> ^ <date/time (TS)>

Definition: This field specifies when to charge for the ordered service. The first component contains a value defined in *HL7 table 0100 - When to charge*. The second component is used to express the exact time to charge for the ordered service; it is used only when the **when to charge** value is T. When used, it is expressed as a TS data type.

Table 0100 - When to charge

Value	Description
D	On discharge
O	On receipt of order
R	At time service is completed
S	At time service is started
T	At a designated date/time

4.3.2.2 Charge type (ID) 00235

Definition: This field identifies someone or something other than the patient to be billed for this service. It is used in conjunction with *BLG-3-account ID*. Refer to *HL7 table 0122 - Charge type* for valid values.

Table 0122 - Charge type

Value	Description
CH	Charge
CO	Contract
CR	Credit
DP	Department
GR	Grant
NC	No Charge
PC	Professional
RS	Research

4.3.2.3 Account ID (CX) 00236

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ < assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility (HD)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field identifies the account to be billed. It is used in conjunction with *BLG-2-charge type*. Refer to *HL7 table 0061 - Check digit scheme* in Chapter 2.

4.4 QUANTITY/TIMING (TQ) DEFINITION

Components: <quantity (CQ)> ^ <interval (CM)> ^ <duration (ST)> ^ <start date/time (TS)> ^ <end date/time (TS)> ^ <priority (ST)> ^ <condition (ST)> ^ <text (TX)> ^ <conjunction (ST)> ^ <order sequencing (CM)> ^ <occurrence duration (CE)> ^ <total occurrences (NM)>

Definition: *Quantity/timing (ORC-7, OBR-27)* provides a means of specifying when the service described by the order segment is to be performed and how frequently. It is a complex multicomponent field that can have repeats; i.e., more than one quantity/timing specification, separated by repeat delimiters, may appear. It is a distinct data type (see Section 2.8.41, “TQ - timing quantity”). The components of a single quantity/timing specification are described in Sections 4.4.1, “Quantity component (CQ),” through 4.4.10, “Order sequencing component (CM).”

4.4.1 Quantity component (CQ)

Subcomponents: <quantity (NM) & units (CE)>

Definition: This field specifies the quantity of the service that should be provided at each service interval. For example, if two blood cultures are to be obtained every 4 hours, the quantity would be 2. If three units of blood are to be typed and cross-matched, the quantity would be 3. The default value is 1. When units are required, they can be added, specified by a subcomponent delimiter.

Note: The component delimiter in this CQ is demoted to a subcomponent delimiter.

4.4.2 Interval component (CM)

Subcomponents: <repeat pattern (IS)> ^ <explicit time interval (ST)>

Definition: This field determines the interval between repeated services.

The default is one time only, the first subcomponent is the repeat pattern, and the second subcomponent is the explicit time at which pattern is to be executed.

4.4.2.1 Repeat pattern

Definition: The repeating frequency with which the treatment is to be administered. It is similar to the frequency and SIG code tables used in order entry systems. The following is preferred syntax for repeat patterns:

User-defined table 0335 - Repeat pattern

Q<integer>S	every <integer> seconds
Q<integer>M	every <integer> minutes
Q<integer>H	every <integer> hours
Q<integer>D	every <integer> days
Q<integer>W	every <integer> weeks
Q<integer>L	every <integer> months (Lunar cycle)
Q<integer>J<day#>	repeats on a particular day of the week, from the French <i>jour</i> (day). If <integer> is missing, the repeat rate is assumed to be 1. Day numbers are counted from 1=Monday to 7=Sunday. So Q2J2 means every second Tuesday; Q1J6 means every Saturday.
BID	twice a day at institution-specified times (e.g., 9AM-4PM)
TID	three times a day at institution-specified times (e.g., 9AM-4PM-9PM)

QID	four times a day at institution-specified times (e.g., 9AM-11AM-4PM-9PM)
xID	"X" times per day at institution-specified times, where X is a numeral 5 or greater. E.g., 5ID=five times per day; 8ID=8 times per day

Note: None of the above three specifications are equivalent to their Q<integer>H counterpart. QID is not Q6H. The former is unequally spaced; the latter is equally spaced.

QAM	in the morning at institution-specified time
QSHIFT	during each of three eight-hour shifts at institution-specified times
QOD	every other day (same as Q2D)
QHS	every day before the hour of sleep
QPM	in the evening at institution-specified time
C	service is provided continuously between start time and stop time
U <spec>	for future use, where <spec> is an interval specification as defined by the UNIX cron specification.
PRN	given as needed
PRNxxx	where xxx is some frequency code (e.g., PRNQ6H); given as needed over the frequency period.
Once	one time only. This is also the default when this component is null.
Meal Related Timings	<timing>C ("cum")<meal>
A	Ante (before)
P	Post (after)
I	Inter (e.g., between this meal and the next, between dinner and sleep)
M	Cibus Matutinus (breakfast)
D	Cibus Diurnus (lunch)
V	Cibus Vespertinus (dinner)

Example: one before breakfast and one after dinner: ACM,PCV

The first subcomponent may repeat, with repeat values separated by a space. The repeats are interpreted as connected by logical ANDs. E.g.,

Twice per day, every other day: BID QOD

Three times per day, Monday Wednesday and Friday: TID QJ135

Because of this syntax, repeat values should never contain blanks. If a free text frequency, such as "Twice a day, every other day" is to be sent, use the text component (component 8).

4.4.2.2 Explicit time interval

Definition: This field explicitly lists the actual times referenced by the code in the first subcomponent, in the following format: HHMM,HHMM,HHMM,... This second subcomponent will be used to clarify the first subcomponent in cases where the actual administration times vary within an institution. If the time of the order spans more than a single day, this new subcomponent is only practical if the same times of administration occur for each day of the order. If the actual start time of the order (as given by the fourth subcomponent of the quantity/timing field) is after the first explicit time, the first administration is taken to be the first explicit time after the start time. In the case where the patient moves to a location having a different set of explicit times, the existing order may be updated with a new quantity/timing field showing the changed explicit times.

Ex: 2nd component of quantity/timing field:

... ^QID&0230, 0830, 1430, 2030^...

4.4.3 Duration component (ST)

Definition: This field indicates how long the service should continue after it is started. The default is INDEF (do indefinitely). This component is coded as follows:

S<integer>	=	<integer> seconds
M<integer>	=	<integer> minutes
H<integer>	=	<integer> hours
D<integer>	=	<integer> days
W<integer>	=	<integer> weeks
L<integer>	=	<integer> months
X<integer>	=	<integer> times at interval specified in the order. A request for 2 blood cultures Q2H X3 would imply obtaining 2 blood cultures 3 different times at 2-hour intervals for a total of 6 blood cultures.
T<integer>	=	at the interval and amount stated until a total of <integer> "DOSAGE" is accumulated. Units would be assumed to be the same as in the QUANTITY field.
INDEF	=	do indefinitely - also the default

4.4.4 Start date/time component (TS)

Definition: This field may be specified by the orderer, in which case it indicates the earliest date/time at which the services should be started. In many cases, however, the start date/time will be implied or will be defined by other fields in the order record (e.g., urgency - STAT). In such a case, this field will be empty.

The filling service will often record a value in this field after receipt of the order, however, and compute an end time on the basis of the start date/time for the filling service's internal use.

4.4.5 End date/time component (TS)

Definition: When filled in by the requester of the service, this field should contain the latest date/time that the service should be performed. If it has not been performed by the specified time, it should not be performed at all. The requester may not always fill in this value, yet the filling service may fill it in on the basis of the instruction it receives and the actual start time.

Regardless of the value of the end date/time, the service should be stopped at the earliest of the date/times specified by either the duration or the end date/time.

4.4.6 Priority component (ST)

Definition: This field describes the urgency of the request. The following values are suggested (the default for Priority is R):

S	=	Stat	With highest priority
A	=	ASAP	Fill after S orders
R	=	Routine	Default
P	=	Preop	
C	=	Callback	
T	=	Timing critical	A request implying that it is critical to come as close as possible to the requested time, e.g., for a trough antimicrobial level.
PRN	=	As needed	

If using the value “T” (timing critical), the degree of criticality can be specified thus:

Format:

TS<integer>	=	timing critical within <integer> seconds
TM<integer>	=	timing critical within <integer> minutes
TH<integer>	=	timing critical within <integer> hours
TD<integer>	=	timing critical within <integer> days
TW<integer>	=	timing critical within <integer> weeks
TL<integer>	=	timing critical within <integer> months

For the sequential orders specification, these values specify the time criticality with which the predecessor order must be followed by the given order.

The priority component may repeat; separate repeating values with the repeat delimiter separated by a space.

4.4.7 Condition component (ST)

Definition: This is a free text field that describes the conditions under which the drug is to be given. For example, **PRN pain**, or **to keep blood pressure below 110**. The presence of text in this field should be taken to mean that human review is needed to determine the how and/or when this drug should be given.

4.4.8 Text component (TX)

Definition: This field is a full text version of the instruction (optional).

4.4.9 Conjunction component (ST)

Definition: This non-null component indicates that a second timing specification is to follow using the repeat delimiter. This field can take three values:

a) S = Synchronous

Do the next specification after this one (unless otherwise constrained by the following components: *ORC-7^4-start date/time* and *ORC-7^5-end date/time*).

An “S” specification implies that the second timing sequence follows the first, e.g., when an order is written to measure blood pressure Q15 minutes for the 1st hour, then every 2 hours for the next day.

b) A = Asynchronous

Do the next specification in parallel with this one (unless otherwise constrained by the following components: *ORC-7^4-start date/time* and *ORC-7^5-end date/time*). The conjunction of “A” specifies two parallel instructions, as are sometimes used in medication, e.g., prednisone given at 1 tab on Monday, Wednesday, Friday, and at 1/2 tab on Tuesday, Thursday, Saturday, Sunday.

c) C = This is an actuation time

It will be followed by a completion time for the service. This code allows one to distinguish between the time and priority at which a service should be actuated (e.g., blood should be drawn) and the time and priority at which a service should be completed (e.g., results should be reported).

For continuous or periodic services, the point at which the service is actually stopped is determined by the components *ORC-7^5-end date/time* and *ORC-7^3-duration*, whichever indicates an earlier stopping time. Ordinarily, only one of these components would be present, but if one requested an EKG with the specification

^1^QAM^X3^D10

then the EKG would be done for only three days since the number of repeats (3) defined the earlier stopping time.

4.4.10 Order sequencing component (CM)

Definition: There are many situations, such as the creation of an order for a group of intravenous (IV) solutions, where the sequence of the individual intravenous solutions (each a service in itself) needs to be specified, e.g., hyperalimentation with multi-vitamins in every third bottle.

There are other situations where part of the order’s instructions contains a results condition of some type, such as “PRN pain.” There is currently a free text “condition” component of *ORC-7-quantity/timing* which allows any condition to be specified. However, to support a fully encoded version of order sequencing, or results condition, we have defined in the following paragraphs a 10th component of *ORC-7-quantity/timing*.

The sequencing conditions supported by this 10th component are based on the completion of a predecessor service.

4.4.10.1 Subcomponents of sequences

To define a sequence condition, the 10th component of the quantity/timing field component is divided into the subcomponents described in *Figure 4-7*.

Figure 4-7. Subcomponents of order sequences

Subcomponent	Contains	Notes												
1	Sequence/Results Flag	S for sequence conditions; C for cyclical; R is reserved for possible future use. The C will be used for indicating a repeating cycle of orders; for example, individual intravenous solutions used in a cyclical sequence (a.k.a. “Alternating IVs”). This value would be compatible with linking separate orders or with having all cyclical order components in a single order. Likewise, the value would be compatible with either Parent-Child messages or a single order message to communicate the orders’ sequencing												
2, 3	Placer Order Number, first two components	Required/Optional: Contains the first two components of the placer order number: <i>entity identifier</i> (ST) and <i>namespace ID</i> (IS) (respectively). Uses two subcomponents since the placer order number is an EI data type. We have not defined sub-subcomponents in HL7.												
4, 5	Filler Order Number, first two components	Required/Optional: Contains the first two components of the filler order number: <i>entity identifier</i> (ST) and <i>namespace ID</i> (IS) (respectively). Uses two subcomponents since the filler order number is an EI data type. We have not defined sub-subcomponents in HL7.												
6	Sequence Condition Value	<p>The acceptable condition values have the form commonly used in project planning methodologies:</p> <p><one of “SS”, “EE”, “SE”, or “ES”> +/- <time></p> <p>The first letter stands for start (S) or end (E) of predecessor order, where the predecessor is defined by the placer or filler order number in subcomponents 1,2 or subcomponents 3,4.</p> <p>The second letter stands for the start (S) or end (E) of the successor order, where the successor order is the order containing this quantity/timing specification.</p> <p>The time specifies the interval between the predecessor and successor starts or ends (see following examples).</p> <p>Where <time> is defined as:</p> <table><tr><td>S<integer></td><td>do for <integer> seconds</td></tr><tr><td>M<integer></td><td>do for <integer> minutes</td></tr><tr><td>H<integer></td><td>do for <integer> hours</td></tr><tr><td>D<integer></td><td>do for <integer> days</td></tr><tr><td>W<integer></td><td>do for <integer> weeks</td></tr><tr><td>L<integer></td><td>do for <integer> months</td></tr></table>	S<integer>	do for <integer> seconds	M<integer>	do for <integer> minutes	H<integer>	do for <integer> hours	D<integer>	do for <integer> days	W<integer>	do for <integer> weeks	L<integer>	do for <integer> months
S<integer>	do for <integer> seconds													
M<integer>	do for <integer> minutes													
H<integer>	do for <integer> hours													
D<integer>	do for <integer> days													
W<integer>	do for <integer> weeks													
L<integer>	do for <integer> months													
7	Maximum Number of Repeats	The maximum number of repeats to be used only on cyclic groups. The total number of repeats is constrained by the end date/time of the last repeat or the end date/time of the parent, whichever is first.												
8, 9	Placer Order Number, last two components	Required/Optional: Contains the last two components of the placer order number: <i>universal ID</i> (ST) and <i>universal ID type</i> (ID) (respectively). Uses two subcomponents since the placer order number is an EI data type. We have not defined sub-subcomponents in HL7.												
10, 11	Filler Order Number, last two components	Required/Optional: Contains the last two components of the filler order number: <i>universal ID</i> (ST) and <i>universal ID type</i> (ID) (respectively). Uses two subcomponents since the filler order number is an EI data type. We have not defined sub-subcomponents in HL7.												

Use notes:

Suppose the following:

The predecessor order is defined by the OE1000&OrdEnt as the placer order number, in subcomponents 2 and 3 of component 10 of *ORC-7-quantity/timing*.

The successor order, this order, has the placer order number OE1001^OrdEnt in the ORC segment.

The following sequence condition values have the following meanings:

ES + 10M	The finish time of OE1000&OrdEnt (predecessor) plus 10 minutes defines the start time of the successor, OE1001^OrdEnt (this order); i.e., start this order 10 minutes after the completion of its predecessor.
SS - 10M	The start time of the predecessor minus 10 minutes defines the start time of this order; i.e., start this order 10 minutes before its predecessor.

4.4.10.2 Cyclic placer order groups

For the special case where there is a cycle of orders that must be repeated, the first order to be executed will have a “sequence condition value” whose first character must be an asterisk (*). The last order to be executed may have a “sequence condition value” whose first character must be a pound sign (#).

Example:

*FS+ 10M	translates to: execute this order the first time without evaluating the condition specified in the 10th component; but repeat only its execution when the specified external order’s start or finish date/time has met this condition. This specification generates a repetition of the order for each iteration of the cycle.
-------------	--

Note: This requires that the ordering application be able to specify the placer order number of the last order in the cycle in the first order’s quantity/timing specification.
--

To implement a cyclic group of four IV orders using the parent/child paradigm, the parent specifies a custom group of IVs, and the following occurs:

ORC-7-quantity/timing of the second child order specifies that it follows the first child order.

ORC-7-quantity/timing of the third child order specifies that it follows the second child order.

ORC-7-quantity/timing of the fourth child order specifies that it follows the third order.

To repeat the group of four child orders in a cyclic manner, the following occurs:

ORC-7-quantity/timing of the first child order specifies that it is to be executed once without any dependence on the completion of other orders.

Its second execution follows the completion of the fourth order. See example in Section 4.8.16.2, “Custom IV example.”

This scheme allows the following to be tracked:

The status of the whole group of orders to be reported back at the level of the parent order.

The status for each individual IV order by following the status of the corresponding child order.

Separate Orders example:

The same group of orders can be sent as a group of four orders (without a common parent), linked only by the data in their quantity/timing fields. In this case, there is no convenient HL7 method of transmitting the order status of the group as a whole without transmitting the status of each of the four separate orders.

4.4.10.3 Inheritance of order status

Cancellation/discontinuation/hold order control events:

This logic implies the normal execution of the referenced predecessor order. Thus a cancel (or discontinuation or hold) of a predecessor order implies the cancellation (or discontinuation or hold) of all subsequent orders in the chain.

If the referenced order has been canceled (or discontinued or held), the current order inherits that same status.

In the case of hold, the removal of the hold of the predecessor implies a removal of the hold for the given order (which can then be executed according to the specification in the 10th component).

4.4.11 Occurrence duration component (CE)

Subcomponents: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system>

Definition: This field contains the duration for a single performance of a service, e.g., whirlpool twenty minutes three times per day for three days. It is optional within TQ and does not repeat.

4.4.12 Total occurrences component (NM)

Definition: This field contains the total number of occurrences of a service that should result from this order. It is optional within TQ and does not repeat. If both the end date/time and the total occurrences are valued and the occurrences would extend beyond the end date/time, then the end date/time takes precedence. Otherwise the number of occurrences takes precedence.

4.4.13 Examples of quantity/timing usage

3^once

Perform the service at one point in time, e.g., order 3 units of blood to be given once.

1^QHS^X2

Perform the service twice at bedtime, e.g., give a unit of blood at bedtime on two sequential nights.

1^C^3D

Do a service continuously for 3 days.

1^Q1H^X4^^^^PVCs>10/min

Perform an EKG every hour up to a maximum of 4 EKGs, if patient is having more than 10 PVCs per minute.

1^Q2J^^1432

Perform a service every Tuesday at 2:32 p.m.

1^^^^198911210800

Perform a test before 11/21/89 0800, e.g., some preop laboratory tests.

1^Q3600S^X5^198911051030

Perform a service every hour for 5 hours starting at 10:30 a.m. 11/5/89, e.g., draw a blood glucose.

1^QAM^X3^^^^S-1^Q0D^4D^^if K+>5.5.

Perform a service every morning for 3 days and then do it every other morning for 4 days (i.e., max twice) if the serum potassium is greater than 5.5.

^^^198812120800^^T^^Trough specimen for MIC^C-^^^^^R

The first repeat instructs to draw a blood specimen exactly at 8:00 a.m. on 12/12/1988. The second repeat specifies to report results routinely.

4.5 OBSERVATION AND DIAGNOSTIC STUDY ORDERS

4.5.1 OBR - observation request segment

General (taken from ASTM E1238)

The Observation Request (OBR) segment is used to transmit information specific to an order for a diagnostic study or observation, physical exam, or assessment.

The Observation Request segment defines the attributes of a particular request for diagnostic services (e.g., laboratory, EKG) or clinical observations (e.g., vital signs or physical exam). When a placer requests a given set of observations, always include an order segment. For lab tests, the information in the order segment usually applies to a single specimen. However, there is not a one-to-one relationship between specimen and tests ordered. Different test batteries will usually require their own order segments even when they can be performed on a single specimen. In this case, the specimen information must be duplicated in each of the order segments that employ that specimen. For other diagnostic studies, e.g., chest X-ray, a separate order segment will usually be generated for each diagnostic study.

Though multiple observation batteries can be ordered on a single order segment, the observation filler shall generate a separate order segment for each battery that it processes independently, e.g., electrolyte, CBC, vital signs. When reporting the observations, the filling service shall copy the appropriate order (specimen) information from the original order segment into each of the new order segments so that a separate “order” segment is returned to the placer as a “header” for each separate battery of observations.

In the event that an ordered battery of observations cannot be performed, e.g., because of hemolysis on a blood sample, an order segment will be returned to the placer with *OBR-25-result status* equal to X (to indicate that the study was not performed). In this case, no observation segments will be transmitted.

When observations are successfully completed, the message returned to the placer will include the order segment (OBR) followed by observation (OBX) segments for each distinct observation generated by the order (see Chapter 7). The number of such observation segments will depend upon the number of individual measurements performed in the process.

OBX segments can be sent by the placer along with an order to provide the filling service with clinical data needed to interpret the results. (See Chapter 7 for OBX details.)

Figure 4-8. OBR attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	4	SI	O			00237	Set ID - OBR
2	22	EI	C			00216	Placer Order Number
3	22	EI	C			00217	Filler Order Number +
4	200	CE	R			00238	Universal Service ID
5	2	ID	B			00239	Priority - OBR
6	26	TS	B			00240	Requested Date/Time
7	26	TS	C			00241	Observation Date/Time #
8	26	TS	O			00242	Observation End Date/Time #
9	20	CQ	O			00243	Collection Volume *
10	60	XCN	O	Y		00244	Collector Identifier *

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
11	1	ID	O		0065	00245	Specimen Action Code *
12	60	CE	O			00246	Danger Code
13	300	ST	O			00247	Relevant Clinical Info.
14	26	TS	C			00248	Specimen Received Date/Time *
15	300	CM	O		0070	00249	Specimen Source *
16	120	XCN	O	Y		00226	Ordering Provider
17	40	XTN	O	Y/2		00250	Order Callback Phone Number
18	60	ST	O			00251	Placer Field 1
19	60	ST	O			00252	Placer Field 2
20	60	ST	O			00253	Filler Field 1 +
21	60	ST	O			00254	Filler Field 2 +
22	26	TS	C			00255	Results Rpt/Status Chng - Date/Time +
23	40	CM	O			00256	Charge to Practice +
24	10	ID	O		0074	00257	Diagnostic Serv Sect ID
25	1	ID	C		0123	00258	Result Status +
26	200	CM	O			00259	Parent Result +
27	200	TQ	O	Y		00221	Quantity/Timing
28	150	XCN	O	Y/5		00260	Result Copies To
29	200	CM	O			00261	Parent
30	20	ID	O		0124	00262	Transportation Mode
31	300	CE	O	Y		00263	Reason for Study
32	200	CM	O			00264	Principal Result Interpreter +
33	200	CM	O	Y		00265	Assistant Result Interpreter +
34	200	CM	O	Y		00266	Technician +
35	200	CM	O	Y		00267	Transcriptionist +
36	26	TS	O			00268	Scheduled Date/Time +
37	4	NM	O			01028	Number of Sample Containers *
38	60	CE	O	Y		01029	Transport Logistics of Collected Sample *
39	200	CE	O	Y		01030	Collector's Comment *
40	60	CE	O			01031	Transport Arrangement Responsibility
41	30	ID	O		0224	01032	Transport Arranged
42	1	ID	O		0225	01033	Escort Required
43	200	CE	O	Y		01034	Planned Patient Transport Comment
44	80	CE	O		0088	00393	Procedure Code
45	80	CE	O	Y	0340	01316	Procedure Code Modifier

4.5.1.0 OBR field definitions

The daggered (+) items in this segment are known to the filler, not the placer. They are valued by the filler as needed when the OBR segment is returned as part of a report.

The starred (*) fields are only relevant when an observation is associated with a specimen. These are completed by the placer when the placer obtains the specimen. They are completed by the filler when the filler obtains the specimen.

OBR-7-observation date/time and *OBR-8-observation end date/time* (flagged with #) are the physiologically relevant times. In the case of an observation on a specimen, they represent the start and end of the specimen collector. In the case of an observation obtained directly from a subject (e.g., BP, Chest X-ray), they represent the start and end time of the observation.

4.5.1.1 Set ID - OBR (SI) 00237

Definition: For the first order transmitted, the sequence number shall be 1; for the second order, it shall be 2; and so on.

4.5.1.2 Placer order number (EI) 00216

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field is identical to *ORC-2-placer order number*.

This field is a special case of the Entity Identifier data type (Section 2.8.13). The first component is a string that identifies an individual order (e.g., OBR). A limit of fifteen (15) characters is suggested but not required. It is assigned by the placer (ordering application). An implementation is HL7 compliant when the number of characters for this field is increased to accommodate applications that require a greater number of characters for the Placer order number. It identifies an order uniquely among all orders from a particular ordering application. The second through fourth components contain the application ID of the placing application in the same form as the HD data type (Section 2.8.18, "HD - Hierarchic designator"). The second component, namespace ID, is a user-defined coded value that will be uniquely associated with an application. A limit of six (6) characters is suggested but not required. A given institution or group of intercommunicating institutions should establish a unique list of applications that may be potential placers and fillers and assign unique application IDs. The components are separated by component delimiters.

See *ORC-2-placer order number* (Section 4.3.1.2) for information on when this field must be valued.

4.5.1.3 Filler order number (EI) 00217

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This is a permanent identifier for an order and its associated observations. It is a special case of the Entity Identifier data type (see Chapter 2, Section 2.8.15, "EI - entity identifier").

The first component is a string that identifies an individual order segment (e.g., OBR). It is assigned by the order filling (receiving) application. It identifies an order uniquely among all orders from a particular filling application (e.g., clinical laboratory). A limit of fifteen (15) characters is suggested but not required.

The second through fourth components contain the filler application ID, in the form of the HD data type (see Section 2.8.18, "HD - hierarchic designator"). The second component is a user-defined coded value that uniquely defines the application from other applications on the network. A limit of six (6) characters is suggested but not required. The second component of the filler order number always identifies the actual filler of an order.

A limit of fifteen (15) characters is suggested but not required. An implementation is HL7 compliant when the number of characters for this field is increased to accommodate applications that require a greater number of characters for the Filler order number.

See *ORC-3-filler order number* for information on when this field must be valued.

OBR-3-filler order number is identical to *ORC-3-filler order number*.

4.5.1.4 Universal service ID (CE) 00238

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the identifier code for the requested observation/test/battery. This can be based on local and/or “universal” codes. We recommend the “universal” procedure identifier. The structure of this CE data type is described in the control section.

4.5.1.5 Priority-OBR (ID) 00239

Definition: *This field has been retained for backward compatibility only.* It is not used. Previously priority (e.g., STAT, ASAP), but this information is carried as the sixth component of *OBR-27-quantity/timing*.

4.5.1.6 Requested date/time (TS) 00240

Definition: *This field has been retained for backward compatibility only.* It is not used. Previously requested date/time. This information is now carried in the fourth component of the *OBR-27-quantity/timing*.

4.5.1.7 Observation date/time (TS) 00241

Definition: This field is the clinically relevant date/time of the observation. In the case of observations taken directly from a subject, it is the actual date and time the observation was obtained. In the case of a specimen-associated study, this field shall represent the date and time the specimen was collected or obtained. (This is a results-only field except when the placer or a third party has already drawn the specimen.) This field is conditionally required. When the OBR is transmitted as part of a report message, the field **must** be filled in. If it is transmitted as part of a request **and** a sample has been sent along as part of the request, this field must be filled in because this specimen time is the physiologically relevant date/time of the observation.

4.5.1.8 Observation end date/time (TS) 00242

Definition: This field contains the end date and time of a study or timed specimen collection. If an observation takes place over a substantial period of time, it will indicate when the observation period ended. For observations made at a point in time, it will be null. This is a results field except when the placer or a party other than the filler has already drawn the specimen.

4.5.1.9 Collection volume (CQ) 00243

Components: <quantity (NM)> ^ <units (CE)>

Subcomponents of units: <identifier (ID)> & <text (ST)> & <name of coding system (ST)> & <alternate identifier (ID)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Definition: For laboratory tests, the collection volume is the volume of a specimen. The default unit is ML. Specifically, units should be expressed in the ISO Standard unit abbreviations (ISO-2955,1977). This is a results-only field except when the placer or a party has already drawn the specimen. (See Chapter 7 for full details about units.)

4.5.1.10 Collector identifier (XCN) 00244

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: When a specimen is required for the study, this field will identify the person, department, or facility that collected the specimen. Either name or ID code, or both, may be present.

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4.5.1.11 Specimen action code (ID) 00245

Definition: This field identifies the action to be taken with respect to the specimens that accompany or precede this order. The purpose of this field is to further qualify (when appropriate) the general action indicated by the order control code contained in the accompanying ORC segment. For example, when a new order (ORC - "NW") is sent to the lab, this field would be used to tell the lab whether or not to collect the specimen ("L" or "O"). Refer to *HL7 table 0065 - Specimen action code* for valid values.

Table 0065 - Specimen action code

Value	Description
A	Add ordered tests to the existing specimen
G	Generated order; reflex order
L	Lab to obtain specimen from patient
O	Specimen obtained by service other than Lab
P	Pending specimen; Order sent prior to delivery
R	Revised order
S	Schedule the tests specified below

4.5.1.12 Danger code (CE) 00246

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the code and/or text indicating any known or suspected patient or specimen hazards, e.g., patient with active tuberculosis or blood from a hepatitis patient. Either code and/or text may be absent. However, the code is always placed in the first component position and any free text in the second component. Thus, free text without a code must be preceded by a component delimiter.

4.5.1.13 Relevant clinical info. (ST) 00247

Definition: This field contains the additional clinical information about the patient or specimen. This field is used to report the suspected diagnosis and clinical findings on requests for interpreted diagnostic studies. Examples include reporting the amount of inspired carbon dioxide for blood gasses, the point in the menstrual cycle for cervical pap tests, and other conditions that influence test interpretations. For some orders this information may be sent on a more structured form as a series of OBX segments (see Chapter 7) that immediately follow the order segment.

4.5.1.14 Specimen received date/time (TS) 00248

Definition: For observations requiring a specimen, the specimen received date/time is the actual login time at the diagnostic service. This field must contain a value when the order is accompanied by a specimen, or when the observation required a specimen **and** the message is a report.

4.5.1.15 Specimen source (CM) 00249

Components: <specimen source name or code (CE)> ^ <additives (TX)> ^ <freetext (TX)> ^ <body site (CE)> ^ <site modifier (CE)> ^ <collection method modifier code (CE)>

Subcomponents of specimen source name or code: <identifier (ST)> & <test (ST)> & <name of coding system (ST)> & <alternate identifier (ST)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Subcomponents of body site: <identifier (ST)> & <test (ST)> & <name of coding system (ST)> & <alternate identifier (ST)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Subcomponents of site modifier: <identifier (ST)> & <test (ST)> & <name of coding system (ST)> & <alternate identifier (ST)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Subcomponents of name of alternate coding system: <identifier (ST)> & <test (ST)> & <name of coding system (ST)> & <alternate identifier (ST)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Definition: This field identifies the site where the specimen should be obtained or where the service should be performed.

The first component contains the specimen source name or code (as a CE data type component). (Even in the case of observations whose name implies the source, a source may be required, e.g., blood culture-heart blood.) Refer to *HL7 table 0070 – Specimen source codes* for valid entries.

The second component should include free text additives to the specimen such as Heparin, EDTA, or Oxalate, when applicable.

The third is a free text component describing the method of collection when that information is a part of the order. When the method of collection is logically an observation result, it should be included as a result segment.

The fourth component specifies the body site from which the specimen was obtained, and the fifth is the site modifier. For example, the site could be antecubital fossa, and the site modifier “right.” The components of the CE fields become subcomponents. Refer to *HL7 table 0163 - Administrative site* for valid entries.

Table 0163 - Administrative site

Value	Description	Value	Description
BE	Bilateral Ears	LVL	Left Vastus Lateralis
OU	Bilateral Eyes	NB	Nebulized
BN	Bilateral Nares	PA	Perianal
BU	Buttock	PERIN	Perineal
CT	Chest Tube	RA	Right Arm
LA	Left Arm	RAC	Right Anterior Chest
LAC	Left Anterior Chest	RACF	Right Antecubital Fossa
LACF	Left Antecubital Fossa	RD	Right Deltoid
LD	Left Deltoid	RE	Right Ear
LE	Left Ear	REJ	Right External Jugular
LEJ	Left External Jugular	OD	Right Eye
OS	Left Eye	RF	Right Foot
LF	Left Foot	RG	Right Gluteus Medius
LG	Left Gluteus Medius	RH	Right Hand
LH	Left Hand	RIJ	Right Internal Jugular
LIJ	Left Internal Jugular	RLAQ	Rt Lower Abd Quadrant
LLAQ	Left Lower Abd Quadrant	RLFA	Right Lower Forearm
LLFA	Left Lower Forearm	RMFA	Right Mid Forearm
LMFA	Left Mid Forearm	RN	Right Naris
LN	Left Naris	RPC	Right Posterior Chest
LPC	Left Posterior Chest	RSC	Right Subclavian
LSC	Left Subclavian	RT	Right Thigh
LT	Left Thigh	RUA	Right Upper Arm
LUA	Left Upper Arm	RUAQ	Right Upper Abd Quadrant
LUAQ	Left Upper Abd Quadrant	RUFA	Right Upper Forearm
LUFA	Left Upper Forearm	RVL	Right Vastus Lateralis
LVG	Left Ventragluteal	RVG	Right Ventragluteal

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The fifth component indicates whether the specimen is frozen as part of the collection method. Suggested values are F (Frozen); R (Refrigerated). If the component is blank, the specimen is assumed to be at room temperature.

Table 0070 - Specimen source codes

Value	Description	Value	Description	Value	Description
ABS	Abscess	FLU	Body fluid, unsp	SER	Serum
AMN	Amniotic fluid	GAS	Gas	SKN	Skin
ASP	Aspirate	GAST	Gastric fluid/contents	SKM	Skeletal muscle
BPH	Basophils	GEN	Genital	SPRM	Spermatozoa
BIFL	Bile fluid	GENC	Genital cervix	SPT	Sputum
BLDA	Blood arterial	GENL	Genital lochia	SPTC	Sputum - coughed
BBL	Blood bag	GENV	Genital vaginal	SPTT	Sputum - tracheal aspirate
BLDC	Blood capillary	HAR	Hair	STON	Stone (use CALC)
BPU	Blood product unit	IHG	Inhaled Gas	STL	Stool = Fecal
BLDV	Blood venous	IT	Intubation tube	SWT	Sweat
BON	Bone	ISLT	Isolate	SNV	Synovial fluid (Joint fluid)
BRTH	Breath (use EXHLD)	LAM	Lamella	TEAR	Tears
BRO	Bronchial	WBC	Leukocytes	THRT	Throat
BRN	Burn	LN	Line	THRB	Thrombocyte (platelet)
CALC	Calculus (=Stone)	LNA	Line arterial	TISS	Tissue
CDM	Cardiac muscle	LNV	Line venous	TISG	Tissue gall bladder
CNL	Cannula	LIQ	Liquid NOS	TLGI	Tissue large intestine
CTP	Catheter tip	LYM	Lymphocytes	TLNG	Tissue lung
CSF	Cerebral spinal fluid	MAC	Macrophages	TISPL	Tissue placenta
CVM	Cervical mucus	MAR	Marrow	TSMI	Tissue small intestine
CVX	Cervix	MEC	Meconium	TISU	Tissue ulcer
COL	Colostrum	MBLD	Menstrual blood	TUB	Tube NOS
CBLD	Cord blood	MLK	Milk	ULC	Ulcer
CNJT	Conjunctiva	MILK	Breast milk	UMB	Umbilical blood
CUR	Curettage	NAIL	Nail	UMED	Unknown medicine
CYST	Cyst	NOS	Nose (nasal passage)	URTH	Urethra
DIAF	Dialysis fluid	ORH	Other	UR	Urine
DOSE	Dose med or substance	PAFL	Pancreatic fluid	URC	Urine clean catch
DRN	Drain	PAT	Patient	URT	Urine catheter
DUFL	Duodenal fluid	PRT	Peritoneal fluid /ascites	URNS	Urine sediment
EAR	Ear	PLC	Placenta	USUB	Unknown substance
EARW	Ear wax (cerumen)	PLAS	Plasma	VOM	Vomit
ELT	Electrode	PLB	Plasma bag	BLD	Whole blood
ENDC	Endocardium	PLR	Pleural fluid (thoracentesis fld)	BDY	Whole body
ENDM	Endometrium	PMN	Polymorphonuclear neutrophils	WAT	Water
EOS	Eosinophils	PPP	Platelet poor plasma	WICK	Wick
RBC	Erythrocytes	PRP	Platelet rich plasma	WND	Wound
EYE	Eye	PUS	Pus	WNSA	Wound abscess
EXHLD	Exhaled gas (=breath)	RT	Route of medicine	WNDE	Wound exudate
FIB	Fibroblasts	SAL	Saliva	WNDD	Wound drainage
FLT	Filter	SEM	Seminal fluid	XXX	To be specified in another part of the message
FIST	Fistula				

4.5.1.16 Ordering provider (XCN) 00226

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code(ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field identifies the provider who ordered the test. Either the ID code or the name, or both, may be present. This is the same as *ORC-12-ordering provider*.

4.5.1.17 Order callback phone number (XTN) 00250

Components: [NNN] [(999)]999-9999 [X999999] [B999999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Definition: This field contains the telephone number for reporting a status or a result using the standard format with extension and/or beeper number when applicable.

4.5.1.18 Placer field 1 (ST) 00251

Definition: This field is user field #1. Text sent by the placer will be returned with the results.

4.5.1.19 Placer field 2 (ST) 00252

Definition: This field is similar to placer field #1.

4.5.1.20 Filler field 1 (ST) 00253

Definition: This field is definable for any use by the filler (diagnostic service).

4.5.1.21 Filler field 2 (ST) 00254

Definition: This field is similar to filler field #1.

4.5.1.22 Results rpt/status chng - date/time (TS) 00255

Definition: This field specifies the date/time when the results were reported or status changed. This field is used to indicate the date and time that the results are composed into a report and released, or that a status, as defined in *ORC-5 order status*, is entered or changed. (This is a results field only.) When other applications (such as office or clinical database applications) query the laboratory application for untransmitted results, the information in this field may be used to control processing on the communications link. Usually, the ordering service would want only those results for which the reporting date/time is greater than the date/time the inquiring application last received results.

4.5.1.23 Charge to practice (CM) 00256

Components: <dollar amount (MO)> ^ <charge code (CE)>

Subcomponents of dollar amount: <quantity (NM)> & <denomination (ID)>

Subcomponents of charge code: <identifier (ST)> & <test (ST)> & <name of coding system (ST)> & <alternate identifier (ST)> & <alternate text (ST)> & <name of alternate coding system (ST)>

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Definition: This field is the charge to the ordering entity for the studies performed when applicable. The first component is a dollar amount when known by the filler. The second is a charge code when known by the filler (results only).

4.5.1.24 Diagnostic serv sect ID (ID) 00257

Definition: This field is the section of the diagnostic service where the observation was performed. If the study was performed by an outside service, the identification of that service should be recorded here. Refer to *HL7 table 0074 - Diagnostic service section ID* for valid entries.

Table 0074 - Diagnostic service section ID

Value	Description	Value	Description
AU	Audiology	OUS	OB Ultrasound
BG	Blood Gases	OT	Occupational Therapy
BLB	Blood Bank	OTH	Other
CUS	Cardiac Ultrasound	OSL	Outside Lab
CTH	Cardiac Catheterization	PHR	Pharmacy
CT	CAT Scan	PT	Physical Therapy
CH	Chemistry	PHY	Physician (Hx. Dx, admission note, etc.)
CP	Cytopathology	PF	Pulmonary Function
EC	Electrocardiac (e.g., EKG, EEC, Holter)	RAD	Radiology
EN	Electroneuro (EEG, EMG, EP, PSG)	RX	Radiograph
HM	Hematology	RUS	Radiology Ultrasound
ICU	Bedside ICU Monitoring	RC	Respiratory Care (therapy)
IMM	Immunology	RT	Radiation Therapy
LAB	Laboratory	SR	Serology
MB	Microbiology	SP	Surgical Pathology
MCB	Mycobacteriology	TX	Toxicology
MYC	Mycology	VUS	Vascular Ultrasound
NMS	Nuclear Medicine Scan	VR	Virology
NMR	Nuclear Magnetic Resonance	XRC	Cineradiograph
NRS	Nursing Service Measures		

4.5.1.25 Result status (ID) 00258

Definition: This field contains the status of results for this order. This conditional field is required whenever the OBR is contained in a report message. It is not required as part of an initial order.

There are two methods of sending status information. If the status is that of the entire order, use *ORC-15-order effective date/time* and *ORC-5-order status*. If the status pertains to the order detail segment, use *OBR-25-result status* and *OBR-22-results rpt/status chng - date/time*. If both are present, the OBR values override the ORC values.

This field would typically be used in a response to an order status query where the level of detail requested does not include the OBX segments. When the individual status of each result is necessary, *OBX-11-observ result status* may be used. Refer to *HL7 table 0123 - Result status* for valid entries.

Table 0123 - Result status

Value	Description	Value	Description
O	Order received; specimen not yet received	R	Results stored; not yet verified
I	No results available; specimen received, procedure incomplete	F	Final results; results stored and verified. Can only be changed with a corrected result.
S	No results available; procedure scheduled, but not done	X	No results available; Order canceled.

Value	Description	Value	Description
A	Some, but not all, results available	Y	No order on record for this test. (Used only on queries)
P	Preliminary: A verified early result is available, final results not yet obtained	Z	No record of this patient. (Used only on queries)
C	Correction to results		

4.5.1.26 Parent result (CM) 00259

Components: <OBX-3-observation identifier of parent result (CE)> ^ <OBX-4-sub-ID of parent result (ST)> ^ <part of OBX-5 observation result from parent (TX)>see discussion>

Subcomponents of OBX-3-observation identifier of parent result: <identifier (ST)> & <test (ST)> & <name of coding system (ST)> & <alternate identifier (ST)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Definition: This field is defined to make it available for other types of linkages (e.g., toxicology). This important information, together with the information in *OBR-29-parent*, uniquely identifies the parent result's OBX segment related to this order. The value of this OBX segment in the parent result is the organism or chemical species about which this battery reports. For example, if the current battery is an antimicrobial susceptibility, the parent results identified OBX contains a result which identifies the organism on which the susceptibility was run. This indirect linkage is preferred because the name of the organism in the parent result may undergo several preliminary values prior to finalization.

The third component may be used to record the name of the microorganism identified by the parent result directly. The organism in this case should be identified exactly as it is in the parent culture.

We emphasize that this field does not take the entire result field from the parent. It is meant only for the text name of the organism or chemical subspecies identified. This field is included only to provide a method for linking back to the parent result for those systems that could not generate unambiguous Observation IDs and sub-IDs.

This field is present only when the parent result is identified by *OBR-29-parent* and the parent spawns child orders for each of many results. (See Chapter 7 for more details about this linkage.)

A second mode of conveying this information is to use a standard observation result segment (OBX). If more than one organism is present, *OBX-4-observation sub-ID* is used to distinguish them. In this case, the first OBX with subID N will contain a value identifying the Nth microorganism, and each additional OBX with subID N will contain susceptibility values for a given antimicrobial test on this organism.

4.5.1.27 Quantity/timing (TQ) 00221

Components: <quantity (CQ)> ^ <interval (CM)> ^ <duration (ST)> ^ <start date/time (TS)> ^ <end date/time (TS)> ^ <priority (ST)> ^ <condition (ST)> ^ <text (TX)> ^ <conjunction (ST)> ^ <order sequencing (CM)> ^ <occurrence duration (CE)> ^ <total occurrences (NM)>

Definition: This field contains information about how many services to perform at one service time and how often the service times are repeated, and to fix duration of the request. See Section 4.4, "QUANTITY/TIMING (TQ) DEFINITION."

4.5.1.28 Result copies to (XCN) 00260

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

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Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field identifies the people who are to receive copies of the results. By local convention, either the ID number or the name may be absent.

4.5.1.29 Parent (CM) 00261

Components: <parent's placer order number (EI)> ^ <parent's filler order number (EI)>

Subcomponents of parent's placer order number: <entity identifier (ST)> & <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (IS)>

Subcomponents of parent's filler order number: <entity identifier (ST)> & <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (IS)>

Definition: This field is identical to *ORC-8-parent*. This field relates a child to its parent when a parent-child relationship exists. For example, observations that are spawned by previous observations, e.g., antimicrobial susceptibilities spawned by blood cultures, need to record the parent (blood culture) filler order number here. The parent-child mechanism is described under the order control field notes (see Section 4.3.1.1.1, "Table notes for order control codes of ORC"). It is required when the order is a child.

Parent is a two-component field. The components of the placer order number and the filler order number are transmitted in subcomponents of the two components of this field.

4.5.1.30 Transportation mode (ID) 00262

Definition: This field identifies how (or whether) to transport a patient, when applicable. Refer to *HL7 table 0124 - Transportation mode* for valid codes.

Table 0124 - Transportation mode

Value	Description
CART	Cart - patient travels on cart or gurney
PORT	The examining device goes to patient's location
WALK	Patient walks to diagnostic service
WHLC	Wheelchair

4.5.1.31 Reason for study (CE) 00263

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field is the code or text using the conventions for coded fields given in the Control/Query Chapter (Chapter 2). This is required for some studies to obtain proper reimbursement.

4.5.1.32 Principal result interpreter (CM) 00264

Components: <name (CN)> ^ <start date/time (TS)> ^ <end date/time (TS)> ^ <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <patient location type (IS)> ^ <building (IS)> ^ <floor (IS)>

Subcomponents of name: <ID number (ST)> & <family name (ST)> & <given name (ST)> & <middle initial or name (ST)> & <suffix (e.g., JR or III) (ST)> & <prefix (e.g., DR) (ST)> & <degree (e.g., MD (ST)> & <source table (IS)> & <assigning authority (HD)>

Subcomponents of facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field identifies the physician or other clinician who interpreted the observation and is responsible for the report content.

4.5.1.33 Assistant result interpreter (CM) 00265

Components: <name (CN)> ^ <start date/time (TS)> ^ <end date/time (TS)> ^ <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <patient location type (IS)> ^ <building (IS)> ^ <floor (IS)>

Subcomponents of name: <identifier(ST)> & <test (ST)> & <name of coding system (ST)> & <alternate identifier (ST)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Subcomponents of facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field identifies the clinical observer who assisted with the interpretation of this study.

4.5.1.34 Technician (CM) 00266

Components: <name (CN)> ^ <start date/time (TS)> ^ <end date/time (TS)> ^ <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <patient location type (IS)> ^ <building (IS)> ^ <floor (IS)>

Subcomponents of name: <identifier(ST)> & <test (ST)> & <name of coding system (ST)> & <alternate identifier (ST)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Subcomponents of facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field identifies the performing technician.

4.5.1.35 Transcriptionist (CM) 00267

Components: <name (CN)> ^ <start date/time (TS)> ^ <end date/time (TS)> ^ <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <patient location type (IS)> ^ <building (IS)> ^ <floor (IS)>

Subcomponents of name: <identifier(ST)> & <test (ST)> & <name of coding system (ST)> & <alternate identifier (ST)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Subcomponents of facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field identifies the report transcriber.

4.5.1.36 Scheduled date/time (TS) 00268

Definition: This field is the date/time the filler scheduled an observation, when applicable (e.g., action code in *OBR-11-specimen action code* = "S"). This is a result of a request to schedule a particular test and provides a way to inform the placer of the date/time a study is scheduled (result only).

4.5.1.37 Number of sample containers (NM) 01028

Definition: This field identifies the number of containers for a given sample. For sample receipt verification purposes; may be different from the total number of samples which accompany the order.

4.5.1.38 Transport logistics of collected sample (CE) 01029

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field is the means by which a sample reaches the diagnostic service provider. This information is to aid the lab in scheduling or interpretation of results. Possible answers: routine transport van, public postal service, etc. If coded, requires a user-defined table.

4.5.1.39 Collector's comment (CE) 01030

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

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Definition: This field is for reporting additional comments related to the sample. If coded, requires a user-defined table. If only free text is reported, it is placed in the second component with a null in the first component, e.g., ^difficult clotting after venipuncture and echymosis.

4.5.1.40 Transport arrangement responsibility (CE) 01031

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field is an indicator of who is responsible for arranging transport to the planned diagnostic service. Examples: Requester, Provider, Patient. If coded, requires a user-defined table.

4.5.1.41 Transport arranged (ID) 01032

Definition: This field is an indicator of whether transport arrangements are known to have been made. Refer to *HL7 table 0224 - Transport arranged* for valid codes.

Table 0224 - Transport arranged

Value	Description
A	Arranged
N	Not Arranged
U	Unknown

4.5.1.42 Escort required (ID) 01033

Definition: This field is an indicator that the patient needs to be escorted to the diagnostic service department. Note: The nature of the escort requirements should be stated in *OBR-43-planned patient transport comment*. See *HL7 table 0225 - Escort required* for valid values.

Table 0225 - Escort required

Value	Description
R	Required
N	Not Required
U	Unknown

4.5.1.43 Planned patient transport comment (CE) 01034

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field is the code or free text comments on special requirements for the transport of the patient to the diagnostic service department. If coded, requires a user-defined table.

4.5.1.44 Procedure code (CE) 00393

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains a unique identifier assigned to the procedure, if any, associated with the Universal Service ID reported in field 4. *User-defined table 0088 - Procedure code is used as the HL7 identifier for the user-defined table of values for this field.* This field is a CE data type for compatibility with clinical and ancillary systems. This field will contain the HCPCS code associated with the order.

4.5.1.45 Procedure code modifier (CE) 01316

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the procedure code modifier to the procedure code reported in field 44, when applicable. Procedure code modifiers are defined by regulatory agencies such as HCFA and the AMA. Multiple modifiers may be reported. Refer to *user-defined table 0340 - Procedure code modifier* for suggested values.

4.5.2 Examples of use

The purpose of this section is to show how certain specific situations would be handled using the order entry protocol. The ellipses represent uncompleted details. The symbol // precedes comments for clarification.

4.5.2.1 An order replaced by three orders

Suppose that an application called “PC” is sending an order to the EKG application for three EKGs to be done on successive days.

The order might be placed as follows:

ORM message:

```
MSH|...
PID|...
ORC|NW|A226677^PC|946281^PC|N|3^QAM|198801121132|P123^AQITANE^ELLINORE^""^""^""^MD
|||4EAST<cr>
// EKG order
OBR|||8601-7^EKG
IMPRESSION^LN|||||||P030^SMITH^MARTIN^""^""^""^MD|||||||3^QAM<cr>
BLG|...
ORC|... // Another order yet others may follow
```

There is a group number first component indicating that an order group is being created.

Responses: Because the EKG application must turn the single order above into three orders for three separate EKGs (services), the results of each will be reported under its own OBR segment. Several response levels are possible depending on the Response Flag:

- a) If the Response Flag is N (as it is), then the filler EKG application only responds “I got the order.”

```
MSH|...
MSA|...
```

The only implication of this response is that the order was received.

If the Response Flag had been E, then the response would have been the same, but its implication would have been that the EKG application had processed all the orders and they were acceptable.

- b) If the Response Flag were R, then the filler EKG application must communicate to the PC the fact of the creation of child orders, but with no details:

```
MSH|...
MSA|...
ORC|PA|A226677^PC|89-458^EKG|946281^PC<cr>
ORC|CH|A226677^PC|89-551^EKG|946281... // 1ST child ORC.
ORC|CH|A226677^PC|89-552^EKG|946281... // 2ND child ORC.
ORC|CH|A226677^PC|89-553^EKG|946281... // 3RD child ORC.
```

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... follow. // Other parts of response might

What has been said here is “Your A226767 has spun out three children named 89-551, 89-552, and 89-553.” Notice that the placer order numbers are identical in the children’s ORCs.

c) If the Response Flag were D, then the filler EKG application must communicate to the PC application the fact of the replacement and also the exact replacement order segments:

```
MSH|...
MSA|...
ORC|PA|A226677^PC|89- 458^EKG<cr>
ORC|CH|A226677^PC|89- 551^EKG|946281^PC|SC||A226677&PC^89- 458&EKG|
... ^^^^198901130500^<cr> // 1ST child ORC
OBR||89- 551^EKG|8601- 7^EKG IMPRESSION^LN|... // 1ST
child OBR
ORC|CH|A226677^PC|89- 522^EKG|946281^PC|SC||A226677&PC^89- 458&EKG|
... ^^^^198901140500^<cr> // 2ND child ORC
OBR||89- 552^EKG|8601- 7^EKG IMPRESSION^LN|... // 2ND
child OBR
ORC|CH|A226677^PC|89- 553^EKG|946281^PC|SC||A226677&PC^89- 458&EKG|
... ^^^^198901150500^<cr> // 3RD
child ORC
OBR||89- 553^EKG|8601- 7^EKG IMPRESSION^LN|... // 3RD
child OBR

// Other parts might
follow
```

Here the actual OBR segments have been added.

The status of the child orders is being reported as SC (scheduled).

ORC-7-quantity/timing shows that the EKGs are requested after 0500 on successive days.

4.6 DIET ORDERS

A diet office needs to receive specific information, the most important being the diet order itself. Diet restrictions (often called diet codes) are the basic building blocks of a diet order.

<u>ORM^O01^OMD_O01</u>	<u>Dietary Order</u>	<u>Chapter</u>
MSH	Message Header	2
[{NTE}]	Notes and Comments (for Header)	2
[
PID	Patient Identification	3
[PD1]	Additional Demographics	3
[{NTE}]	Notes and Comments (for Patient ID)	2
[PV1]	Patient Visit	3
[PV2]]	Patient Visit - Additional Info	3
[{IN1]	Insurance	6
[IN2]	Insurance Additional Info	6
[IN3]	Insurance Add'l Info - Cert.	6
}]		
[GT1]	Guarantor	6
[{AL1}]	Allergy Information	3
]		
{		
ORC	Common Order Segment	4
[
{ODS}	Dietary Orders, Suppl., Prefer.	4

[{NTE}]	Notes and Comments (for ODS)	2
{OBX	Results	7
[{NTE}]}	Notes and Comments (for OBX)	2
}		
{		
[
ORC	Common Order Segment	4
{ODT}	Diet Tray Instructions	4
[{NTE}]	Notes and Comments (for ODT)	2
}		
}		

<u>ORR^O02^ORD_O02</u>	<u>General Order Acknowledgment Message</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2
[{NTE}]	Notes and Comments (for MSA)	2
[
[PID	Patient Identification	3
[{NTE}]	Notes and Comments (for Patient ID)	2
]		
{		
ORC	Common Order	4
[{ODS}]	Dietary Orders, Supplements, and Preferences	4
[{NTE}]	Notes and Comments (for ODS)	2
}		
[
{		
ORC	Common Order	4
[{ODT}]	Diet Tray Instructions	4
[{NTE}]	Notes and Comments (for ODT)	2
}		
]		
}		

The ODS segment is intended to cover the basic diet definition of one diet code. A diet can be ordered as a combination of one or more diet specifications, followed by any number of supplements and/or preferences. Many diets are common to all institutions, such as an ADA 1500 calorie diet, and may exist in a table. Each diet code is limited to a six-character abbreviation.

A dietary message never specifies more than one diet. However, a single diet order may be used to discontinue one diet and specify its replacement. In this instance, the dietary message will contain two ORCs. The first ORC will not contain an ODT. A tray specification order may follow the second ORC.

Often a complete diet order consists of a single diet code. The diet code defines which foods a patient may receive. In cases where a patient cannot make food selections, a diet code often causes service of a predefined set of foods. A patient must have at least one diet code to receive food.

Supplements provide a mechanism for giving any additional desired foods to a patient. Supplements are foods given to a patient regardless of their diet codes. These foods are part of the patient's diet without being restricted by any other part of the order. Therefore, supplement assignment needs to be a controlled and supervised process to ensure that a patient does not receive improper or potentially harmful foods.

Preferences consist of likes, dislikes, substitutions, and complementary foods. Preferences are diet orders, effectively from the patient, but transmitted from the ward. They are subject to change. A mechanism is included for defining patient preferences with this proposal. Preferences are independent of the diet order and do not change when the order changes. However, if a preference violates the conditions of the diet order, then that preference is not allowed.

There is additional information that the dietary service requires for proper operation, including tray delivery times, extra trays, and messages regarding tray delivery and handling.

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A patient can have only one effective diet order at a time. A diet order consists of the diet codes, supplements, and preferences effective at a given time. These three specifications govern which foods a patient will receive. Diets generally do not have a stated ending time to ensure that the patient always receives food (unless an NPO order is received).

Diet codes govern foods in two ways. First, there are foods which are simply not allowed on a specified diet. Second, some diets imply a nutrient exchange pattern which controls the amounts of certain foods that a patient can receive. Some diet codes can combine to make a single diet order. An ADA 1500 and a 2 gram sodium (NA2GM) diet can coexist since they do not address the same exchanges. The patterns for these diets can combine without conflicting or overlapping. Certain kinds of diet codes cannot be combined, such as ADA 1500 and ADA 2000. It is impossible to feed a patient at two different calorie levels. These constraints are not defined in the table, but rather are implied by the semantics of the codes.

An order specifies the complete foods a patient can or should receive at a given meal. (Depending on the institution and diet order, a patient may or may not have a choice of foods. For example, a clear liquid diet often gives no choices since there are few clear liquid foods.) A modification to a diet, by adding a diet code or supplement, may have a drastic effect on foods the patient may eat. Due to this, any modification to the diet codes or supplements will be a new order. Therefore, one must send any information for diet codes or supplements from the previous order which is still applicable for the next order. For example, a patient has an ADA 1500 calorie diet and an evening snack of Skim Milk. If you wanted to add a 2 gram sodium restriction, you need to send both the ADA 1500 calorie and the 2 gram sodium diet codes along with the Skim Milk supplement. If you do not do this, the dietary application must presume the new order is merely for 2 grams of sodium. This method allows for a comprehensive audit trail of orders and prevents ambiguities in interpretation.

4.6.1 ODS - dietary orders, supplements, and preferences segment

The ORC sequence items of interest to ODS are *ORC-1-order control*, *ORC-2-placer order number*, *ORC-3-filler order number*, *ORC-7-quantity/timing*, *ORC-9-date/time of transaction*, *ORC-10-entered by*, and *ORC-11-verified by*. For *ORC-1-order control*, the values may be New (NW), Cancel (CA), Discontinue Order Request (DC), Change (XO), Hold Order Request (HD), and Release Previous Hold (RL). The HD and RL codes could stop service for a specified length of time. *ORC-7-quantity/timing* should be used to specify whether an order is continuous or for one service period only. It is also useful for supplements which are part of a diet but only delivered, say, every day at night. Example:

|1^QPM^19910415|.

Figure 4-9. ODS attributes

SEQ	LEN	DT	OPT	RP/ #	TBL #	ITEM #	ELEMENT NAME
1	1	ID	R		0159	00269	Type
2	60	CE	O	Y/10		00270	Service Period
3	60	CE	R	Y/20		00271	Diet, Supplement, or Preference Code
4	80	ST	O	Y/2		00272	Text Instruction

4.6.1.0 ODS field definitions

4.6.1.1 Type (ID) 00269

Definition: This field specifies type of diet. Refer to *HL7 table 0159 - Diet code specification type* for valid entries.

Table 0159 - Diet code specification type

Value	Description
D	Diet
S	Supplement
P	Preference

4.6.1.2 Service period (CE) 00270

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: When blank, the modifier applies to all service periods. Diet orders, for example, typically apply to all service periods. This field usually specifies supplements. This field allows you to designate a modification for one or more of the service periods during a day by combining service specifications as needed. The service periods will be local CEs, normally numbers. Suggested are:

service 1 is breakfast
 service 2 is mid-morning snack
 service 3 is lunch
 service 4 is mid-afternoon snack
 service 5 is dinner
 service 6 is bedtime snack

Ex: |1~5| means service 1 and service 5, whatever these are locally defined to be.

4.6.1.3 Diet, supplement, or preference code (CE) 00271

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field is the identifier of the ordered item for a patient; it is equivalent to *OBR-4-universal service ID* in function. Since ODS is a repeating segment, multiple entities get multiple segments. Example:

|^REG^L&FD7|, |023^^L&FD6|, |^NOLACT^L&FD5|, |^TUBEFD^L&FD4|, and
 |011^HIPRO100^L&FD1~123^LOFAT20^L&FD1|

In the case where this segment requests a diet supplement, i.e., *ODS-I-type* = S, this attribute specifies a particular item or class of items. If institutional codes for patient food preferences (P) have been codified, they are also expressed as coded segments; otherwise, the information is passed as a text string in the fourth component of the ODS segment, described below.

4.6.1.4 Text instruction (ST) 00272

Definition: This field defines the specific instructions for dietary. These instructions may address specific patient needs, such as isolation. This field provides the ordering provider's dietary instructions as free text. It can represent the full dietary instruction or indicate supplemental information.

4.6.2 ODT - diet tray instructions segment

This segment addresses tray instructions. These are independent of diet codes, supplements, and preferences and therefore get separate order numbers.

Figure 4-10. ODT attributes

SEQ	LEN	DT	OPT	RP/ #	TBL #	ITEM #	ELEMENT NAME
1	60	CE	R		0160	00273	Tray Type
2	60	CE	O	Y/10		00270	Service Period
3	80	ST	O			00272	Text Instruction

4.6.2.0 ODT field definitions

4.6.2.1 Tray type (CE) 00273

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field defines the type of dietary tray. Refer to *HL7 table 0160 - Tray type* for valid entries.

Table 0160 - Tray type

Value	Description
EARLY	Early tray
LATE	Late tray
GUEST	Guest tray
NO	No tray
MSG	Tray message only

Tray specifications are useful for early and late tray delivery in cases where a patient undergoes a procedure during normal feeding times. Tray specifications can also be used for guest trays, no trays, and messages. The value MSG means the ODT segment does not specify the type of tray but provides additional information about an existing tray. This information is found in *ODT-3-text instruction*.

4.6.2.2 Service period (CE) 00270

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: When blank, the modifier applies to all service periods. This field allows you to designate one or more of the feeding periods during a day by combining the codes as needed. It can also combine with quantity/timing to give such information as which service period the order belongs with. This field is identical in meaning with *ODS-2-service period*. See Section 4.6.1.2, “Service period (CE) 00270,” for further details.

4.6.2.3 Text instruction (ST) 00272

Definition: This field defines instructions associated with the tray. Example:

|PLASTIC SILVERWARE|.

4.6.3 Example diet messages

4.6.3.1 Typical progression of orders for a surgery patient

First order:

```
MSH|...<cr>
PID|...<cr>
ORC|NW|1235^NURS|||^^^199108021700||199108021200|^HRF|^MFW|<cr>
ODS|D|^DB15^L&D03|<cr>
ODS|D|^NA2GM^L&D03|<cr>
```

Hold first order:

```
MSH|...<cr>
PID|...<cr>
ORC|HL|1235^NURS|||^^^199108031700||199108031200|^HRF|^MFW|<cr>
```

NPO order with guest tray:

```
MSH|...<cr>
PID|...<cr>
ORC|NW|1236^NURS|||^^^199108031700||199108031200|^HRF|^MFW|<cr>
ODS|D|^NPO^L&D03|<cr>
ORC|NW|1244^NURS|||^^^199108031700||199108031200|^HRF|^MFW|<cr>
ODT|GUEST|5^^L&CBD|<cr>
```

Clear liquid with guest tray:

```
MSH|...<cr>
PID|...<cr>
ORC|DC|1236^NURS|||^^^199108041700||199108041200|^HRF|^MFW|<cr>
ORC|NW|1237^NURS|||^^^199108041700||199108041200|^HRF|^MFW|<cr>
ODS|D|^DB15^L&D03|<cr>
ODS|D|^NA2GM^L&D03|<cr>
ODS|D|^CLRLIQ^L&D03|<cr>
ORC|NW|1245^NURS|||^^^199108041700||199108041200|^HRF|^MFW|<cr>
ODT|GUEST|5^^L&CBD|<cr>
```

Full liquid with guest tray:

```
MSH|...<cr>
PID|...<cr>
ORC|DC|1237^NURS|||^^^199108051700||199108051200|^HRF|^MFW|<cr>
ORC|NW|1238^NURS|||^^^199108051700||199108051200|^HRF|^MFW|<cr>
ODS|D|^DB15^L&D03|<cr>
ODS|D|^NA2GM^L&D03|<cr>
ODS|D|^FULLIQ^L&D03|<cr>
ORC|NW|1246^NURS|||^^^199108051700||199108051200|^HRF|^MFW|<cr>
ODT|GUEST|3^^L&CBD|<cr>
```

Release hold on previous order and give discharge message:

```
MSH|...<cr>
PID|...<cr>
ORC|DC|1238^NURS|||^^^199108061700||199108061200|^HRF|^MFW|<cr>
ORC|RL|1235^NURS|||^^^199108061700||199108061200|^HRF|^MFW|<cr>
ORC|NW|1247^NURS|||^^^199108061700||199108061200|^HRF|^MFW|<cr>
ODT|MSG|5^^L&CBD|You Will Be Leaving Tomorrow|<cr>
```

4.6.3.2 Complex order

Basic diet: high protein, low fat. Supplements are ice cream at service period 4 and a half ham sandwich at service period 6. There are also tray orders for early service period 1, late service period 3, and guest tray at dinner.


```
MSH|...<cr>
PID|...<cr>
ORC|NW|1234^NURS||| |^^^199108021700||199108021200|^HRF|^MFW|<cr>
ODS|D| |011^HI PR0100^L&FD1|<cr>
ODS|D| |123^LOFAT20^L&FD1|<cr>
ODS|S|4|119^ICE CREAM^L&FD8|<cr>
ODS|S|6|320^1/2 HAM SANDWICH^L&FD8|<cr>
ORC|NW|1244^NURS||| |^^^199108031700||199108031200|^HRF|^MFW|<cr>
ODT|EARLY|1^^L&CBD|<cr>
ORC|NW|1245^NURS||| |^^^199108031700||199108031200|^HRF|^MFW|<cr>
ODT|LATE|3^^L&CBD|<cr>
ORC|NW|1246^NURS||| |^^^199108031700||199108031200|^HRF|^MFW|<cr>
ODT|GUEST|^DINNER^L&CBD|<cr>
```

4.6.3.3 Tube feeding

This order specifies Similac with MCT oil and polycose additives.

```
MSH|...<cr>
PID|...<cr>
ORC|NW|1232^NURS||| |60^Q3H^^199108021700||199108021200|^HRF|^MFW|<cr>
ODS|D| |010^SIMILAC^L&D01|<cr>
ODS|D| |011^MCT^L&D01|<cr>
ODS|D| |012^POLYCOSE^L&D01|<cr>
```

4.6.3.4 Patient preference

This order specifies that the patient is a vegetarian.

```
MSH|...<cr>
PID|...<cr>
ORC|NW|1232^NURS||| |60^Q3H^^199108021700||199108021200|^HRF|^MFW|<cr>
ODS|D| |123^LOFAT20^L&FD1|<cr>
ODS|S|4|119^ICE CREAM^L&FD8|<cr>
ODS|P| |^^^VEGETARIAN|<cr>
```

4.7 SUPPLY ORDERS

The Requisition Detail segment (RQD) is used for ordering medical, surgical, and patient care supplies. It is assumed that these supplies are managed by a materials management application, which contains a master list of all items the hospital uses.

There are basically two types of supplies, commonly referred to as stock and nonstock.

Stock supplies are, as the name suggests, stocked in the hospital in designated areas, such as the warehouse, Central Supply, Nursing floors, or Operating Room.

When requisitioning stock supplies, the requesting application need only specify the information in the RQD segment. It is assumed that this is enough information for the application receiving to identify the item. If the sending application is not aware whether the supply is stock, it may optionally send an RQ1 along with the RQD. Typically in that case, the item is requested with a free text description.

Nonstock supplies are not stocked anywhere in the hospital and must be ordered from an industry distributor or manufacturer.

When the requesting application knows that it is requisitioning nonstock supplies, it may also send an RQ1 segment with the RQD if at least one field in RQ1 is known to the sending application. This may be necessary in order for the receiving application to properly determine where to get these supplies. This depends on the sophistication of the database of the receiving application, which may contain a history of requisitions from the sending application.

Stock requisition orders use the ORM. RQD replaces the Order Detail Segment of the ORM message as follows:

<u>ORM^O01^OMS_O01</u>	<u>Stock Requisition Order Message</u>	<u>Chapter</u>
MSH	Message Header	2
[{NTE}]	Notes and Comments (for Header)	2
[
PID	Patient Identification	3
[PD1]	Additional Demographics	3
[{NTE}]	Notes and Comments (for Patient ID)	2
[PV1	Patient Visit	3
[PV2]]	Patient Visit - Additional Info	3
[{IN1	Insurance	6
[IN2]	Insurance Additional Info	6
[IN3]	Insurance Add'l Info - Cert.	6
}]		
[GT1]	Guarantor	6
[{AL1}]	Allergy Information	3
]		
{		
ORC	Common Order	4
[
RQD	Requisition Detail	4
[{NTE}]	Notes and Comments (for RQD)	2
[
{		
OBX	Observation/Result	7
[{NTE}]	Notes and Comments (for OBX)	2
}		
]		
]		
[BLG]	Billing Segment	4
]		
<u>ORR^O02^ORS_O02</u>	<u>General Order Acknowledgment Message</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2
[{NTE}]	Notes and Comments (for Header)	2
[
[PID	Patient Identification	3
[{NTE}]	Notes and Comments (for Patient ID)	2
]		
{		
ORC	Common Order	4
RQD	Requisition Detail	4
[{NTE}]	Notes and Comments (for RQD)	2
}		
]		

Nonstock requisitions use the ORM. RQD followed by RQ1 replaces the Order Detail Segment of the ORM message as follows:

<u>ORM^O01^OMN_O01</u>	<u>Nonstock Requisition Order Message</u>	<u>Chapter</u>
MSH	Message Header	2
[{NTE}]	Notes and Comments (for Header)	2
[
PID	Patient Identification	3

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[PD1]	Additional Demographics	3
[{NTE}]	Notes and Comments (for Patient ID)	2
[PV1]	Patient Visit	3
[PV2]]	Patient Visit - Additional Info	3
[{IN1]	Insurance	6
[IN2]	Insurance Additional Info	6
[IN3]	Insurance Add'l Info - Cert.	6
}]		
[GT1]	Guarantor	6
[{AL1}]	Allergy Information	3
}		
{		
ORC	Common Order	4
[
RQD	Requisition Detail	4
[RQ1]	Requisition Detail-1	4
[{NTE}]	Notes and Comments (for RQD)	2
[
{		
OBX	Observation/Result	7
[{NTE}]	Notes and Comments (for OBX)	2
}		
]		
}		
[BLG]	Billing Segment	4
}		

<u>ORR^O02^ORN_002</u>	<u>General Order Acknowledgment Message</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2
[{NTE}]	Notes and Comments (for Header)	2
[
[PID	Patient Identification	3
[{NTE}]	Notes and Comments (for Patient ID)	2
]		
{		
ORC	Common Order	4
RQD	Requisition Detail	4
[RQ1]	Requisition Detail-1	4
[{NTE}]	Notes and Comments (for RQD)	2
}		
]		

4.7.1 RQD - requisition detail segment

RQD contains the detail for each requisitioned item. See assumptions above.

Figure 4-11. RQD attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	4	SI	O			00275	Requisition Line Number
2	60	CE	C			00276	Item Code - Internal
3	60	CE	C			00277	Item Code - External
4	60	CE	C			00278	Hospital Item Code
5	6	NM	O			00279	Requisition Quantity
6	60	CE	O			00280	Requisition Unit of Measure
7	30	IS	O		0319	00281	Dept. Cost Center
8	30	IS	O		0320	00282	Item Natural Account Code
9	60	CE	O			00283	Deliver To ID
10	8	DT	O			00284	Date Needed

4.7.1.0 RQD field definitions

4.7.1.1 Requisition line number (SI) 00275

Definition: This field contains the number that identifies this line in the requisition.

4.7.1.2 Item code - internal (CE) 00276

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the identifier and description that uniquely identify the item on the application sending the requisition. This field is conditional because at least one of the three fields *RQD-2-item code- internal*, *RQD-3-item code-external*, or *RQD-4-hospital item code* must be valued.

4.7.1.3 Item code - external (CE) 00277

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the identifier and description that uniquely identify the item on the application receiving the requisition. This field is conditional because at least one of the three fields -- *RQD-2-item code-internal*, *RQD-3-item code-external* or *RQD-4-hospital item code* -- must be valued.

4.7.1.4 Hospital item code (CE) 00278

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the identifier and description that uniquely identify the item on all applications in the hospital. The identifier is usually controlled by the hospital financial application in the charge description master file. This field is conditional because at least one of the three fields-- *RQD-2-item code-internal*, *RQD-3-item code-external* or *RQD-4-hospital item code*-- must be valued.

Note: At least one of the three fields 4.7.1.2 through 4.7.1.4 must be non-null.

4.7.1.5 Requisition quantity (NM) 00279

Definition: This field contains the quantity requisitioned for this item.

4.7.1.6 Requisition unit of measure (CE) 00280

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the unit of measure for this item.

4.7.1.7 Dept. cost center (IS) 00281

Definition: This field contains the accounting code that identifies this department in order to charge for this item. *User-defined table 0319 - Department cost center is used as the HL7 identifier for the user-defined table of values for this field.*

4.7.1.8 Item natural account code (IS) 00282

Definition: This field contains the accounting code that identifies this item in order to charge for this item. *User-defined table 0320 - Item natural account code is used as the HL7 identifier for the user-defined table of values for this field.*

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4.7.1.9 Deliver to ID (CE) 00283

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the unique identifier and descriptive name of the department/location where the item should be delivered.

4.7.1.10 Date needed (DT) 00284

Definition: This field contains the date this item is required.

Note: Although none of the fields are required, one of the three identifying codes—*RQD-2-item code-internal*, *RQD-3-item code-external*, or *RQD-4-hospital item code*—must be specified in order for the receiving application to process the request.

It is left to the vendors to determine which will be used as the common link between the two applications. HL7 recommends using the *RQD-4-hospital item code*.

Hospital accounting requires an identifier to charge a particular cost center or patient for a requisitioned supply. If the supply is for a patient, then this identifier comes from the PID segment; otherwise, from *RQD-7-dept. cost center* and *RQD-8-item natural account code* must be used. It is recommended that the “final” cost center responsible for providing the supply to the patient be included, even when the patient ID is provided.

Hospital accounting applications use *RQD-7-dept. cost center* concatenated with *RQD-8-item natural account code* in order to post this transaction to the General Ledger. This concatenated value should correspond to a valid entry in the accounting applications “Chart of Accounts.”

4.7.2 RQ1 - requisition detail-1 segment

RQ1 contains additional detail for each nonstock requisitioned item. This segment definition is paired with a preceding RQD segment.

Figure 4-12. RQ1 attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	10	ST	O			00285	Anticipated Price
2	60	CE	C			00286	Manufacturer ID
3	16	ST	C			00287	Manufacturer's Catalog
4	60	CE	C			00288	Vendor ID
5	16	ST	C			00289	Vendor Catalog
6	1	ID	O		0136	00290	Taxable
7	1	ID	O		0136	00291	Substitute Allowed

4.7.2.0 RQ1 field definitions

4.7.2.1 Anticipated price (ST) 00285

Definition: This field contains the reference price for the requisition unit of measure that is known to the requisition application. It may or may not be the actual cost of acquiring the item from a supplier. It is also not the price charged to the patient.

4.7.2.2 Manufacturer ID (CE) 00286

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the unique code that identifies the manufacturer on the application receiving the requisition. This field is conditional because either *RQ1-2-manufacturer ID* and *RQ1-3-manufacturer's catalog* or *RQ1-4-vendor ID* and *RQ1-5-vendor catalog* must be valued.

Codes may be selected from HIBCC Manufacturers Labeler ID Code (LIC), the UPC or the NDC. These code sets may be obtained from the appropriate organization whose addresses are included in *Figure 7-3*.

4.7.2.3 Manufacturer's catalog (ST) 00287

Definition: This field is the manufacturer's catalog number or code for this item. This field is conditional because either *RQ1-2-manufacturer ID* and *RQ1-3-manufacturer's catalog* or *RQ1-4-vendor ID* and *RQ1-5-vendor catalog* must be valued.

4.7.2.4 Vendor ID (CE) 00288

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field is the unique code that identifies the vendor on the application receiving the requisition. This field is conditional because either *RQ1-2-manufacturer ID* and *RQ1-3-manufacturer's catalog* or *RQ1-4-vendor ID* and *RQ1-5-vendor catalog* must be valued.

Because of this, it is recommended that each nonstock item have *RQ1-2-manufacturers ID* and *RQ1-3-manufacturer's catalog*, or *RQ1-4-vendor ID* and *RQ1-5-vendor catalog*. It is also possible that the requisitioning application will not know the identifier, as listed in the Manufacturer's or Vendor's catalog. In this case, it is important to include the name portion of this coded element field.

4.7.2.5 Vendor catalog (ST) 00289

Definition: This field is the vendor's catalog number, name, or code for this item. This field is conditional because either *RQ1-2-manufacturer ID* and *RQ1-3-manufacturer's catalog* or *RQ1-4-vendor ID* and *RQ1-5-vendor catalog* must be valued.

4.7.2.6 Taxable (ID) 00290

Definition: This field indicates whether this item is subject to tax.

In general, nonstock requisitioned items will be printed by the receiving application and then processed by a human. In other words, the human will use the information to call the vendor or manufacturer to get pricing and other related purchasing information before placing the order with an outside vendor. Refer to *HL7 table 0136 -Yes/no indicator* as defined in Chapter 2.

4.7.2.7 Substitute allowed (ID) 00291

Definition: This field indicates whether the ancillary department may substitute an equivalent version of the item(s) ordered. Refer to *HL7 table 0136 - Yes/no indicator* as defined in Chapter 2.

4.7.3 Examples of the use of RQD and RQ1 segments

a) The first example is a requisition from the ORSUPPLY application to the MMSUPPLY application for two items for patient John J. Smith. One item is a stock item for an IV Solution and the second item is a nonstock implant manufactured by Detter. The requisition number used by the ORSUPPLY application is RQ101.

```
MSH|^~\&|ORSUPPLY|ORSYS|MMSUPPLY|MMSYS|19911105131523||ORM|100|P|2.2||<cr>
PID|||100928782^9^MDD11|3781928|Smith^John^J||19690424|M|||||A|
... 100928782^4^MDD11||<cr>
```

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```
ORC|NW|RQ101^ORSUPPLY|||N||19911105130000|jones^Jones^Jean|sgomez^Gomez^Susan|
...|MAINOR^2W|X2304<cr>
RQD|1|1234^Solution, 2.25% Saline||S1786^Saline Solution|1|BT^Bottle|1234-5678|
...ORSUP^Main OR Supply Room|19901123<cr>
RQD|2|23455^Implant, Special Hip||I45323^Implant|1|EA^Each|1234-5678|
...ORSUP^Main OR Supply Room|19901123<cr>
RQ1|123.45|DET^Detter, Inc.|444456|DST^Local Distributors, Inc.|333-456|N<cr>
```

b) The second example is a requisition from the ORSUPPLY application to the MMSUPPLY application for five stock items to replenish a supply closet. The requisition number used by the ORSUPPLY application is RQ102.

```
MSH|^~\&|ORSUPPLY|ORSYS|MMSUPPLY|MMSYS|19911105152034||ORM|100|P|
.1||<cr>
ORC|NW|RQ102^ORSUPPLY|||N||19911105150100|jones^Jones^Jean|sgomez^Gomez^Susan|
...|MAINOR^2W|X2304<cr>
RQD|1|1232^Solution, 1% Saline||S1784^Saline Solution|5|BT^Bottle|1234-5678|
...ORSUP^Main OR Supply Room|19901105<cr>
RQD|2|1231^Solution, 0.2% Saline||S1781^Saline Solution|2|BT^Bottle|1234-5678|
...ORSUP^Main OR Supply Room|19901105<cr>
RQD|3|2342^Suture, Black Silk||SU123^Suture|2|DZ^Dozen|1234-5678|
...ORSUP^Main OR Supply Room|19901105<cr>
RQD|4|2344^Suture, Black Silk 3-0||SU124^Suture|1|DZ^Dozen|1234-5678|
...ORSUP^Main OR Supply Room|19901105<cr>
RQD|5|4565^Bandage Pad, 4x4||B6345^Bandage Pad|3|BX^Box|1234-5678|
...ORSUP^Main
```

4.8 PHARMACY/TREATMENT ORDERS

4.8.1 ORM - pharmacy/treatment order message

<u>ORM^O01^RDO_O01</u>	<u>Pharmacy/treatment Order Message</u>	<u>Chapter</u>
MSH	Message Header	2
[{NTE}]	Notes and Comments (for Header)	2
[
PID	Patient Identification	3
[PD1]	Additional Demographics	3
[{NTE}]	Notes and Comments (for Patient ID)	2
[PV1]	Patient Visit	3
[PV2]]	Patient Visit - Additional Info	3
[{IN1]	Insurance	6
[IN2]	Insurance Additional Info	6
[IN3]	Insurance Add'l Info - Cert.	6
}]		
[GT1]	Guarantor	6
[{AL1}]	Allergy Information	3
]		
{		
ORC	Common Order	4
[
RXO	Pharmacy/Treatment Order	
[{NTE}]	Notes and Comments (for RXO)	2
{RXR}	Pharmacy/Treatment Route	4
]		

{RXC}	Pharmacy/Treatment Component	4
[{NTE}]	Notes and Comments (for RXC)	2
]		
[
{		
OBX	Observation/Result	7
[{NTE}]	Notes and Comments (for OBX)	2
}		
]		
]		
[BLG]	Billing Segment	6
}		

ORR message for pharmacy/treatment:

<u>ORR^O02^RRO_O02</u>	<u>Description</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2
[{NTE}]	Notes and Comments (for Response Header)	2
[
[PID	Patient Identification	3
[{NTE}]]	Notes and Comments (for Patient ID)	2
{		
ORC	Common Order	4
[
RXO	Pharmacy/Treatment Order	4
[{NTE}]	Notes and Comments (for RXO)	2
{RXR}	Pharmacy/Treatment Route	4
[{RXC}]	Pharmacy/Treatment Component	4
[{NTE}]	Notes and Comments (for RXC)	2
]		
}		
]		

4.8.2 RXO - pharmacy/treatment order segment

This is the “master” pharmacy/treatment order segment. It contains order data not specific to components or additives. Unlike the OBR, it does not contain status fields or other data that are results-only.

It can be used for any type of pharmacy order, including inpatient (unit dose and compound unit dose), outpatient, IVs, and hyperalimentation IVs (nutritional IVs), as well as other nonpharmacy treatments, e.g., respiratory therapy, oxygen, and metabolites.

In addition to the pharmaceutical information, this segment contains additional data such as provider and text comments.

A quantity/timing field is not needed in the RXO segment. The ORC segment contains the requested *ORC-7-quantity/timing* of the original order which does not change as the order is encoded, dispensed, or administered.

Figure 4-13. RXO attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	100	CE	C			00292	Requested Give Code
2	20	NM	C			00293	Requested Give Amount - Minimum
3	20	NM	O			00294	Requested Give Amount - Maximum
4	60	CE	C			00295	Requested Give Units
5	60	CE	O			00296	Requested Dosage Form
6	200	CE	O	Y		00297	Provider's Pharmacy/Treatment Instructions
7	200	CE	O	Y		00298	Provider's Administration Instructions
8	200	CM	O			00299	Deliver-To Location

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SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
9	1	ID	O		0161	00300	Allow Substitutions
10	100	CE	O			00301	Requested Dispense Code
11	20	NM	O			00302	Requested Dispense Amount
12	60	CE	O			00303	Requested Dispense Units
13	3	NM	O			00304	Number Of Refills
14	60	XCN	C	Y		00305	Ordering Provider's DEA Number
15	60	XCN	C	Y		00306	Pharmacist/Treatment Supplier's Verifier ID
16	1	ID	O		0136	00307	Needs Human Review
17	20	ST	C			00308	Requested Give Per (Time Unit)
18	20	NM	O			01121	Requested Give Strength
19	60	CE	O			01122	Requested Give Strength Units
20	200	CE	O	Y		01123	Indication
21	6	ST	O			01218	Requested Give Rate Amount
22	60	CE	O			01219	Requested Give Rate Units
23	10	CQ	O			00329	Total Daily Dose

4.8.2.0 RXO field definitions

4.8.2.1 Requested give code (CE) 00292

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field identifies the medical substance or product ordered to be given to the patient; it is equivalent to *OBR-4-universal service ID* in function. The request-to-dispense fields, which define the type and amount of what is to be issued to the patient (see *RXO-10 requested dispense code*, *RXO-11-requested dispense amount*, and *RXO-12-requested dispense units*), do not necessarily correlate with the instructions of what amount is to be “given” or administered with each dose, and may or may not be specified with the order. For example, the “give” part of the order may convey the field-representation of *give 15 mg of Librium every 6 hours*, while the request to dispense part of the order may convey *issue 30 tablets of 10 mg generic equivalent for this outpatient prescription*. When the give code does not include the dosage form, use *RXO-5-requested dosage form*.

If the prescription is transmitted as free text using RXO-6, then RXO-1, RXO-2, and RXO-4 may be blank and the first subcomponent of RXO-6 must be blank. Otherwise, RXO-1, RXO-2 and RXO-4 are mandatory.

4.8.2.2 Requested give amount - minimum (NM) 00293

Definition: This field is the ordered amount. In a variable dose order, this is the minimum ordered amount. In a nonvarying dose order, this is the exact amount of the order.

If the prescription is transmitted as free text using RXO-6, then RXO-1, RXO-2, and RXO-4 may be blank and the first subcomponent of RXO-6 must be blank. Otherwise, RXO-1, RXO-2 and RXO-4 are mandatory.

Note: This field is not a duplication of the first component of the quantity/timing field, since in non-pharmacy/treatment orders, that component can be used to specify multiples of an ordered amount.

Another way to say this is that, for pharmacy/treatment orders, the quantity component of the quantity/timing field refers to what is to be given out at each service interval; thus, in terms of the RX order, that first component always defaults to 1. Hence, in the actual execution of the order, the value of 1 in the first component of the quantity/timing field always refers to one administration of the amount specified in this field (the Requested Give Amount field).

4.8.2.3 Requested give amount - maximum (NM) 00294

Definition: In a variable dose order, this is the maximum ordered amount. In a nonvarying dose order, this field is not used.

4.8.2.4 Requested give units (CE) 00295

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field indicates the units for the give amount.

If the prescription is transmitted as free text using RXO-6, then RXO-1, RXO-2, and RXO-4 may be blank and the first subcomponent of RXO-6 must be blank. Otherwise, RXO-1, RXO-2 and RXO-4 are mandatory.

Note: These units can be a "compound quantity"; i.e., the units may contain the word "per." For example, micrograms per KG (mcg/kg) is an acceptable value, which means that the units are micrograms per KG (of body weight). See Chapter 7 for full definition of ISO+ units.

A table of standard units is needed to define standard abbreviations for compound units. Until such a table is agreed on, a user-defined table is needed for each site. If the interpretation of a compound unit requires knowledge of some observation results (such as body weight or height), these results can be sent in the same order message using the optional OBX segments.

4.8.2.5 Requested dosage form (CE) 00296

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field indicates the manner in which the medication is aggregated for dispensing, e.g., tablets, capsules, suppositories. In some cases, this information is implied by the dispense/give code in *RXO-1-requested give code* or *RXO-10-requested dispense code*. Use when both *RXO-1-requested give code* and *RXO-10-requested dispense code* do not specify the drug/treatment form.

4.8.2.6 Provider's pharmacy/treatment instructions (CE) 00297

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field identifies the ordering provider's instructions to the pharmacy or the non-pharmacy treatment provider (e.g., respiratory therapy). If coded, a user-defined table must be used. If transmitted as a free text field, place a null in the first component and the text in the second, e.g., |^this is a free text treatment instruction|.

If the prescription is transmitted as free text using RXO-6, then RXO-1, RXO-2, and RXO-4 may be blank and the first subcomponent of RXO-6 must be blank. Otherwise, RXO-1, RXO-2 and RXO-4 are mandatory.

4.8.2.7 Provider's administration instructions (CE) 00298

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field identifies the ordering provider's instructions to the patient or to the provider administering the drug or treatment. If coded, a user-defined table must be used. If transmitted as free text, place a null in the first component and the text in the second, e.g., |^this is a free text administration instruction|.

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4.8.2.8 Deliver-to location (CM) 00299

Components: <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <patient location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <address (AD)>

Subcomponents of facility (HD): <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of address (AD): <street address (ST)> & < other designation (ST)> & <city (ST)> & <state or province (ST)> & <zip or postal code (ST)> & <country (ID)> & <address type (ID)> & <other geographic designation (ST)>

Definition: The first components, modeled after the PL data type, contain the inpatient or outpatient location to which the pharmacy provider or treatment supplier is to deliver the drug or treatment device (if applicable). The default (null) value is the current census location for the patient. This component has the same form as *PVI-3-assigned patient location*. The last component can be used to specify an address. This could be used to fill mail orders to a patient or provider, or to account for home health care.

4.8.2.9 Allow substitutions (ID) 00300

Definition: Following are the values:

Table 0161 - Allow substitution

Value	Description
N	Substitutions are NOT authorized. (This is the default - null.)
G	Allow generic substitutions.
T	Allow therapeutic substitutions

4.8.2.10 Requested dispense code (CE) 00301

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field indicates what is to be/was dispensed; it is equivalent to *OBR-4-universal service ID* in function. It may be present in the order or not, depending on the application. If not present, and values are given for *RXO-11-requested dispense amount* and *RXO-12-requested dispense units*, the *RXO-1-requested give code* is assumed. If the requested dispense code does not include the dosage form, use *RXO-5-requested dosage form*.

Note on request-to-dispense fields:

Sometimes an order will be written in which the total amount of the drug or treatment requested to be dispensed has no direct relationship with the give amounts and schedule. For example, an outpatient pharmacy/treatment order might be *take four pills a day of <drug name, value>, Q6H (every 6 hours) -- dispense 30 tablets*. An inpatient order might be *NS/D5W (normal saline with 5% dextrose) at 1000cc/hour—dispense 3 1-liter bottles of NSD5W solution*. The request-to-dispense fields support this common style of ordering.

4.8.2.11 Requested dispense amount (NM) 00302

Definition: This field specifies the amount to be dispensed.

4.8.2.12 Requested dispense units (CE) 00303

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field identifies the units for the dispense amount. This must be in simple units that reflect the actual quantity of the substance to be dispensed. It does not include compound units.

4.8.2.13 Number of refills (NM) 00304

Definition: This field defines the number of times the requested dispense amount can be given to the patient, subject to local regulation. Refers to outpatient only.

4.8.2.14 Ordering provider's DEA number (XCN) 00305

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code(ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field identifies the provider's controlled substance number, if required by site. It is defined as conditional because it is required when the substance being requested is a controlled substance (e.g., a narcotic).

4.8.2.15 Pharmacist/treatment supplier's verifier ID (XCN) 00306

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code(ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field is the provider ID of the pharmacist/treatment substance supplier verifier. Use if required by the pharmacy or treatment application or site on orders (or some subgroup of orders), in addition to *ORC-11-verified by*.

Example:

The site requires a "verified by" provider (such as a nurse) and a "verifying pharmacist/treatment supplier" on the order. In this case the first field, *ORC-11-verified by*, is already present; but the second field, *RXO-15-pharmacist/treatment supplier's verifier ID*, is needed.

4.8.2.16 Needs human review (ID) 00307

Definition: This field uses *HL7 table 0136 - Yes/no indicator*. The values have the following meaning for this field:

Table 0136 - Yes/no indicator

Value	Description
Y	Yes - Indicates that the pharmacist or non-pharmacist treatment supplier filling the order needs to pay special attention to the text in the <i>RXO-6-provider's pharmacy/treatment instructions</i> . A warning is present.
N	No - No warning is present. This is the equivalent default (null) value.

An example of the use of this field is given by the following case:

A *smart* Order Entry application knows of a possible drug or treatment interaction on a certain order, but the provider issuing the order wants to override the condition. In this case, the pharmacy or treatment application receiving the order will want to have a staff pharmacist or non-pharmacist treatment supplier review the interaction and contact the ordering physician.

4.8.2.17 Requested give per (time unit) (ST) 00308

Definition: This field identifies the time unit to use to calculate the rate at which the pharmaceutical is to be administered.

Format:

S<integer>	=	<integer> seconds
M<integer>	=	<integer> minutes
H<integer>	=	<integer> hours
D<integer>	=	<integer> days
W<integer>	=	<integer> weeks
L<integer>	=	<integer> months

Note: This is the same as the format specified for the DURATION component of the quantity/timing field, excluding the "X" specification.

This field is defined as conditional because it is required when the ordered substance is to be administered continuously at a prescribed rate (e.g., certain IVs). For example, if the "give amount/units" are 300 ml and the "give per" time unit is H1, the rate is 300ml/hr and the duration of this dose is 1 hour. Thus the give amount and give per time unit define the duration of the service.

This field is distinct from the "interval" component of the quantity/timing field, but it could be used in conjunction with it, as in *give 300ml of NS per hr for 1 hour; repeat twice a day*.

4.8.2.18 Requested give strength (NM) 01121

Definition: Use this field when *RXO-1-requested give code* does not specify the strength. This is the numeric part of the strength, used in combination with *RXO-19-requested give strength units*.

The need for strength and strength unit fields in addition to the amount and amount units fields included in various RX_ segments requires explanation. Physicians can write a prescription for a drug such as Ampicillin in two ways. One way would be: "Ampicillin 250 mg tabs, 2 tabs four times a day." In this case the give amount would be 2, the give units would be tabs, the strength would be 250 and the strength units would milligrams. However, the provider could also write the prescription as "Ampicillin 500 mg four times a day." In this case the give amount would be 500 and the give units would be milligrams. The strength would not be reported in the RXO segment because it is not specified; the drug could be given in two 250 mg caps or one 500 mg cap. But the pharmacist would dispense a specific pill size and would record the strength in the RXE segment as 250 or 500, depending upon which pill size was dispensed.

Some coding systems imply the strength, units, route of administration, and manufacturer of substances within a single instructional code. NDC codes, for example, usually imply not only the medical substance, but the strength, the units, and the form, e.g., 0047-0402-30^Ampicillin 250 MG TABS^NDC. So all of this information can also be completely specified in *RXO-1-requested give code* and in the analogous CE fields in other pharmacy/treatment segments. In this case, it is not necessary to use the strength and strength units fields to specify this information.

4.8.2.19 Requested give strength units (CE) 01122

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: Use when both *RXO-1-requested give code* and *RXO-10-requested dispense code* do not specify the strength. This is the unit of the strength, used in combination with *RXO-18-requested give strength*.

Note: These units can be a "compound quantity;" i.e., the units may express a quantity per unit of time. For example, micrograms per hour (g/h) is an acceptable value. These compound units are contained in the ISO+ table. See Chapter 7 for full definition of ISO+ units.

4.8.2.20 Indication (CE) 01123

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field identifies the condition or problem for which the drug/treatment was prescribed. May repeat if multiple indications are relevant.

4.8.2.21 Requested give rate amount (ST) 01218

Definition: This field contains the rate at which to administer treatment.

4.8.2.22 Requested give rate units (CE) 01219

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the units in which *RXO-21-requested give rate amount* is denominated.

4.8.2.23 Total daily dose (CQ) 00329

Components: <quantity (NM)> ^ <units (CE)>

Subcomponents of units: <identifier (ID)> & <text (ST)> & <name of coding system (ST)> & <alternate identifier (ID)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Definition: This field contains the total daily dose for this particular pharmaceutical as expressed in terms of actual dispense units.

4.8.3 RXR - pharmacy/treatment route segment

The Pharmacy/Treatment Route segment contains the alternative combination of route, site, administration device, and administration method that are prescribed. The pharmacy, treatment staff and/or nursing staff has a choice between the routes based on either their professional judgment or administration instructions provided by the physician.

Figure 4-14. RXR attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	60	CE	R		0162	00309	Route
2	60	CE	O		0163	00310	Site
3	60	CE	O		0164	00311	Administration Device
4	60	CE	O		0165	00312	Administration Method
5	60	CE	O			01315	Routing Instruction

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4.8.3.0 RXR field definitions

4.8.3.1 Route (CE) 00309

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field is the route of administration.

Some current “route codes,” such as some of the NDC-derived codes include the site already. In such cases, the entire code can be included in this field as a “locally-defined code” for the CE data type. Refer to *HL7 table 0162 - Route of administration* for valid values.

Table 0162 - Route of administration

Value	Description	Value	Description
AP	Apply Externally	MM	Mucous Membrane
B	Buccal	NS	Nasal
DT	Dental	NG	Nasogastric
EP	Epidural	NP	Nasal Prongs*
ET	Endotracheal Tube*	NT	Nasotracheal Tube
GTT	Gastrostomy Tube	OP	Ophthalmic
GU	GU Irrigant	OT	Otic
IMR	Immerse (Soak) Body Part	OTH	Other/Miscellaneous
IA	Intra-arterial	PF	Perfusion
IB	Intrabursal	PO	Oral
IC	Intracardiac	PR	Rectal
ICV	Intracervical (uterus)	RM	Rebreather Mask*
ID	Intradermal	SD	Soaked Dressing
IH	Inhalation	SC	Subcutaneous
IHA	Intrahepatic Artery	SL	Sublingual
IM	Intramuscular	TP	Topical
IN	Intranasal	TRA	Tracheostomy*
IO	Intraocular	TD	Transdermal
IP	Intraperitoneal	TL	Translingual
IS	Intrasynovial	UR	Urethral
IT	Intrathecal	VG	Vaginal
IU	Intrauterine	VM	Ventimask
IV	Intravenous	WND	Wound
MTH	Mouth/Throat		

*used primarily for respiratory therapy and anesthesia delivery

4.8.3.2 Site (CE) 00310

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the site of the administration route. Refer to *HL7 table 0163 - Administrative site* for valid values.

As a CE data type, this field may be extended to cover a wide variety of body site codes (e.g., when SNOMED is used as the table source).

4.8.3.3 Administrative device (CE) 00311

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the mechanical device used to aid in the administration of the drug or other treatment. Common examples are IV-sets of different types. Refer to *HL7 table 0164 - Administration device* for valid entries.

Table 0164 - Administration device

Value	Description	Value	Description
AP	Applicator	IVS	IV Soluset
BT	Buretrol	MI	Metered Inhaler
HL	Heparin Lock	NEB	Nebulizer
IPPB	IPPB	PCA	PCA Pump
IVP	IV Pump		

4.8.3.4 Administration method (CE) 00312

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field identifies the specific method requested for the administration of the drug or treatment to the patient. Refer to *HL7 table 0165 - Administration method* for valid values.

Table 0165 - Administration method

Value	Description	Value	Description
CH	Chew	NB	Nebulized
DI	Dissolve	PT	Pain
DU	Dust	PF	Perfuse
IF	Infiltrate	SH	Shampoo
IS	Insert	SO	Soak
IR	Irrigate	WA	Wash
IVPB	IV Piggyback	WI	Wipe
IVP	IV Push		

4.8.3.5 Routing instruction (CE) 01315

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field provides instruction on administration routing, especially in cases where more than one route of administration is possible. A typical case would be designating which IV line should be used when more than one IV line is a possible route for injection.

4.8.4 RXC - pharmacy/treatment component order segment

If the drug or treatment ordered with the RXO segment is a compound drug OR an IV solution, AND there is not a coded value for *OBR-4-universal service ID*, which specifies the components (base and all additives), then the components (the base and additives) are specified by two or more RXC segments. The policy of the pharmacy or treatment application on substitutions at the RXC level is identical to that for the RXO level.

Figure 4-15. RXC attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	1	ID	R		0166	00313	RX Component Type
2	100	CE	R			00314	Component Code

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SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
3	20	NM	R			00315	Component Amount
4	60	CE	R			00316	Component Units
5	20	NM	O			01124	Component Strength
6	60	CE	O			01125	Component Strength Units

4.8.4.0 RXC field definitions

4.8.4.1 RX component type (ID) 00313

Definition: Following are the values for this field:

Table 0166 - RX component type

Value	Description
B	Base
A	Additive

For the non-IV case, the “B” value may still apply. For example, if a custom dermatologic salve is being prepared, the “B” item might be a standard base ointment into which other components are mixed.

The amount of the “base” specified in the “B” segment(s) is defined to be the quantity into which amounts specified in the “A” components are mixed. Thus the RXC segments as a group define the “recipe” for a particular amount (defined by the base segment(s)). The give amount, as defined in the RXO, does not need to correspond to this base amount. For example, the RXC segments may specify a recipe for a liter of a standard type of saline with 1 gram of a particular antimicrobial, while the give amount (from the RXO) may specify the administration of 2 liters of this IV-solution every 24 hours.

The amount specified in each “A” segment is defined to be the quantity to be added to the amount of the base as specified in its RXC segment.

If any “base” components are present then these should be transmitted first. The first “base” component in the transmission should be considered the “primary base” if such a distinction is necessary. Similarly, the first “additive” in the transmission should be considered the “primary additive” if such a distinction is necessary.

4.8.4.2 Component code (CE) 00314

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field is equivalent to *OBR-4-universal service ID*. It defines the base or component in the same manner as the give and dispense codes. As with the give and dispense codes, it may contain text only, code only, text + code, or text + code + units (implied or explicit). As with the give and dispense codes, if *RXC-4-component units* is present, this overrides the units implied by the code. If only text is present, the pharmacy or treatment application must include a manual review or reentering of the component drug or treatment.

4.8.4.3 Component amount (NM) 00315

Definition: This field identifies the amount of this component to be added to the specified amount of the base.

4.8.4.4 Component units (CE) 00316

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field identifies the units for the component amount. If present, this overrides the units implied by *RXC-2-component code*. This must be in simple units that reflect the actual quantity of the component being added. It does not include compound units.

4.8.4.5 Component strength (NM) 01124

Definition: Use when *RXC-2-component code* does not specify the strength. This is the numeric part of the strength, used in combination with *RXC-6-component strength units*.

4.8.4.6 Component strength units (CE) 01125

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: Use when *RXC-2-component code* does not specify the strength. This is the unit of the strength, used in combination with *RXC-5-component strength*.

Note: These units can be a “compound quantity;” i.e., the units may express a quantity per unit of time. For example, micrograms per hour (ug/h) is an acceptable value. These compound units are contained in the ISO+ table. See Chapter 7 for full definition of ISO+ units.

4.8.5 IV solution groups

An order for a group of IV solutions to be given sequentially can be supported in two similar ways: Parent/Child and Separate Orders. This HL7 Standard supports both methods of ordering. The method used at a particular site must be negotiated between the site institution and the various application vendors. See Section 4.4.10.2, “Cyclic placer order groups,” for further details.

4.8.6 RDE/RRE - pharmacy/treatment encoded order message (O01/O02)

This message communicates the pharmacy or treatment application’s encoding of the pharmacy/treatment order (ORM message with RXO segment, see above). It may be sent as an unsolicited message to report on either a single order or multiple pharmacy/treatment orders for a patient.

As a site-specific variant, the original order segments (RXO, RXRs, associated RXCs, and any NTEs) may be sent optionally (for comparison).

<u>RDE^O01</u>	<u>Pharmacy/Treatment Encoded Order Message</u>	<u>Chapter</u>
MSH	Message Header	2
[{NTE}]	Notes and Comments (for Header)	2
[
PID	Patient Identification	3
[PD1]	Additional Demographics	3
[{NTE}]	Notes and Comments (for Patient ID)	2
[PV1]	Patient Visit	3
[PV2]]	Patient Visit - Additional Info	3
[{IN1]	Insurance	
[IN2]	Insurance Additional Info	6
[IN3]	Insurance Add'l Info - Cert.	6
]]		
[GT1]	Guarantor	6
[{AL1}]	Allergy Information	3
]		
{		
ORC	Common Order	4
[
RXO	Pharmacy/Treatment Prescription Order	4
[{NTE}]	Notes and Comments (for RXO)	2
{RXR}	Pharmacy/Treatment Route	4
[

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{RXC}	Pharmacy/Treatment Component (for RXO)	4
[{NTE}]	Notes and Comments (for RXC)	2
]		
RXE	Pharmacy/Treatment Encoded Order	4
{RXR}	Pharmacy/Treatment Route	4
[{RXC}]	Pharmacy/Treatment Component (for RXE)	4
{		
[OBX]	Results	7
[{NTE}]	Notes and Comments (for OBX)	2
}		
{CTI}	Clinical Trial Identification	7
}		

Note: The RXCs which follow the RXO may not be fully encoded, but those that follow the RXE must be fully encoded.

(acknowledged by)

<u>RRE^O02</u>	<u>Pharmacy/Treatment Encoded Order Acknowledgment Message</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2
[{NTE}]	Notes and Comments (for Header)	2
[
[PID	Patient Identification	3
[{NTE}]	Notes and Comments (for PID)	2
{		
ORC	Common Order	4
[
RXE	Pharmacy/Treatment Encoded Order	4
{RXR}	Pharmacy/Treatment Route	4
[{RXC}]	Pharmacy/Treatment Component	4
]		
}		
]		

4.8.7 RXE - pharmacy/treatment encoded order segment

The RXE segment details the pharmacy or treatment application's encoding of the order. It also contains several pharmacy-specific order status fields, such as *RXE-16-number of refills remaining*, *RXE-17-number of refills/doses dispensed*, *RXE-18-D/T of most recent refill or dose dispensed*, and *RXE-19-total daily dose*.

Note that *ORC-7-quantity/timing* has a different meaning from *RXE-1-quantity/timing* and *RXG-3-quantity/timing*. The pharmacy or treatment department has the “authority” (and/or necessity) to schedule dispense/give events. Hence, the pharmacy or treatment department has the responsibility to encode this scheduling information in *RXE-1-quantity/timing* and *RXG-3-quantity/timing*. *ORC-7-quantity/timing* does not change: it always specifies the requested give/dispense schedule of the original order.

Figure 4-16. RXE attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	200	TQ	R			00221	Quantity/Timing
2	100	CE	R		0292	00317	Give Code
3	20	NM	R			00318	Give Amount - Minimum
4	20	NM	O			00319	Give Amount - Maximum
5	60	CE	R			00320	Give Units
6	60	CE	O			00321	Give Dosage Form
7	200	CE	O	Y		00298	Provider's Administration Instructions
8	200	CM	C			00299	Deliver-to Location
9	1	ID	O		0167	00322	Substitution Status

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
10	20	NM	C			00323	Dispense Amount
11	60	CE	C			00324	Dispense Units
12	3	NM	O			00304	Number of Refills
13	60	XCN	C	Y		00305	Ordering Provider's DEA Number
14	60	XCN	O	Y		00306	Pharmacist/Treatment Supplier's Verifier ID
15	20	ST	C			00325	Prescription Number
16	20	NM	C			00326	Number of Refills Remaining
17	20	NM	C			00327	Number of Refills/Doses Dispensed
18	26	TS	C			00328	D/T of Most Recent Refill or Dose Dispensed
19	10	CQ	C			00329	Total Daily Dose
20	1	ID	O		0136	00307	Needs Human Review
21	200	CE	O	Y		00330	Pharmacy/Treatment Supplier's Special Dispensing Instructions
22	20	ST	C			00331	Give Per (Time Unit)
23	6	ST	O			00332	Give Rate Amount
24	60	CE	O			00333	Give Rate Units
25	20	NM	O			01126	Give Strength
26	60	CE	O			01127	Give Strength Units
27	200	CE	O	Y		01128	Give Indication
28	20	NM	O			01220	Dispense Package Size
29	60	CE	O			01221	Dispense Package Size Unit
30	2	ID	O		0321	01222	Dispense Package Method

4.8.7.0 RXE field definitions

4.8.7.1 Quantity/timing (TQ) 00221

Components: <quantity (CQ)> ^ <interval (CM)> ^ <duration (ST)> ^ <start date/time (TS)> ^ <end date/time (TS)> ^ <priority (ST)> ^ <condition (ST)> ^ <text (TX)> ^ <conjunction (ST)> ^ <order sequencing (CM)> ^ <occurrence duration (CE)> ^ <total occurrences (NM)>

Definition: See Section 4.8.7, "RXE - pharmacy/treatment encoded order segment," for necessary modification for this field's definition to cover interorder dependencies needed by pharmacy/treatment orders. This field is used by the pharmacy or non-pharmacy treatment supplier to express the fully-coded version of the drug or treatment timing. It may differ from *ORC-7-quantity/timing*, which contains the requested quantity/timing of the original order.

4.8.7.2 Give code (CE) 00317

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field identifies the medical substance ordered to be given to the patient, as encoded by the pharmacy or treatment supplier; it is equivalent to *OBR-4-universal service ID* in function. In the RXE segment, this give code must be fully encoded. The dispense fields, which define the units and amount of what is to be issued to the patient (see *RXE-10-dispense amount* and *RXE-11-dispense units* below), do not necessarily correlate with the instructions of what amount is to be "given" or administered with each dose, and may or may not be specified with the order. For example, the "give" part of the order may convey the field-representation of *give 250 mg of Ampicillin*, while the request to dispense part of the order may convey *issue 30 tablets of generic equivalent for this outpatient prescription*. Refer to *HL7 Table 0292 - Vaccines administered* for valid values.

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4.8.7.3 Give amount - minimum (NM) 00318

Definition: This field contains the ordered amount as encoded by the pharmacy or treatment supplier. In a variable dose order, this is the minimum ordered amount. In a nonvarying dose order, this is the exact amount of the order.

Note: This field is not a duplication of the first component of the quantity/timing field, since in non-pharmacy/treatment orders, that component can be used to specify multiples of an ordered amount.

Another way to say this is that, for pharmacy/treatment orders, the quantity component of the quantity/timing field refers to what is to be given out at each service interval; thus, in terms of the RX order, that first component always defaults to 1. Hence, in the actual execution of the order, the value of 1 in the first component of the quantity/timing field always refers to one administration of the amount specified in this field (the requested Give Amount field).

4.8.7.4 Give amount - maximum (NM) 00319

Definition: In a variable dose order, this is the maximum ordered amount. In a nonvarying dose, this field is not used.

4.8.7.5 Give units (CE) 00320

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the units for the give amount as encoded by the pharmacy or treatment (e.g., respiratory therapy) application.

Note: These units can be a "compound quantity"; i.e., the units may contain the word "per." For example, micrograms per KG (mcg/kg) is an acceptable value, which means that the units are micrograms per KG (of body weight).

A table of standard units that contains compound units is needed. Until such a table is agreed on, a user-defined table is needed for each site.

4.8.7.6 Give dosage form (CE) 00321

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: The dosage form indicates the manner in which the medication is aggregated for dispensing, e.g., tablets, capsules, suppositories. In some cases, this information is implied by the give code in *RXE-2-give code*. Use the *RXE-6-give dosage form* when the give code does not specify the dosage form.

4.8.7.7 Provider's administration instructions (CE) 00298

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the ordering provider's instructions to the patient or the provider administering the drug or treatment. If coded, a user-defined table must be used; if free text (describing a custom IV, mixture, or salve, for example), place the text in the second component, e.g., |^this is a free text administration instruction|.

4.8.7.8 Deliver-to location (CM) 00299

Components: <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <patient location type (IS)> ^ <building (IS)> ^ <floor (IS)> <address(AD)>

Subcomponents of facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of address (AD): <street address (ST)> & < other designation (ST)> & <city (ST)> & <state or province (ST)> & <zip or postal code (ST)> & <country (ID)> & <address type (ID)> & <other geographic designation (ST)>

Definition: The first component contains the inpatient or outpatient location to which the pharmacy or treatment supplier is to deliver the drug or treatment (if applicable). The default (null) value is the current census location for the patient. Site-specific table. The first eight components have the same form as the first eight components of *PVI-3-assigned patient location*. The final eight components replace the ninth component of *PVI-3-assigned patient location* and represent the full address specification.

4.8.7.9 Substitution status (ID) 00322

Definition: Refer to *HL7 table 0167 - Substitution status* for valid values. If a substitution has been made, and a record of the original requested give code (*R XO-I-requested give code*) is needed, the optional RXO segment can be included in the RDE message.

Table 0167 - Substitution status

Value	Description
N	No substitute was dispensed. This is equivalent to the default (null) value.
G	A generic substitution was dispensed.
T	A therapeutic substitution was dispensed.
0	No product selection indicated
1	Substitution not allowed by prescriber
2	Substitution allowed - patient requested product dispensed
3	Substitution allowed - pharmacist selected product dispensed
4	Substitution allowed - generic drug not in stock
5	Substitution allowed - brand drug dispensed as a generic
7	Substitution not allowed - brand drug mandated by law
8	Substitution allowed - generic drug not available in marketplace

4.8.7.10 Dispense amount (NM) 00323

Definition: This field contains the amount dispensed as encoded by the pharmacy or treatment supplier.

4.8.7.11 Dispense units (CE) 00324

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the units for the dispense amount as encoded by the pharmacy or treatment supplier. This field is required if the units are not implied by the actual dispense code. This must be in simple units that reflect the actual quantity of the substance dispensed. It does not include compound units.

4.8.7.12 Number of refills (NM) 00304

Definition: This field contains the total original number of refills. Outpatient only.

4.8.7.13 Ordering provider's DEA number (XCN) 00305

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code(ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

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Definition: This field is defined as conditional because it is required when the substance requested is a controlled substance (e.g., a narcotic).

4.8.7.14 Pharmacist/treatment supplier's verifier ID (XCN) 00306

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code(ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the provider ID of Pharmacist/treatment supplier's verifier. Use if required by the pharmacy or treatment application or site on orders (or some subgroup of orders).

4.8.7.15 Prescription number (ST) 00325

Definition: This field contains the prescription number as assigned by the pharmacy or treatment application. Equivalent in uniqueness to the pharmacy/treatment filler order number. At some sites, this may be the pharmacy or treatment system (internal) sequential form. At other sites, this may be an external form. This is a required field in RXE when used in pharmacy/treatment messages, but it is not required when used in product experience messages (see Chapter 7).

4.8.7.16 Number of refills remaining (NM) 00326

Definition: Number of refills remaining. This field is conditional because it is required when a prescription is dispensed to an outpatient. It is not relevant to inpatient treatment orders.

4.8.7.17 Number of refills/doses dispensed (NM) 00327

Definition: Number of refills remaining. This field is conditional because it is required when a prescription is dispensed to an outpatient. It is not relevant to inpatient treatment orders.

4.8.7.18 D/T of most recent refill or dose dispensed (TS) 00328

Definition: Date/time of the most recent refill or dose dispensed.

4.8.7.19 Total daily dose (CQ) 00329

Components: <quantity (NM)> ^ <units (CE)>

Subcomponents of units: <identifier (ID)> & <text (ST)> & <name of coding system (ST)> & <alternate identifier (ID)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Definition: This field contains the total daily dose for this particular pharmaceutical as expressed in terms of actual dispense units.

4.8.7.20 Needs human review (ID) 00307

Definition: This field uses *HL7 table 0136 - Yes/no indicator*. The values have the following meaning for this field:

Table 0136 - Yes/no indicator

Value	Description
Y	Yes - Indicates that a warning is present. The application receiving the encoded order needs to warn the person administering the drug or treatment to pay attention to the text in <i>RXE-22-pharmacy/treatment special dispensing instructions</i> .
N	No - Indicates no warning is present. This is the equivalent default (null) value.

4.8.7.21 Pharmacy/treatment supplier's special dispensing instructions (CE) 00330

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the pharmacy or treatment supplier's provider-generated special instructions to the provider dispensing/administering the order.

4.8.7.22 Give per (time unit) (ST) 00331

Definition: This field contains the time unit to use to calculate the rate at which the pharmaceutical is to be administered.

Format:

S<integer>	=	<integer> seconds
M<integer>	=	<integer> minutes
H<integer>	=	<integer> hours
D<integer>	=	<integer> days
W<integer>	=	<integer> weeks
L<integer>	=	<integer> months
T<integer>	=	at the interval and amount stated until a total of <integer> "DOSAGE" is accumulated. Units would be assumed to be the same as in the QUANTITY field.
INDEF	=	do indefinitely - also the default

This is the same as the format specified for the DURATION component of the quantity/timing field, excluding the "X" specification.

This field is defined as conditional because it is required when the ordered substance is to be administered continuously at a prescribed rate (e.g., certain IVs). For example, if the "give amount/units" were 300 ml and the "give per" time unit were H1 (equivalent to one hour), the rate is 300ml/hr.

4.8.7.23 Give rate amount (ST) 00332

Definition: This field contains the rate at which the substance should be administered.

4.8.7.24 Give rate units (CE) 00333

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the units for *RXE-23-give rate amount*. May be composite. The ratio of the *RXE-23-give rate amount* and *RXE-24-give rate units* defines the actual rate of administration. Thus, if

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RXE-23-give rate amount = 100 and *RXE-24-give rate units* = ml/hr, the requested rate of administration is 100 ml/hr. (See ISO+ *Figure 7-13* in Chapter 7 for possible compound units codes.)

4.8.7.25 Give strength (NM) 01126

Definition: Use when *RXE-2-give code* does not specify the strength. This is the numeric part of the strength, used in combination with *RXE-26-give strength units*.

4.8.7.26 Give strength unit (CE) 01127

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: Use when *RXE-2-give code* does not specify the strength. This is the unit of the strength, used in combination with *RXE-25-give strength*.

Note: These units can be a "compound quantity"; i.e., the units may express a quantity per unit of time. For example, micrograms per hour (ug/h) is an acceptable value. These compound units are contained in the ISO+ table. See Chapter 7 for full definition of ISO+ units.

4.8.7.27 Give indication (CE) 01128

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field identifies the condition or problem for which the drug/treatment was prescribed. May repeat if multiple indications are relevant.

4.8.7.28 Dispense package size (NM) 01220

Definition: This field contains the size of package to be dispensed. Units are transmitted in *RXE-29-dispense package size unit*.

4.8.7.29 Dispense package size unit (CE) 01221

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the units in which *RXE-28-dispense package size* is denominated.

4.8.7.30 Dispense package method (ID) 01222

Definition: This field contains the method by which treatment is dispensed. Refer to *HL7 table 0321 - Dispense method* for valid values.

Table 0321 - Dispense method

Value	Description
TR	Traditional
UD	Unit Dose
F	Floor Stock
AD	Automatic Dispensing

4.8.8 Usage notes for pharmacy/treatment messages

For the RDS (pharmacy/treatment dispense), RGV (pharmacy/treatment give) and RAS (pharmacy/treatment administration) messages, the placer and filler order numbers are those of the parent RDE (pharmacy/treatment encoded order) message. In these messages, the filler order number does not provide a unique identification of the instance of the pharmacy/treatment action (dispense, give or administer). To correct this problem, each of the defining segments (RXD, RXG, and RXA) has an appropriately named

sub-ID field (dispense sub-ID counter, give sub-ID counter, and administration sub-ID counter). The combination of the filler order number (including its application ID component) and the appropriate sub-ID counter uniquely identifies the instance of the pharmacy/treatment action(s) present in these messages.

Although the default order control code for the RDE, RDS, RGV and RAS messages is “RE,” there are cases in which the pharmacy or treatment system and the receiving system must communicate changes in state. Depending on whether the pharmacy or treatment supplier’s relationship to the receiving system is that of placer or filler, the appropriate order control code may be substituted for the default value of RE. The receiving system can also use an appropriate order control code to report status back to the pharmacy or treatment system.

For example, suppose that a pharmacy or treatment system is sending RGV messages to a nursing system which will administer the medication and that the pharmacy or treatment system needs to request that several instances of a give order be discontinued. To implement this request, the RGV message may be sent with a “DC” order control code (discontinue request), and the appropriate RXG segments whose give sub-ID fields identify the instances to be discontinued. If a notification back to the pharmacy or treatment supplier is needed, the nursing system can initiate an RGV message with a “DR” order control code (discontinue as requested), and containing RXG segments whose give sub-ID fields identify the discontinued instances.

4.8.9 RDS/RRD - pharmacy/treatment dispense message (O01/O02)

The RDS message may be created by the pharmacy/treatment application for each instance of dispensing a drug or treatment to fill an existing order or orders. In the most common case, the RDS messages would be routed to a Nursing application or to some clinical application, which needs the data about drugs dispensed or treatments given. As a site-specific variant, the original order segments (RXO, RXE and their associated RXR/RXC) may be sent optionally (for comparison).

<u>RDS^O01</u>	<u>Pharmacy/Treatment Dispense Message</u>	<u>Chapter</u>
MSH	Message Header	2
[{NTE}]	Notes and Comments (for Header)	2
[
PID	Patient Identification	3
[PD1]	Additional Demographics	3
[{NTE}]	Notes and Comments (for PID)	2
[{AL1}]	Allergy Information	2
[PV1]	Patient Visit	3
[PV2]]	Patient Visit - Additional Info	3
]		
{		
ORC	Common Order	4
[
RXO	Pharmacy /Treatment Order	4
[
{NTE}	Notes and Comments (for RXO)	2
{RXR}	Pharmacy/Treatment Route	4
[
{RXC}	Pharmacy/Treatment Component	4
[{NTE}]	Notes and Comments (for RXC)	2
]		
]		
]		
[
RXE	Pharmacy/Treatment Encoded Order	4
{RXR}	Pharmacy/Treatment Route	4
[{RXC}]	Pharmacy/Treatment Component	4
]		
RXD	Pharmacy/Treatment Dispense	4
{RXR}	Pharmacy/Treatment Route	4
[{RXC}]	Pharmacy/Treatment Component	4
{		
[OBX]	Results	7
[{NTE}]	Notes and Comments (for OBX)	2

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    }
  }
  (acknowledged by)

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<u>RRD^O02</u>	<u>Pharmacy/Treatment Dispense Acknowledgment Message</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2
[{NTE}]	Notes and Comments (for Header)	2
[
[PID	Patient Identification	3
[{NTE}]]	Notes and Comments (for Patient ID)	2
{		
ORC	Common Order	4
[
RXD	Pharmacy/Treatment Dispense	4
{RXR}	Pharmacy/Treatment Route	4
[{RXC}]	Pharmacy/Treatment Component	4
]		
}		
]		

The ORC must have the filler order number and the order control code RE. The RXE and associated RXCs may be present if the receiving application needs any of their data. The RXD carries the dispense data for a given issuance of medication: thus it may describe a single dose, a half-day dose, a daily dose, a refill of a prescription, etc. The RXD is not a complete record of an order. Use the RXO and RXE segments if a complete order is needed. It is a record from the pharmacy or treatment supplier to the Nursing application (or other) with drug/treatment dispense and administration instructions.

4.8.10 RXD - pharmacy/treatment dispense segment

Figure 4-17. RXD attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	4	NM	R			00334	Dispense Sub-ID Counter
2	100	CE	R		0292	00335	Dispense/Give Code
3	26	TS	R			00336	Date/Time Dispensed
4	20	NM	R			00337	Actual Dispense Amount
5	60	CE	C			00338	Actual Dispense Units
6	60	CE	O			00339	Actual Dosage Form
7	20	ST	R			00325	Prescription Number
8	20	NM	C			00326	Number of Refills Remaining
9	200	ST	O	Y		00340	Dispense Notes
10	200	XCN	O	Y		00341	Dispensing Provider
11	1	ID	O		0167	00322	Substitution Status
12	10	CQ	O			00329	Total Daily Dose
13	200	CM	C			01303	Dispense-to Location
14	1	ID	O		0136	00307	Needs Human Review
15	200	CE	O	Y		00330	Pharmacy/Treatment Supplier's Special Dispensing Instructions
16	20	NM	O			01132	Actual Strength
17	60	CE	O			01133	Actual Strength Unit
18	20	ST	O	Y		01129	Substance Lot Number
19	26	TS	O	Y		01130	Substance Expiration Date
20	60	CE	O	Y	0227	01131	Substance Manufacturer Name
21	200	CE	O	Y		01123	Indication
22	20	NM	O			01220	Dispense Package Size

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
23	60	CE	O			01221	Dispense Package Size Unit
24	2	ID	O		0321	01222	Dispense Package Method

4.8.10.0 RXD field definitions

4.8.10.1 Dispense sub-ID counter (NM) 00334

Definition: This field starts with 1 the first time that medication is dispensed for this order. Increments by one with each additional issuance of medication.

4.8.10.2 Dispense/give code (CE) 00335

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field identifies the medical substance ordered to be given to the patient; it is equivalent to *OBR-4-universal service ID*. See the RXE segment for a complete definition of the *RXE-2-give code*. If the substance dispensed is a vaccine, CVX codes may be used to code this field (see *HL7 table 0292 - Vaccines administered*).

Note: The contents of *RXD-2-dispense/give code* should be identical to the comparable field in the RXE (*RXE-2-give code*). The RDS message refers ONLY to the dispensing of the drug or treatment by the pharmacy or treatment supplier.

4.8.10.3 Date/time dispensed (TS) 00336

Definition: This field indicates when the pharmaceutical is dispensed from the pharmacy or treatment supplier. Use the time stamp format.

4.8.10.4 Actual dispense amount (NM) 00337

Definition: This field indicates the amount dispensed.

4.8.10.5 Actual dispense units (CE) 00338

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field indicates the units dispensed. Site-defined table. This field is required if the units are not implied by the actual dispense code. If present, it overrides units implied by the actual dispense code. This must be in simple units that reflect the actual quantity of the substance dispensed. It does not include compound units.

4.8.10.6 Actual dosage form (CE) 00339

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: The dosage form indicates the manner in which the medication is aggregated for dispensing, e.g., tablets, capsules, suppositories. In some cases, this information is implied by the dispense/give code in *RXD-2-dispense/give code*. Use this field when the give code and the dispense code do not specify the dosage form.

4.8.10.7 Prescription number (ST) 00325

Definition: This field is equivalent in uniqueness to the pharmacy/treatment supplier filler order number. At some sites, this may be the pharmacy/treatment supplier (internal) sequential form. At other sites, this may be an external number.

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4.8.10.8 Number of refills remaining (NM) 00326

Definition: This field is conditional because it is required when a prescription is dispensed to an outpatient. It is not relevant to inpatient treatment orders.

4.8.10.9 Dispense notes (ST) 00340

Definition: This field contains free text notes to the person dispensing the medication (may include the ordering provider's original notes, as well as any notes from the formulary or the pharmacy or treatment supplier). This may contain free text describing a custom IV, mixture, or salve.

4.8.10.10 Dispensing provider (XCN) 00341

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code(ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the provider ID of the person dispensing the pharmaceutical.

4.8.10.11 Substitution status (ID) 00322

Definition: Refer to HL7 *table 0167 - Substitution status* for suggested values.

4.8.10.12 Total daily dose (CQ) 00329

Components: <quantity (CQ)> ^ <interval (CM)> ^ <duration> ^ <start date/time (TS)> ^ <end date/time (TS)> ^ <priority (ID)> ^ <condition (ST)> ^ <rtext (TX)> ^ <conjunction (ID)> ^ <order sequencing>

Definition: This field contains the total daily dose being dispensed as expressed in terms of the actual dispense units.

Note: The next two fields are equivalent to the corresponding fields of the RXE segment. They are included (optionally) in the RXD so that it may "stand alone" as a dispense result instruction segment.

4.8.10.13 Dispense-to location (CM) 01303

Components: <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <patient location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <street address (ST)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code (ST)> ^ <country (ID)> ^ <address type (ID)> ^ <other geographic designation (ST)>

Subcomponents of facility(HD): <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: The first component (which is of PL data type with the component delimiters demoted to sub-components) contains the inpatient or outpatient location where the drug or treatment was dispensed (if applicable). The default (null) value is the current census location for the patient. Site-specific table. The first eight components have the same form as the first eight components of *PVI-3-assigned patient location*. The final eight components replace the ninth component of *PVI-3-assigned patient location* and represent the full address specification.

4.8.10.14 Needs human review (ID) 00307

Definition: Refer to *HL7 table 0136 - Yes/no indicator* for valid values. The values have the following meaning for this field:

Table 0136 - Yes/no indicator

Value	Description
Y	Yes - Indicates that a warning is present. The application receiving the dispense order needs to warn the person dispensing/administering the drug or treatment to pay attention to the text in <i>RXD-15-pharmacy/treatment supplier's special dispensing instructions</i> .
N	No - Indicates no warning is present. This is the equivalent default (null) value.

4.8.10.15 Pharmacy/treatment supplier's special dispensing instructions (CE) 00330

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains pharmacy or treatment supplier-generated special instructions to the provider dispensing/administering the order.

4.8.10.16 Actual strength (NM) 01132

Definition: Use when *RXD-2-dispense/give code* does not specify the strength. This is the numeric part of the strength, used in combination with *RXD-17-actual strength unit*.

4.8.10.17 Actual strength unit (CE) 01133

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: Use when *RXD-2-dispense/give code* does not specify the strength. This is the unit of the strength, used in combination with *RXD-16-actual strength*.

Note: These units can be a "compound quantity;" i.e., the units may express a quantity per unit of time. For example, micrograms per hour (ug/h) is an acceptable value. These compound units are contained in the ISO+ table. See Chapter 7 for full definition of ISO+ units.

4.8.10.18 Substance lot number (ST) 01129

Definition: This field contains the lot number of the medical substance administered.

Note: The lot number is the number printed on the label attached to the container holding the substance and on the packaging which houses the container. If the substance is a vaccine, for example, and a diluent is required, a lot number may appear on the vial containing the diluent; however, any such identifier associated with a diluent is not the identifier of interest. The substance lot number should be reported, not that of the diluent.

4.8.10.19 Substance expiration date (TS) 01130

Definition: This field contains the expiration date of the medical substance administered.

Note: Vaccine expiration date does not always have a "day" component; therefore, such a date may be transmitted as YYYYMM^L.

4.8.10.20 Substance manufacturer name (CE) 01131

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the manufacturer of the medical substance administered.

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Note: For vaccines, code system MVX may be used to code this field (see Section 4.10, "VACCINE ADMINISTRATION DATA"). This field may be used if the manufacturer of the substance is not identified by the code used in *RXA-5-administered code*.

4.8.10.21 Indication (CE) 01123

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the identifier of the condition or problem for which the drug/treatment was prescribed. May repeat if multiple indications are relevant.

4.8.10.22 Dispense package size (NM) 01220

Definition: This field contains the size of package to be dispensed. Units are transmitted *in RXE-29-dispense package size unit*.

4.8.10.23 Dispense package size unit (CE) 01221

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the units in which *RXE-28-dispense package size* is denominated.

4.8.10.24 Dispense package method (ID) 01222

Definition: This field contains the method by which treatment is dispensed. Refer to *HL7 table 0321 - Dispense method* for valid values.

Table 0321 - Dispense method

Value	Description
TR	Traditional
UD	Unit Dose
F	Floor Stock
AD	Automatic Dispensing

4.8.11 RGV/RRG - pharmacy/treatment give message (O01/O02)

The RDS message's RXD segment carries the dispense data for a given issuance of medication: thus it may describe a single dose, a half-day dose, a daily dose, a refill of a prescription, etc. It does not contain the given instructions or scheduling information. When this "give" (i.e., administration) information needs to be transmitted from the pharmacy or treatment application to another application, it is done with the RGV message.

The RGV message uses the RXG segment to record drug or treatment administration instructions. It may carry information about a single scheduled administration on a drug or treatment, or it may carry information about multiple administrations. If the pharmacy or treatment application (or some other application) needs to create a nonambiguous MAR report where each administration is matched to a particular give date/time instruction, it may use the RGV message as described in the following way:

For each scheduled administration of the medication, the pharmacy/treatment issues either a single RGV message or a single RGV message with multiple RXG segments, one for each scheduled administration. The actual administrations (transmitted by one or more RAS messages) are matched against the scheduled ones by recording in each RXA segment the Give Sub-ID of the corresponding RXG segment. If more than one administration needs to be matched (as in the case of recording a change or rate of an IV solution) the administering application issues additional RXA segment(s) (corresponding to the same RXG segment). If no matching is needed, the Give Sub-ID of the RXA segments has the value zero (0).

The ORC must have the filler order number and the order control code RE. The RXE and associated RXCs may be present if the receiving application needs any of their data. The RXG carries the scheduled administration data for either a single “give instruction” (single dose) of medication or for multiple “give instructions.” The RXG is not a complete record of an order. Use the RXO and RXE segments if a complete order is needed. It is a record from the pharmacy or treatment application to the Nursing application (or other) with drug/treatment administration instructions.

<u>RGV^O01</u>	<u>Pharmacy/Treatment Give</u>	<u>Chapter</u>
MSH	Message Header	2
[{NTE}]	Notes and Comments (for Header)	2
[
PID	Patient Identification	3
[{NTE}]	Notes and Comments (for PID)	2
[{AL1}]	Allergy Information	2
[PV1]	Patient Visit	3
[PV2]]	Patient Visit - Additional Info	3
]		
{		
ORC	Common Order	4
[
RXO	Pharmacy /Treatment Order	4
[
{NTE}	Notes and Comments (for RXO)	2
{RXR}	Pharmacy/Treatment Route	4
[
{RXC}	Pharmacy/Treatment Component	4
[{NTE}]	Notes and Comments (for RXC)	2
]		
]		
]		
[
RXE	Pharmacy/Treatment Encoded Order	4
{RXR}	Pharmacy/Treatment Route	4
[{RXC}]	Pharmacy/Treatment Component	4
]		
{		
RXG	Pharmacy/Treatment Give	4
{RXR}	Pharmacy/Treatment Route	4
[{RXC}]	Pharmacy/Treatment Component	4
[
[OBX]	Observation/Results	7
[{NTE}]	Notes and Comments (for OBX)	2
]		
]		
]		

(acknowledged by)

<u>RRG^O02</u>	<u>Pharmacy/Treatment Give Acknowledgment Message</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2
[{NTE}]	Notes and Comments (for Header)	2
[
[PID	Patient Identification	3
[{NTE}]]	Notes and Comments (for PID)	2
[
ORC	Common Order	4
[
RXG	Pharmacy/Treatment Give	4
{RXR}	Pharmacy/Treatment Route	4
[{RXC}]	Pharmacy/Treatment Component	4
]		
]		
]		

4.8.12 RXG - pharmacy/treatment give segment

Figure 4-18. RXG attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	4	NM	R			00342	Give Sub-ID Counter
2	4	NM	O			00334	Dispense Sub-ID Counter
3	200	TQ	R			00221	Quantity/Timing
4	100	CE	R		0292	00317	Give Code
5	20	NM	R			00318	Give Amount - Minimum
6	20	NM	O			00319	Give Amount - Maximum
7	60	CE	R			00320	Give Units
8	60	CE	O			00321	Give Dosage Form
9	200	CE	O	Y		00351	Administration Notes
10	1	ID	O		0167	00322	Substitution Status
11	200	CM	O			01303	Dispense-To Location
12	1	ID	O		0136	00307	Needs Human Review
13	200	CE	O	Y		00343	Pharmacy/Treatment Supplier's Special Administration Instructions
14	20	ST	C			00331	Give Per (Time Unit)
15	6	ST	O			00332	Give Rate Amount
16	60	CE	O			00333	Give Rate Units
17	20	NM	O			01126	Give Strength
18	60	CE	O			01127	Give Strength Units
19	20	ST	O	Y		01129	Substance Lot Number
20	26	TS	O	Y		01130	Substance Expiration Date
21	60	CE	O	Y	0227	01131	Substance Manufacturer Name
22	200	CE	O	Y		01123	Indication

4.8.12.0 RXG fields definitions

4.8.12.1 Give sub-ID counter (NM) 00342

Definition: Use if this RXG segment carries information about a single administration. Starts with 1 for the first scheduled give date/time transmitted by the pharmacy/treatment supplier for this order. Increments by one with each additional scheduled give date/time for this order.

If the RXG segment carries information about multiple administrations, this field's value is zero (0), since in this case a one-to-one matching with the RAS segment is ambiguous.

4.8.12.2 Dispense sub-ID counter (NM) 00334

Definition: This is the dispense sub-ID to which this give message is related.

4.8.12.3 Quantity/timing (TQ) 00221

Components: <quantity (CQ)> ^ <interval (CM)> ^ <duration (ST)> ^ <start date/time (TS)> ^ <end date/time (TS)> ^ <priority (ST)> ^ <condition (ST)> ^ <text (TX)> ^ <conjunction (ST)> ^ <order sequencing (CM)> ^ <occurrence duration (CE)> ^ <total occurrences (NM)>

Definition: This field contains the quantity/timing specification that refers to either a single scheduled give instruction only or to multiple give instructions. In the former case, *RXG-I-give sub-ID counter* is a positive integer greater than or equal to one (1). In the latter case, *RXG-I-give sub-ID counter* is zero (0). The quantity will always be 1. This quantity/timing field may differ from the ORC quantity/timing field, which contains the requested quantity/timing of the original order.

Note: The contents of fields 3-8 should be identical to the comparable fields in the RXE (RXE-2 thru 5).

4.8.12.4 Give code (CE) 00317

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field is the identifier of the medical substance ordered to be given to the patient; it is equivalent to *OBR-4-universal service ID* in function. See the RXE segment for a complete definition of the *RXE-2-give code*. If the substance given is a vaccine, CVX codes may be used to code this field (see *HL7 table 0292 - Vaccines administered*).

4.8.12.5 Give amount - minimum (NM) 00318

Definition: This field contains the ordered amount as encoded by the pharmacy/treatment supplier. In a variable dose order, this is the minimum ordered amount. In a nonvarying dose order, this is the exact amount of the order.

Note: This field is not a duplication of the first component of the quantity/timing field, since in non-pharmacy/treatment orders, that component can be used to specify multiples of an ordered amount.

Another way to say this is that, for pharmacy/treatment orders, the quantity component of the quantity/timing field refers to what is to be given out at each service interval; and thus, in terms of the RX order, that first component always defaults to 1. Hence, in the actual execution of the order, the value of 1 in the first component of the quantity/timing field always refers to one administration of the amount specified in this field (the requested Give Amount field).

4.8.12.6 Give amount - maximum (NM) 00319

Definition: In a variable dose order, this is the maximum ordered amount. In a nonvarying dose order, this field is not used.

4.8.12.7 Give units (CE) 00320

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the units for the give amount.

Note: These units can be a "compound quantity;" i.e., the units may contain the word "per." For example, micrograms per KG (mcg/kg) is an acceptable value, which means that the units are micrograms per KG (of body weight).

A table of standard units that contains compound units is needed. Until such a table is agreed on, a user-defined table is needed for each site.

4.8.12.8 Give dosage form (CE) 00321

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: The dosage form indicates the manner in which the medication is aggregated for dispensing, e.g., tablets, capsules, suppositories. In some cases, this information is implied by the give code in *RXG-4-give code*. Use this field when the give code does not specify the dosage form.

4.8.12.9 Administration notes (CE) 00351

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains notes to the person administering the medication (may include the ordering provider's original notes, as well as any notes from the formulary or the pharmacy or treatment supplier). If coded, a user-defined table must be used. If free text, place a null in the first component and the text in the second, e.g., |^this is a free text administration note|.

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4.8.12.10 Substitution status (ID) 00322

Definition: Refer to *HL7 table 0167 - Substitution status* for valid values.

Note: The next two fields are equivalent to the corresponding fields of the RXE segment. They are included (optionally) in the RXG so that it may "stand alone" as a "give" instruction segment.

4.8.12.11 Dispense-to location (CM) 01303

Components: <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <patient location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <street address (ST)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code (ST)> ^ <country (ID)> ^ <address type (ID)> ^ <other geographic designation (ST)>

Subcomponents of facility(HD): <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: The first component contains the inpatient or outpatient location where the drug or treatment was dispensed (if applicable). The default (null) value is the current census location for the patient. Site-specific table. The first eight components have the same form as the first eight components of *PVI-3-assigned patient location*. The final eight components replace the ninth component of *PVI-3-assigned patient location* and represent the full address specification.

4.8.12.12 Needs human review (ID) 00307

Definition: Refer to *HL7 table 0136 - Yes/no indicator* for valid values. The values have the following meaning for this field:

Table 0136 - Yes/no indicator

Value	Description
Y	Yes - Indicates that a warning is present. The application receiving the dispense order needs to warn the person dispensing/administering the drug or treatment to pay attention to the text in <i>RXG-13-pharmacy/treatment supplier's special administration instructions</i> .
N	No - Indicates no warning is present. This is the equivalent default (null) value.

4.8.12.13 Pharmacy/treatment supplier's special administration instructions (CE) 00343

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains pharmacy/treatment supplier-generated special instructions to the provider administering the order.

4.8.12.14 Give per (time unit) (ST) 00331

Definition: This field contains the time unit to use to calculate the rate at which the pharmaceutical is to be administered.

Format:

S<integer>	=	<integer> seconds
M<integer>	=	<integer> minutes
H<integer>	=	<integer> hours
D<integer>	=	<integer> days

W<integer>	=	<integer> weeks
L<integer>	=	<integer> months
T<integer>	=	at the interval and amount stated until a total of <integer> "DOSAGE" is accumulated. Units would be assumed to be the same as in the QUANTITY field.
INDEF	=	do indefinitely - also the default

This is the same as the format specified for the DURATION component of the quantity/timing field, excluding the "X" specification.

Required when relevant (e.g., certain IVs). For example, if the "give amount/units" were 300 ml and the "give per" time unit were H1 (equivalent to one hour), the rate is 300ml/hr.

4.8.12.15 Give rate amount (ST) 00332

Definition: This field contains the amount (number) of substance to be administered.

4.8.12.16 Give rate units (CE) 00333

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the units for *RXG-15-give rate amount*. May be composite. The ratio of the *RXG-15-give rate amount* and *RXG-16-give rate units* fields define the actual rate of administration. Thus, if *RXG-15-give rate amount* = 100 and *RXG-16-give rate units* = ml/hr, the requested rate of administration is 100 ml/hr.

4.8.12.17 Give strength (NM) 01126

Definition: Use when *RXG-4-give code* does not specify the strength. This is the numeric part of the strength, used in combination with *RXG-18-give strength units*.

4.8.12.18 Give strength units (CE) 01127

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: Use when *RXG-4-give code* does not specify the strength. This is the unit of the strength, used in combination with *RXG-17-give strength*.

Note: These units can be a "compound quantity"; i.e., the units may express a quantity per unit of time. For example, micrograms per hour (ug/h) is an acceptable value. These compound units are contained in the ISO+ table. See Chapter 7 for full definition of ISO+ units.

4.8.12.19 Substance lot number (ST) 01129

Definition: This field contains the lot number of the medical substance administered.

Note: The lot number is the number printed on the label attached to the container holding the substance and on the packaging which houses the container. If the substance is a vaccine, for example, and a diluent is required, a lot number may appear on the vial containing the diluent; however, any such identifier associated with a diluent is not the identifier of interest. The substance lot number should be reported, not that of the diluent.

4.8.12.20 Substance expiration date (TS) 01130

Definition: This field contains the expiration date of the medical substance administered.

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Note: Vaccine expiration date does not always have a “day” component; therefore, such a date may be transmitted as YYYYMM.

4.8.12.21 Substance manufacturer name (CE) 01131

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the manufacturer of the medical substance administered.

Note: For vaccines, code system MVX may be used to code this field (see Section 4.10, “VACCINE ADMINISTRATION DATA”). This field may be used if the manufacturer of the substance is not identified by the code used in *RXA-5-administered code*.

4.8.12.22 Indication (CE) 01123

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the identifier of the condition or problem for which the drug/treatment was prescribed. May repeat if multiple indications are relevant.

4.8.13 RAS/RRA - pharmacy/treatment administration message (O01/O02)

The RAS message may be created by the administering application (e.g., nursing application) for each instance of administration for an existing order. If the administering application wants to report several administrations of medication for a given order with a single RAS message, each instance is reported by a separate (repeating) RXA segment. In addition, the administration records for a group of orders may be sent in a single message by creating repeating groups of segments at the ORC level.

In the most common case, the RAS messages would be sent from a nursing application to the pharmacy or treatment application (or to the ordering application or another clinical application), which could use the data to generate the medication administration reports. Multiple RXA segments, each corresponding to a separate administration instance for a given order, may be sent with a single ORC.

<u>RAS^O01</u>	<u>Pharmacy/Treatment Administration</u>	<u>Chapter</u>
MSH	Message Header	2
[{NTE}]	Notes and Comments (for Header)	2
[
PID	Patient Identification	3
[PD1]	Additional Demographics	3
[{NTE}]	Notes and Comments (for PID)	2
[{AL1}]	Allergy Information	2
[PV1]	Patient Visit	3
[PV2]]	Patient Visit - Additional Info	3
]		
{		
ORC	Common Order	4
[
RXO	Pharmacy /Treatment Order	4
[
{NTE}	Notes and Comments (for RXO)	2
{RXR}	Pharmacy/Treatment Route	4
[
{RXC}	Pharmacy/Treatment Component	4
[{NTE}]	Notes and Comments (for RXC)	2
]		
]		
]		
[
RXE	Pharmacy/Treatment Encoded Order	4
{RXR}	Pharmacy/Treatment Route	4
[{RXC}]	Pharmacy/Treatment Component	4

]			
{RXA}	Pharmacy/Treatment Administration		4
RXR	Pharmacy/Treatment Route		4
{[OBX	Observation/Result		7
{[NTE]}	Notes and Comments (for OBX)		2
}}			
{{[CTI]}	Clinical Trial Identification		7
}			

(acknowledged by)

<u>RRA^O02</u>	<u>Pharmacy/Treatment Administration Acknowledgment Message</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2
[{NTE}]	Notes and Comments (for Header)	2
[
[PID	Patient Identification	3
[{NTE}]	Notes and Comments (for PID)	2
{		
ORC	Common Order	4
[
{RXA}	Pharmacy/Treatment Administration	4
RXR	Pharmacy/Treatment Route	4
]		
}		
]		

4.8.14 RXA - pharmacy/treatment administration segment

The ORC must have the filler order number and the order control code RE. As a site-specific variant, the RXO and associated RXCs and/or the RXE (and associated RXCs) may be present if the receiving application needs any of their data. The RXA carries the administration data.

Figure 4-19. RXA attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	4	NM	R			00342	Give Sub-ID Counter
2	4	NM	R			00344	Administration Sub-ID Counter
3	26	TS	R			00345	Date/Time Start of Administration
4	26	TS	R			00346	Date/Time End of Administration
5	100	CE	R		0292	00347	Administered Code
6	20	NM	R			00348	Administered Amount
7	60	CE	C			00349	Administered Units
8	60	CE	O			00350	Administered Dosage Form
9	200	CE	O	Y		00351	Administration Notes
10	200	XCN	O	Y		00352	Administering Provider
11	200	CM	C			00353	Administered-at Location
12	20	ST	C			00354	Administered Per (Time Unit)
13	20	NM	O			01134	Administered Strength
14	60	CE	O			01135	Administered Strength Units
15	20	ST	O	Y		01129	Substance Lot Number
16	26	TS	O	Y		01130	Substance Expiration Date
17	60	CE	O	Y	0227	01131	Substance Manufacturer Name
18	200	CE	O	Y		01136	Substance Refusal Reason
19	200	CE	O	Y		01123	Indication
20	2	ID	O		0322	01223	Completion Status
21	2	ID	O		0323	01224	Action Code-RXA

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SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
22	26	TS	O			01225	System Entry Date/Time

4.8.14.0 RXA field definitions

4.8.14.1 Give sub-ID counter (NM) 00342

Definition: Use this field if matching this RXA segment to its corresponding RXG segment. If the two applications are not matching RXG and RXA segments, this field's value is zero (0).

4.8.14.2 Administration sub-ID counter (NM) 00344

Definition: This field starts with 1 the first time that medication is administered for this order. Increments by one with each additional administration of medication.

Note: More than one RXA segment can be "matched" to a single RXG segment, as is the case when recording a change of the rate of administration of an IV solution.

4.8.14.3 Date/time start of administration (TS) 00345

Definition: If the order is for a continuous administration (such as an IV), and the rate is changed at a certain time after the start, an RAS message can be issued to record the change. For such an RAS message, this field records the time the rate was changed to the new value recorded in *the RXA-12-administered per (time unit)* of the same message.

4.8.14.4 Date/time end of administration (if applies) (TS) 00346

Definition: If null, the date/time of *RXA-3-date/time start of administration* is assumed.

4.8.14.5 Administered code (CE) 00347

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the identifier of the medical substance administered. It is equivalent to *OBR-4-universal service ID* in function. If the substance administered is a vaccine, CVX codes may be used to code this field (see *HL7 table 0292 - Vaccines administered*).

4.8.14.6 Administered amount (NM) 00348

Definition: This field contains the amount administered.

4.8.14.7 Administered units (CE) 00349

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field is conditional because it is required if the administered amount code does not imply units. This field must be in simple units that reflect the actual quantity of the substance administered. It does not include compound units.

4.8.14.8 Administered dosage form (CE) 00350

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: The dosage form indicates the manner in which the medication is aggregated for dispensing, e.g., tablets, capsules, suppositories. In some cases, this information is implied by the dispense/give code in *RXA-5-administered code*. Use this field when the administered code does not specify the dosage form.

4.8.14.9 Administration notes (CE) 00351

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains notes from the provider administering the medication. If coded, requires a user-defined table. If free text (describing a custom IV, mixture, or salve, for example) place a null in the first component and the text in the second, e.g., |^this is a free text administration note|.

4.8.14.10 Administering provider (XCN) 00352

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the provider ID of the person administering the pharmaceutical.

4.8.14.11 Administered-at location (CM) 00353

Components: <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <patient location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <street address (ST)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code (ST)> ^ <country (ID)> ^ <address type (ID)> ^ <other geographic designation (ST)>

Subcomponents of facility (HD): <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: The first component contains the inpatient or outpatient location at which the drug or treatment was administered (if applicable). The default (null) value is the current census location for the patient. Site-specific table. The first eight components have the same form as the first eight components of *PVI-3-assigned patient location*. The final eight components replace the ninth component of *PVI-3-assigned patient location* and represent the full address specification.

4.8.14.12 Administered per (time unit) (ST) 00354

Definition: This field contains the rate at which this medication was administered as calculated by using *RXA-6-administered amount* and *RXA-7-administered units*. This field is conditional because it is required when a treatment is administered continuously at a prescribed rate, e.g., certain IV solutions.

4.8.14.13 Administered strength (NM) 01134

Definition: Use when *RXA-5-administered code* does not specify the strength. This is the numeric part of the strength, used in combination with *RXA-14-administered strength units*.

4.8.14.14 Administered strength units (CE) 01135

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: Use when *RXA-5-administered code* does not specify the strength. This is the unit of the strength, used in combination with *RXA-13-administered strength*.

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Note: These units can be a “compound quantity,” i.e., the units may express a quantity per unit of time. For example, micrograms per hour (ug/h) is an acceptable value. These compound units are contained in the ISO+ table. See Chapter 7 for full definition of ISO+ units.

4.8.14.15 Substance lot number (ST) 01129

Definition: This field contains the lot number of the medical substance administered.

Note: The lot number is the number printed on the label attached to the container holding the substance and on the packaging which houses the container. If the substance is a vaccine, for example, and a diluent is required, a lot number may appear on the vial containing the diluent; however, any such identifier associated with a diluent is not the identifier of interest. The substance lot number should be reported, not that of the diluent.

4.8.14.16 Substance expiration date (TS) 01130

Definition: This field contains the expiration date of the medical substance administered.

Note: Vaccine expiration date does not always have a “day” component; therefore, such a date may be transmitted as YYYYMM.

4.8.14.17 Substance manufacturer name (CE) 01131

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the manufacturer of the medical substance administered.

Note: For vaccines, code system MVX may be used to code this field (see Section 4.10, “VACCINE ADMINISTRATION DATA”). This field may be used if the manufacturer of the substance is not identified by the code used in *RXA-5- administered code*.

4.8.14.18 Substance refusal reason (CE) 01136

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the reason the patient refused the medical substance. Any entry in the field indicates that the patient did not take the substance.

4.8.14.19 Indication (CE) 01123

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the identifier of the condition or problem for which the drug/treatment was prescribed. May repeat if multiple indications are relevant.

4.8.14.20 Completion status (ID) 01223

Definition: Status of treatment administration event. Refer to *HL7 table 0322 - Completion status* for valid values.

Table 0322 - Completion status

Value	Description
CP	Complete
RE	Refused
NA	Not Administered
PA	Partially Administered

4.8.14.21 Action code - RXA (ID) 01224

Definition: Status of record. The information in this field enables the use of the RXA in the vaccine messages (see Section 4.13, “RXA SEGMENT USAGE IN VACCINE MESSAGES”), where a method of correcting vaccination information transmitted with incorrect patient identifying information is needed. Refer to *HL7 table 0323 - Action code* for valid values.

Table 0323 - Action code

Value	Description
A	Add
D	Delete
U	Update

4.8.14.22 System entry date/time (TS) 01225

Definition: Date/time the administration information was entered into the source system. This field is used to detect instances where treatment administration information is inadvertently entered multiple times by providing a unique identification field. Under usual circumstances, this field would be provided automatically by the computer system rather than being entered by a person.

4.8.15 Pharmacy/treatment queries

With appropriate definitions in the QRD and/or QRF segments, the RDE, RDS, RGV, and RAS messages can serve as models for result-oriented pharmacy/treatment queries returning the current profile of pharmacy or treatment orders (RDE type), the current dispense history (RDS type), the current dose history (RGV type), or the current administration record (RAS type). Examples are given in Section **Error! Reference source not found.**, “**Error! Reference source not found.**”

4.8.16 Examples of use

The purpose of this section is to show how certain specific situations would be handled using the pharmacy/treatment protocol. The ellipses represent uncompleted details. The symbol // precedes comments for clarification.

4.8.16.1 Example of various levels of coding in an order

The order *give 500 mg Ampicillin P.O. Q6H for 10 days for a total of 40 tablets* is sent to the RX application from the OE application. This order can be coded with various levels of precision by an ordering application:

- E-mail only version (uses only free text, *RXO-6-provider’s pharmacy/treatment instructions* or *RXO-7-provider’s administration instructions* only); fully encoded version must be re-entered or verified manually by the pharmacy or treatment application.
- With *RXO-2-requested give amount-minimum*, *RXO-4-requested give units*, and *ORC-7-quantity/timing* coded, and *RXO-1-requested give code* as free text.
- With *RXO-1-requested give code*, *RXO-2-requested give amount-minimum*, *RXO-4-requested give units*, and *ORC-7-quantity/timing* coded, but where *RXO-1-requested give code* does not include units.
- With *RXO-1-requested give code*, *RXO-2-requested give amount-minimum*, *RXO-4-requested give units*, and *ORC-7-quantity/timing* coded, and where *RXO-1-requested give code* does include units.

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In this case, the units are optional. The rule for this case (on orders, dispense results, give results, and administration results) is as follows: if units are coded, they override or supersede the units value implied by the give code.

- a) The E-mail only version of the order: no coded fields exist in the RXO.

```
MSH|...
PID|...
ORC|NW|1000^0E|||E<cr>
RXO|||||500 mg Polycillin Q6H for 10 days, dispense 40 Tablets<cr>
```

- b) A partially coded version of the order. This version has the *RXO-2-requested give amount-minimum*, *RXO-4-requested give units*, and *ORC-7-quantity/timing* coded, but the *RXO-1-requested give code* as free text.

```
MSH|...
PID|...
ORC|NW|1000^0E|||E|^Q6H^D10^^^R<cr>
RXO|^Polycillin 500 mg TAB^|500||MG|||Y||40<cr>
RXR|P0<cr>
```

- c) A more completely coded version of the order, with the *RXO-1-requested give code*, *RXO-2-requested give amount-minimum*, *RXO-4-requested give units*, and *ORC-7-quantity/timing* coded, but where *RXO-1-requested give code* does not imply units.

```
MSH|...
PID|...
ORC|NW|1000^0E|||E|^Q6H^D10^^^R<cr>
RXO|RX1001^Polycillin^L|500||MG|||Y||40<cr>
RXR|P0<cr>
```

- d) A completely encoded version, with the *RXO-1-requested give code*, *RXO-2-requested give amount-minimum*, *RXO-4-requested give units*, and *ORC-7-quantity/timing* coded, and where *RXO-1-requested give code* does imply units.

```
MSH|...
PID|...
ORC|NW|1000^0E|||E|^Q6H^D10^^^R<cr>
RXO|RX1001^Polycillin 500 mg TAB^L|500||MG|||G||40<cr>
RXR|P0<cr>
```

- e) Pharmacy or treatment supplier's encoded version (RDE message) sent to nursing application (a generic substitution).

```
MSH|...
PID|...
ORC|RE|1000^0E|9999999^RX|||E|^Q6H^D10^^^R<cr>
RXE|^^^199012100600^R|0047-0402-30^Ampicillin 250 MG
TAB^NDC|2||TAB|||G|80|||123456|rx#1001<cr>
RXR|P0<cr>
```

- f) Pharmacy or treatment supplier's dispense results (RDS message).

```
MSH|...
PID|...
```

```

ORC|RE|1000^OE|9999999^RX|||E|^Q6H^D10^^^R<cr>
RXD|1|0047-0402-30^Ampicillin 250 MG TAB^NDC|199012100400|8|TAB||RX#1001|||
123456|G|8<cr>

```

- g) Pharmacy or treatment supplier's give results (RGV message).

```

MSH|...
PID|...
ORC|RE|1000^OE|9999999^RX|||E|^Q6H^D10^^^R<cr>
RXG|1|1|^199012100600^R|0047-0402-30^Ampicillin 250 MG TAB^NDC|500||MG|||G|
RXR|P0<cr>

```

- b) Nursing application Medications Administration results to pharmacy, treatment, or Order Entry application.

```

MSH|...
PID|...
ORC|RE|1000^OE|9999999^RX|||E|^Q6H^D10^^^R<cr>
RXA|1|1|199012100615||0047-0402-30^Ampicillin 250 MG TAB^NDC|2|TAB<cr>
RXR|P0<cr>

```

4.8.16.2 Custom IV example

The RXC segments are used when the RXO-level code does not fully describe the ordered entity, and the description requires more than a single code. Such "customized" orderable entities may use a "generic" code at the RXO level; e.g., <generic code> means "custom IV solution, see RXC segments for details." In general, a given pharmacy or treatment application will have CE-type RXO-level codes equivalent to:

```

RXCUSIV^Custom IV^Local          (for nonstandard IVs)
RXCUSMIX^Custom Mixture^Local     (for dermatology and other specialties)
RXCUSSLV^Custom Salve^Local       (for dermatology and other specialties)

```

An order is sent from an Order Entry application to a pharmacy or treatment application as follows:

- IV D5W < 1/2 NS 100 cc/hr with an additive of 20 meq KCl in every third liter, starting with the first bottle
 - Continuous for 2 days (December 10, 1993 8am to December 12, 1993 at 8am)
 - With a timing critical factor of 30 minutes
- a) The ORC/RXO for the custom IV mixture and the two liters of NSD5W as entered on the Order Entry application

```

MSH|...
PID|...

ORC|NW|2045^OE|||E|^C^199312100800^199312120800^^TM30<Cr>
RXO|||3|L|IV|D5W WITH 1/2 NS WITH 20 MEQ KCL EVERY THIRD BOTTLE STARTING WITH
FIRST||W8&825&A^|N|||||H30<cr>
RXR|IV|LA|IV-SET01^^L<cr>

```

- b) Pharmacy/treatment's encoded version sent to Nursing Unit West 8 Room 825 Bed A

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The pharmacy or treatment supplier sends the order as a parent/child set. This spawns, from the free text order 2045, two child orders with two precisely-defined service requests. *ORC-7-quantity/timing* represents the timing request of the time of the order creation; i.e., *ORC-7-quantity/timing* represents the requested time. *RXE-1-quantity/timing* represents the pharmacy or treatment supplier's interpretation of the order.

MSH|...

PID|...

ORC|PA|2045^OE|123^PH|||E|^C^199312100800^199312120800^^TM30<cr>

The first fully-encoded child order is the order for the custom IV. This is a continuous, repeating order, the first of a cyclic group with a maximum number of two repetitions. The first repeat starts at the start date/time of 199312100800. This order can itself be a parent order and spawn individual give orders and/or it can be sent to an administering system (as in this example) which will be responsible for handling the “give” parts of the transactions.

ORC|CH|2045^OE|124^PH|||E||2045&OE^123&PH<cr>

RXE|^C^H10^199312100800^199312120800^TM30^^^^S&&125&PH&*ES+OM&2|RXCUSIV^Custom

IV^L||1|L|IV||W8&825&A|N|||||RX#1256|||||H10|100|CC/HR<cr>

RXR|IV|LA|IV-SET01^^L<cr>

RXC|B|IVDEX05^D5W WITH 1/2 NS^L|1|L<cr>

RXC|A|CHEM_KCL^KCL^L|20|MEQ<cr>

The second fully-encoded child order is for the plain D5W solution. It is the second part of a cyclic order group, and starts as soon as the first repetition of order with filler order number 124^PH is done (end-to-start with no intervening time increment). It has a maximum number of two repetitions. This order can itself be a parent order and spawn individual give orders and/or it can be sent to an administering system (as in this example) which will be responsible for handling the “give” parts of the transactions.

ORC|CH|2045^OE|125^PH|||E||2045&OE^123&PH<cr>

RXE|^C^H20^199312101800^199312120800^TM30^^^^S&&124&PH&ES+OM&2|

IVDEX05^D5W WITH 1/2 NS^L||2|L|IV||W8&825&A|N|||||RX#1256|||||H20|100|

CC/HR<cr>

RXR|IV|LA|IV-SET01^^L<cr>

c) Pharmacy/treatment's give instructions (for the custom IV order only)

If the nursing system does not decode the RDE messages, but instead required the individual give messages, the following message can be used. It carries the instructions to the Nursing unit for administering the (first child) IV. It is also the pharmacy or treatment supplier's (dispense audit) record. The optional RXC segments are used to give a full description of the custom IV solution. In this example, *RXG-3-quantity/timing* represents the actual time the pharmacy or treatment supplier is requesting that the drug or treatment be given. The order sequencing component of quantity/timing is not needed in this message.

MSH|...

PID|...

ORC|RE|2045^OE|124^PH|||E|^C^199312100800^199312120800^^TM30^^^^|

2045&OE^123&PH<cr>

RXG|1||^C^H10^199312100800^199312101800^^TM30|RXCUSIV^Custom IV^L|1||L|

IV|||W8&825&A|||H10|100|CC/HR<cr>

RXR|IV|LA|IV-SET01^^L<cr>

RXC|B|IVDEX05^D5W WITH 1/2 NS^L|1|L<cr>

RXC|A|CHEM_KCL^KCL^L|20|MEQ<cr>

- d) Nursing application Medication Administration results to the pharmacy or treatment supplier or Order Entry application

A message is sent from Nursing when the first bottle of Custom Mixture has been administered. A second message would be sent from Nursing when the NS is administered.

MSH|...

PID|...

ORC|RE|2045^OE|124^PH|||E|^C^199312100800^199312120800^^TMB0<cr>RXA|1|1|199312100800|199312101800|RXCUSIV^Custom IV^L|1|L|IV|||W8&825&A|H10<cr>

RXR|IV|LA|IV-SET01^^L<cr>

This completes the first series of messages for this drug/treatment administration.

4.8.16.3 Alternating IV Order Messages

HL7 Delimiters: <cr> = segment terminator; | = field separator; ^ = component separator; & = subcomponent separator; ~ = repetition indicator; \ = escape character

Encoding Note: For readability, these examples do not show encoding of the subcomponents of the Give Codes (CE data type) in the RXC and RXO segments. In practice, the subcomponents should be encoded as described in the HL7 specification.

a) Example #1

D5/0.45NaCl 1000mL with 20mEq KCl in every 3rd bottle. Start the KCl in the 3rd bottle of this order. Run in at a rate of 100mL/hr.

(Other message data: placer order #123, placer application ID=SMS, interval=continuous, start date/time=11/28/94 0900, no stop date/time, priority=Routine, order sequencing= Cyclical)

This order may be expressed using a parent/child relationship. The parent order consists of an ORC (and a RXO, incompletely elaborated in this example) that contains order level information. The repeating bottle cycle of D5/0.45NaCl 1000mL followed by D5/0.45NaCl 1000mL followed by D5/0.45NaCl + 20mEq KCL 1000mL is represented by three child segments. The placer system may be treating this as a single order with two bottles, A (D5/0.45NaCl 1000mL @ 100mL/hr) and B (D5/0.45NaCl + 20mEq KCL 1000mL @ 100mL/hr), repeating in the cycle of A-A-B.

The parent:

ORC|NW|123^SMS|||1^C^^199411280900^^R^^^C|...

RXO|Cyclic IV|...

The first child:

ORC|CH|123A1^SMS|||1^C^^^^^^C&123B&SMS&&&ES+0M|123|...

RXO Segment, Requested Give Amount-Minimum ... |100|ML|...

Requested Give Per (Time Unit): ... |H1|...

RXR|IV|<cr>

RXC|B|D5/. 45NACL|1000|ML|<cr>

The second child:

ORC|CH|123A2^SMS|||1^C^^^^^^C&123A1&SMS&&&ES+0M|123|...

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```
RX0 Segment, Requested Give Amount-Minimum ... |100| |ML|...  
    Requested Give Per (Time Unit): ... |H1|...  
RXR|IV<cr>  
RXC|B|D5/. 45NACL|1000|ML<cr>
```

The third child:

```
ORC|CH|123B^SMS| || || 1^C^^^^^^^C&123A2&SMS&&&#ES+OM|123|...  
RX0 Segment, Requested Give Amount-Minimum ... |100| |ML|...  
    Requested Give Per (Time Unit): ... |H1|...  
RXR|IV<cr>  
RXC|B|D5/. 45NACL|1000|ML<cr>  
RXC|A|KCL|20|MEQ<cr>
```

Discussion points:

Placer Order Number - Three alternatives must be discussed for placer order number.

1. Each child could have its own placer order number.
2. Each child could have the order number of the parent plus some appended identifier (for examples, 123A or 123.A or 123.1 etc.) that labels each child or each unique combination of ingredients.
3. In addition to the appended identifier discussed in 'B' above, a further suffix could be attached to uniquely identify each repetition of a particular member of the sequence. The example (a cycle of bottles 'A' and 'B' in the sequence A-A-B) identified the order numbers of the children as 123A1, 123A2, and 123B, thereby enabling the quantity/timing to be completely unambiguous. This could be expressed many other ways, such as 123A.1 or 123.A.1 or 123.A#1 etc. HL7 does not specify a format for the expression of order number suffixes, nor does it specify a delimiter to use for such a purpose.

Sequence Condition Value - In this example, the first child contains an asterisk (*) as the first character of the Sequence Condition Value and the third (last) child contains a pound sign (#).

The asterisk and pound sign are important for designating the first and last bottles especially when children are sent in separate messages, although this example is not constructed that way.

Note that computing the duration of the bottle is dependent upon the presence of all of the following fields:

- *RXO-2-requested give amount-minimum*
- *RXO-4-requested give units*
- *RXC-3-component amount*
- *RXC-4-component units*

For cyclic IV orders, these fields are all required in order to determine how long each occurrence of a child will last.

While HL7 allows either sending the parent and children in one message or sending the parent and children in separate messages, it appears simpler and therefore recommended to have the parent and all children included in a single message. The example is constructed that way.

b) Example #2

D5W + 40mEq KCl 1000mL alternating with D5/LR + 20mEq KCl 1000mL at 125mL/hr

(Other message data: placer order #124, placer application ID=SMS, interval=continuous, start date/time=11/28/94 0900, no stop date/time, priority=Routine, order sequencing= Cyclical)

This example is a variation on the first example where two different base solutions are used. In this example, the placer system deals with this as one order with two alternating bottles, A (D5W + 40mEq KCl 1000mL @ 125mL/hr) and B (D5/LR + 20mEq KCl 1000mL @ 125mL/hr) in the cycle A-B. The principles discussed in Example #1 apply equally to this example.

The parent:

```
ORC|NW|124^SMS|||1^C^^199411280900^^R^^^C|...
RXO|Cyclic IV|...
```

The first child:

```
ORC|CH|124A^SMS|||1^C^^^^^^^C&124B&SMS&&&*ES+OM|124|...
RXO Segment, Requested Give Amount-Minimum ...|125|ML|...
    Requested Give Per (Time Unit): ...|H1|...
RXR|IV<cr>
RXC|B|D5W|1000|ML<cr>
RXC|A|KCL|40|MEQ<cr>
```

The second child:

```
ORC|CH|124B^SMS|||1^C^^^^^^^C&124A&SMS&&&#ES+OM|124|...
RXO Segment, Requested Give Amount-Minimum ...|125|ML|...
    Requested Give Per (Time Unit): ...|H1|...
RXR|IV<cr>
RXC|B|D5/LR|1000|ML<cr>
RXC|A|KCL|20|MEQ<cr>
```

c) Example #3

D5/0.45NaCl 1000mL with 20mEq KCl in every 3rd bottle. Start the KCl in the 3rd bottle of this order. Add 10mL of multi-vitamins to the one bag daily. Run in at a rate of 100mL/hr.

(Other message data: placer order #134, placer application ID=SMS, interval=continuous, start date/time=11/28/94 0900, no stop date/time, priority=Routine, order sequencing= Cyclical. Note that the encoding of the multi-vitamins statement in the above order, adding multi-vitamins to one IV bag each day, may vary by institution to put it into the first or last bottle of the day.)

This order may be expressed using a parent/child relationship. The parent order consists of an ORC (and a RXO, although I did not completely elaborate one in this example) that contains order level information. The repeating bottle cycle of D5/0.45NaCl 1000mL followed by D5/0.45NaCl 1000mL followed by D5/0.45NaCl + 20mEq KCL 1000mL is represented by three child segments. This order is complicated by the request to add one component into any one of the three repeating bottles, depending upon which of the bottles will occur first on any particular day. Further complicating this order is a rate of infusion (10 hours

for a 1000mL bottle) which results in a fractional number of daily administrations. Most legacy systems have a great deal of trouble accommodating orders like this within their existing database structures; however there are a few vendors who now are able to handle the situation. The placer system may be treating this as a single order with two bottles, A (D5/0.45NaCl 1000mL @ 100mL/hr) and B (D5/0.45NaCl + 20mEq KCL 1000mL @ 100mL/hr), repeating in the cycle of A-A-B with a cyclical component (multi-vitamins).

The parent:

```
ORC|NW|134^SMS|||1^C^^199411280900^^R^^^C|...  
RX0|Cyclic IV|...
```

The first child:

```
ORC|CH|134A1^SMS|||1^C^^^^^^^C&134B&SMS&&&ES+0M|134|...  
RX0 Segment, Requested Give Amount-Minimum ...|100|ML|...  
    Requested Give Per (Time Unit): ...|H1|...  
RXR|IV<cr>  
RXC|B|D5/. 45NACL|1000|ML<cr>
```

The second child:

```
ORC|CH|134A2^SMS|||1^C^^^^^^^C&134A1&SMS&&&ES+0M|134|...  
RX0 Segment, Requested Give Amount-Minimum ...|100|ML|...  
    Requested Give Per (Time Unit): ...|H1|...  
RXR|IV<cr>  
RXC|B|D5/. 45NACL|1000|ML<cr>
```

The third child:

```
ORC|CH|134B^SMS|||1^C^^^^^^^C&134A2&SMS&&&ES+0M|134|...  
RX0 Segment, Requested Give Amount-Minimum ...|100|ML|...  
    Requested Give Per (Time Unit): ...|H1|...  
RXR|IV<cr>  
RXC|B|D5/. 45NACL|1000|ML<cr>  
RXC|A|KCL|20|MEQ<cr>
```

The fourth child:

```
ORC|CH|134X^SMS|||1^Q1D^^^^^^^|134|...  
RX0|MULTIVITAMINS|10|ML|INJECTABLE|...
```

Discussion points:

This method for accommodating the Multi-vitamins Daily scenario does not pretend to be the best or only way to express the message, but simply demonstrates adapting the current specification to a highly complex order without adding new components.

The Multi-vitamins component may be sent as a fourth child.

In this example, its *ORC-7-quantity/timing* includes an interval of “Q1D” (every 1 days).

Its order number consists of the placer’s parent order number plus an appended identifier (‘X’ in the above example) that labels this child as a special case. This convention would need to be agreed upon by sending and receiving applications.

d) Example #4

D5W + 40mEq KCl 1000mL alternating with D5/LR + 20mEq KCl 1000mL alternating with D5/0.45NaCl 1000mL. Infuse the D5W and D5/0.45 at 125mL/hr, and the D5/LR at 100mL/hr.

(Other message data: placer order #177, placer application ID=SMS, interval=continuous, start date/time=11/28/94 0900, no stop date/time, priority=Routine, order sequencing= Cyclical)

This example is another variation of Example 1 where the rate for each bottle is different, and this can be expressed within the RX segments of the children using current components. In this example, the placer system deals with this as one order with three alternating bottles, A (D5W + 40mEq KCl 1000mL @ 125mL/hr) , B (D5/LR + 20mEq KCl 1000mL @ 100mL/hr) , and C (D5/0.45NaCl 1000mL @ 125mL/hr) in the cycle A-B-C. The principles discussed in Example #1 apply equally to this example.

The parent:

```
ORC|NW|177^SMS|||1^C^^199411280900^^R^^^C|...
RX0|Cyclic IV|...
```

The first child:

```
ORC|CH|177A^SMS|||1^C^^^^^^C&177C&SMS&&&*ES+0M|177|...
RX0 Segment, Requested Give Amount-Minimum ...|125|ML|...
Requested Give Per (Time Unit): ...|H1|...
RXR|IV<cr>
RXC|B|D5W|1000|ML<cr>
RXC|A|KCL|40|MEQ<cr>
```

The second child:

```
ORC|CH|177B^SMS|||1^C^^^^^^C&177A&SMS&&&ES+0M|177|...
RX0 Segment, Requested Give Amount-Minimum ...|100|ML|...
Requested Give Per (Time Unit): ...|H1|...
RXR|IV<cr>
RXC|B|D5/LR|1000|ML<cr>
RXC|A|KCL|20|MEQ<cr>
```

The third child:

```
ORC|CH|177C^SMS|||1^C^^^^^^C&177B&SMS&&&ES+0M|177|...
RX0 Segment, Requested Give Amount-Minimum ...|125|ML|...
Requested Give Per (Time Unit): ...|H1|...
RXR|IV<cr>
RXC|B|D5/0.45NACL|1000|ML<cr>
```

4.8.17 R0R - pharmacy/treatment order response R0R)

<u>R0R^R0R</u>	<u>Pharmacy /Treatment Order Response</u>
MSH	Message Header
MSA	Message Acknowledgment
[ERR]	Error
{	
QRD	Query Definition
[QRF]	Query Filter
[PID	Patient Identification
{[NTE]}}	Notes and Comments (for PID)
{	
ORC	Common Order
RXO	Pharmacy/Treatment Order
{RXR}	Pharmacy/Treatment Route
{[RXC]}	Pharmacy/Treatment Component
}	
}	
[DSC]	Continuation Pointer

4.8.18 RAR - pharmacy/treatment administration information (RAR)

<u>RAR^RAR</u>	<u>Pharmacy/treatment Administration Information</u>
MSH	Message Header
MSA	Message Acknowledgment
[ERR]	Error
{	
QRD	Query Definition
[QRF]	Query Filter
[PID	Patient Identification
{[NTE]}}	Notes and Comments (for PID)
{	
ORC	Common Order
[
RXE	Pharmacy/Treatment Encoded Order
{RXR}	Pharmacy/Treatment Route
{[RXC]}	Pharmacy/Treatment Component
]	
{RXA}	Pharmacy/Treatment Administration
RXR	Pharmacy/Treatment Route
}	
}	
[DSC]	Continuation Pointer

4.8.19 RDR - pharmacy/treatment dispense information (RDR)

<u>RDR^RDR</u>	<u>Pharmacy/treatment Dispense Information</u>
MSH	Message Header
MSA	Message Acknowledgment
[ERR]	Error
{	
QRD	Query Definition
[QRF]	Query Filter
[PID	Patient Identification
{[NTE]}}	Notes and Comments (for PID)
{	
ORC	Common Order
[
RXE	Pharmacy/Treatment Encoded Order
{RXR}	Pharmacy/Treatment Route
{[RXC]}	Pharmacy/Treatment Component
]	
{RXD	Pharmacy/Treatment Dispense
{RXR}	Pharmacy/Treatment Route
{[RXC]}	Pharmacy/Treatment Component
}	
}	

```

}
[DSC]          Continuation Pointer

```

4.8.20 RER - pharmacy/treatment encoded order information (RER)

<u>RER^RER</u>	<u>Pharmacy/treatment Encoded Order Information</u>
MSH	Message Header
MSA	Message Acknowledgment
[ERR]	Error
{	
QRD	Query Definition
[QRF]	Query Filter
[PID	Patient Identification
{[NTE]]}	Notes and Comments (for PID)
{	
ORC	Common Order
RXE	Pharmacy/Treatment Encoded Order
{RXR}	Pharmacy/Treatment Route
{[RXC]}	Pharmacy/Treatment Component
}	
}	
[DSC]	Continuation Pointer

4.8.21 RGR - pharmacy/treatment dose information (RGR)

<u>RGR^RGR</u>	<u>Pharmacy/treatment Dose Information</u>
MSH	Message Header
MSA	Message Acknowledgment
[ERR]	Error
{	
QRD	Query Definition
[QRF]	Query Filter
[PID	Patient Identification
{[NTE]]}	Notes and Comments (for PID)
{	
ORC	Common Order
{	
RXE	Pharmacy/Treatment Encoded Order
{RXR}	Pharmacy/Treatment Route
{[RXC]}	Pharmacy/treatment Component
}	
{RXG}	Pharmacy/Treatment Give
{RXR}	Pharmacy/Treatment Route
{[RXC]}	Pharmacy/Treatment Component
}	
}	
[DSC]	Continuation Pointer

4.8.22 Query examples

The order entry application requests pharmacy/treatment order information for patient 12345, from 8/12/92 through 8/13/92.

```

MSH|...<cr>
QRD|19920814181254|R|D|9200785|||45^RD|12345|RDE<cr>
QRF|PHM|19920812000000|19920813235959<cr>
DSC<cr>

```

```

MSH|...<cr>
MSA|...<cr>
QRD|...<cr>
QRF|...<cr>

```

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```
ORC|RE|3346|R23<cr>
RXE|^BID^D5^199208120800^199208162000|10986^AMPICILLIN|250||MG<cr>
RXR|P0<cr>
ORC|RE|3987|R76<cr>
RXE|^TID^D7^199208120600^199208182200|12796^ASPIRIN|325||MG<cr>
RXR|P0<cr>
DSC<cr>
```

The lab application requests pharmacy/treatment administration information for patient 12345, from 8/12/92 through 8/13/92.

```
MSH|...<cr>
QRD|19920814165645|R|D|9200231|||30^RD|12345|RAS<cr>
QRF|PHM|19920812000000|19920813235959<cr>
DSC<cr>

MSH|...<cr>
MSA|...<cr>
QRD|...<cr>
QRF|...<cr>
ORC|RE||R23<cr>
RXE|^BID^D5^199208120800^199208162000|10986^AMPICILLIN|250||MG<cr>
RXR|P0<cr>
RXA|1|1|199208120800|||250<cr>
RXA|2|2|199208122000|||250<cr>
RXA|3|3|199208130800|||250<cr>
RXA|4|4|199208132000|||250<cr>
ORC|RE||R76<cr>
RXE|^TID^D7^199208120600^199208182200|12796^ASPIRIN|325||MG<cr>
RXR|P0<cr>
RXA|1|1|199208120600|||325<cr>
RXA|2|2|199208121400|||325<cr>
RXA|3|3|199208122200|||325<cr>
RXA|4|4|199208130600|||325<cr>
RXA|5|5|199208131400|||325<cr>
RXA|6|6|199208132200|||325<cr>
DSC<cr>
```

The nursing system requests pharmacy/treatment dose information for patient 12345, from 8/12/92 through 8/13/92.

```
MSH|...<cr>
QRD|19920814172309|R|D|9200543|||100^RD|12345|RXG<cr>
QRF|PHM|19920812000000|19920813235959<cr>
DSC<cr>

MSH|...<cr>
MSA|...<cr>
QRD|...<cr>
```

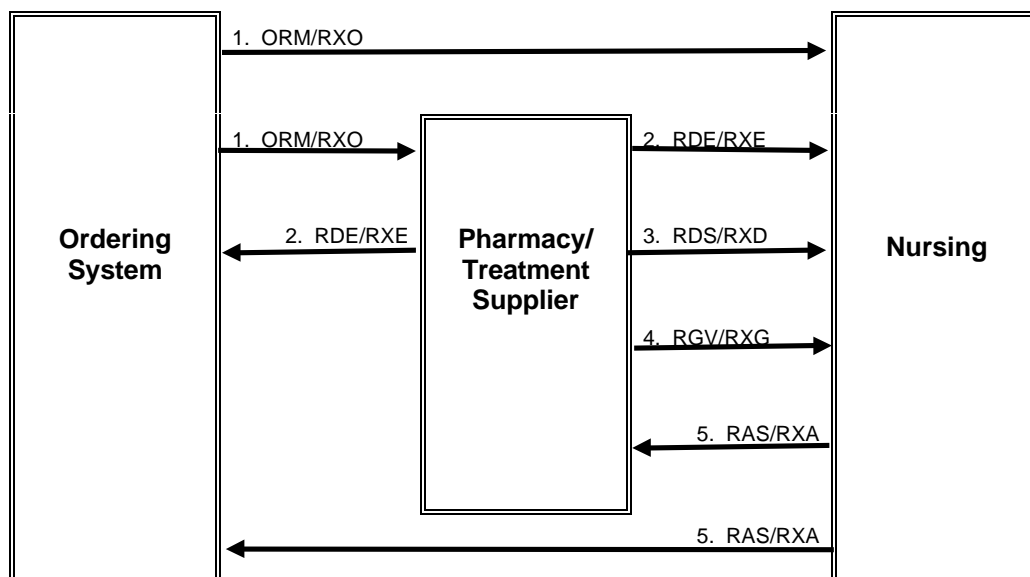
```

QRF|...<cr>
ORC|RE||R23<cr>
RXE|^BID^D5^199208120800^199208162000|10986^AMPCILLIN|250||MG<cr>
RXR|PO<cr>
RXG|1||199208120701||250<cr>
RXG|2||199208121923||250<cr>
RXG|3||199208130702||250<cr>
RXA|4||199208131912||250<cr>
ORC|RE||R76<cr>
RXE|^TID^D7^199208120600^199208182200|12796^ASPIRIN|325||MG<cr>
RXR|PO<cr>
RXG|1||199208120459||325<cr>
RXG|2||199208121328||325<cr>
RXG|3||199208122101||325<cr>
RXG|4||199208130503||325<cr>
RXG|5||199208131311||325<cr>
RXG|6||199208132145||325<cr>
DSC<cr>

```

4.9 PHARMACY/TREATMENT ORDERS AND RESULTS TRANSACTION FLOW DIAGRAM

The following are possible routes at a generic site.



1. ORM/RXO:

The Ordering application generates a pharmacy/treatment order (ORM with RXO and possibly additional RXC segments) and sends it to the pharmacy or treatment application, Nursing application, and/or other applications as appropriate at the site.

2. RDE/RXE:

The pharmacy/treatment application may send the RDE, the Pharmacy/Treatment Encoded Order message, a fully encoded order to the Nursing application, Ordering application, and/or other system applications as appropriate at the site.

3. RDS/RXD:

The pharmacy/treatment application may send the RDS, the Pharmacy/Treatment Dispense message, to the Nursing application or other applications as appropriate at the site, each time a medication is dispensed for this order. This message may occur multiple times for each order.

4. RGV/RXG:

The pharmacy application may send the RGV, the Pharmacy/Treatment Give message, to the Nursing application or other applications as appropriate at the site, for each scheduled date/time of administration of a medication for a given order. This message may occur multiple times for each order.

5. RAS/RXA:

The Nursing application (and other applications) can generate the RAS, the pharmacy/treatment Administration Results message, whenever a medication is given to the patient. This message may occur multiple times for each order.

Note:	Sites having a long term clinical data repository may wish to route data to the data repository from copies of all or any of the five messages.
--------------	---

4.10 VACCINE ADMINISTRATION DATA

Immunization registries that maintain vaccination records need to be able to transmit patient-specific records of vaccines administered to other registries to provide access to the record at the time healthcare is given and to allow tracking of progress in reaching age-appropriate immunization coverage. The transmissions will occur as the result of four activities: (1) a query from one system for a patient's vaccination record that is held in another system, (2) a response to a query containing multiple patient matches to the query, (3) a response to a query containing the vaccination record, and (4) an unsolicited update to an immunization registry

These messages permit the transmission of immunization records from care providers to immunization registries, queries of these registries for immunization records, and the return of these immunization records to care providers. Messages containing immunization records carry patient identifying information in the PID segment. They may also carry parent or guardian information in the NK1 segments to help identify a child. The RXA segment is used to report the details of the immunization event: the type of vaccine (e.g., DPT, polio, MMR), the date administered, the sequence (1st, 2nd, etc.), the amount (e.g., 0.5 ml), and location and provider of the immunization. In addition, the RXA provides a place to record the lot number, manufacturer and date of expiration of the immunization. The RXA can also be used to report the fact that a specified immunization was refused. This section includes two tables (0292 and 0227) maintained by the U.S. Centers for Disease Control and Prevention (CDC). These tables are recommended in the U.S. for identifying the immunization in field *RXA-5-administered code* and the vaccine manufacturer in field *RXA-17-substance manufacturer name*.

4.11 QUERIES FOR IMMUNIZATION RECORDS (QRF SEGMENTS)

The VXQ, VXX, and VXR messages defined below incorporate the QRF segment defined at 2.24.5, “QRF - original style query filter segment.” *QRF-5-other query subject filter* is a locally defined filter for use between two systems which mutually agree on a definition. For transferring vaccination administration data, *QRF-5-other QRY subject filter* should be structured as shown in *Figure 4-20* to transmit up to ten separate search “keys.” These search keys are only used to identify one patient’s immunization record. The message provides for a wide variety of “identifying” keys including mother’s and/or father’s name and other identifiers; in some cases such information will be needed to identify a specific patient in the immunization database.

The format of each of the possible “search keys” is given below, and listed in a more structured form in *Figure 4-20*. These keys are transmitted as strings separated by repeat delimiters. The position of the components within *QRF-5-other QRY subject filter* is significant. The requester sends values for all the components that are known.

Components: <patient social security number> ~ <patient birth date> ~ <patient birth state> ~
<patient birth registration number> ~ <patient medicaid number> ~ <mother's name
last^first^middle> ~ <mother's maiden name> ~ <mother's Social Security number> ~
<father's name last^first^middle> ~ <father's Social Security number>

Figure 4-20. QRF-5 usage in vaccination messages

Pos	Component	Data Type	Description/Examples
1	Patient Social Security Number~	ST	In U.S., use SSN, without hyphens between 3rd and 4th digits and 5th and 6th digits, e.g., 123456789. In other countries, universal patient ID such as National Health Service number may be used.
2	Patient Birth Date~	DT	July 4, 1976 = 19760704
3	Patient Birth State~	ID	In U.S., use 2-letter postal code, e.g., IN, NY, CA. In other countries, locally applicable postal table may be used.
4	Patient Birth Registration Number~	ST	State birth certificate number
5	Patient Medicaid Number~	ST	When relevant
6	Mother’s Name Last^First^Middle~	PN	<family name> ^ <given name> ^ <middle name or initial> ^ <suffix> ^ <prefix> ^ <degree>. E.g., Smith^Mary^Elizabeth
7	Mother’s Maiden Name~	ST	Family name of mother before marriage. E.g., Jones
8	Mother’s Social Security Number~	ST	In U.S., use SSN, without hyphens between 3rd and 4th digits and 5th and 6th digits, e.g., 123456789. In other countries, universal patient ID such as National Health Service number may be used.
9	Father’s Name Last^First^Middle~	PN	<family name> ^ <given name> ^ <middle name or initial> ^ <suffix> ^ <prefix> ^ <degree>. E.g., Smith^Thomas^A^Jr
10	Father’s Social Security Number	ST	In U.S., use SSN, without hyphens between 3rd and 4th digits and 5th and 6th digits, e.g., 123456789. In other countries, universal patient ID such as National Health Service number may be used.

For instance, if the requestor knew only the patient’s Social Security number and birthdate, this *QRF-5-other QRY subject filter* would be sent:

| 908723461~19941005 |

If, in addition, the patient’s birth state and mother’s current and maiden name were known, this *QRF-5-other QRY subject filter* would be sent:

| 908723461~19941005~IN~~~HUTCHINS^KATHY^ANN~HARKNESS |

4.12 VACCINE TRIGGER EVENTS AND MESSAGE DEFINITIONS

The message header segment will carry one of four event types at *MSH-9-message type*:

<u>Event</u>	<u>Description</u>
V01	Query for Vaccination Record
V02	Response to Vaccination Query (V01) Returning Multiple PID Matches
V03	Response to Query (V01) Returning Vaccination Record
V04	Unsolicited Update to Vaccination Record

4.12.1 VXQ -query for vaccination record (V01)

Definition: When an immunization registry does not already have the complete patient vaccination record, it will send a query (with a V01 event) for the definitive (last updated) record. Within the definitions for QRD and QRF, certain components are defined according to position in the field, as detailed in Section 4.11, “QUERIES FOR IMMUNIZATION RECORDS (QRF SEGMENTS).” The three-letter code in the leftmost column indicates the segment that is included; the column on the right specifies the chapter in which that segment is fully defined.

The query will follow this format:

<u>VXQ^V01</u>	<u>Vaccination Query</u>	<u>Chapter</u>
MSH	Message Header Segment	2
QRD	Query Definition Segment	2
[QRF]	Query Filter Segment	2

4.12.2 VXX - response to vaccination query returning multiple PID matches (V02)

Definition: In response to a query for the definitive patient vaccination record, the registry holding the record will return it to the registry originating the query.

If the query results in multiple “matches,” i.e., more than one patient record matches the identifiers in the query so that there is no unique identification, the response to the query (with a V02 event) will follow this format. Within the definitions for QRD and QRF, certain components are defined according to position in the field, as detailed in Section 4.11, “QUERIES FOR IMMUNIZATION RECORDS (QRF SEGMENTS).” The three-letter code in the leftmost column indicates the segment that is included; the column on the right specifies the chapter in which that segment is fully defined.

<u>VXX^V02</u>	<u>Returning Multiple PID Matches</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
QRD	Query Definition	2
[QRF]	Query Filter	2
{ PID	Patient Identification	3
[{NK1}]	Next of Kin/Associated Parties	3
}		

4.12.3 VXR - vaccination record response (V03)

Definition: When the patient has been uniquely identified (there is only one “match” to the query), the response to the query (with a V03 event) will follow this format. Within the definitions for QRD and QRF, certain components are defined according to position in the field, as detailed in Section 4.11, “QUERIES FOR IMMUNIZATION RECORDS (QRF SEGMENTS).” The three-letter code in the leftmost column indicates the segment that is included; the column on the right specifies the chapter in which that segment is fully defined.

<u>VXR^V03</u>	<u>Vaccination Response</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
QRD	Query Definition	2
[QRF]	Query Filter	2
PID	Patient Identification	3
[PD1]	Additional Demographics	3
[{{NK1}}]	Next of Kin/Associated Parties	3
[PV1]	Patient Visit	3
[PV2]]	Patient Visit - Additional Info	3
[{{IN1	Insurance	6
[IN2]	Insurance Additional Info	6
[IN3]	Insurance Add'l Info - Cert.	6
}}]		
[{{ [ORC]	Common Order	4
RXA	Pharmacy Administration	4
[RXR]	Pharmacy Route	4
[{{ OBX	Observation/Result	7
[{{NTE}}]	Notes (Regarding Immunization)	2
}}]		
}}]		

4.12.4 VXU - unsolicited vaccination record update (V04)

Definition: When a provider wishes to update the patient's vaccination record being held in a registry, he will transmit an unsolicited update of the record (a V04 trigger event).

An unsolicited update will follow this format. The three-letter code in the leftmost column indicates the segment that is included; the column on the right specifies the chapter in which that segment is fully defined.

<u>VXU^V04</u>	<u>Unsolicited Vaccination Update</u>	<u>Chapter</u>
MSH	Message Header Segment	2
PID	Patient Identification Segment	3
[PD1]	Additional Demographics	3
[{{NK1}}]	Next of Kin/Associated Parties	3
[PV1]	Patient Visit	3
[PV2]]	Patient Visit - Additional Info	3
[{{IN1	Insurance	6
[IN2]	Insurance Additional Info	6
[IN3]	Insurance Add'l Info - Cert.	6
}}]		
[{{ [ORC]	Common Order Segment	4
RXA	Pharmacy Administration Segment	4
[RXR]	Pharmacy Route	4
[{{ OBX	Observation/Result	7
[{{NTE}}]	Notes (Regarding Immunization)	2
}}]		
}}]		

4.13 RXA SEGMENT USAGE IN VACCINE MESSAGES

Figure 4-21. RXA attributes usage

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	4	NM	R			00342	Give Sub-ID Counter
2	4	NM	R			00344	Administration Sub-ID Counter
3	26	TS	R			00345	Date/Time Start of Administration
4	26	TS	R			00346	Date/Time End of Administration
5	100	CE	R		0292	00347	Administered Code
6	20	NM	R			00348	Administered Amount

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SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
7	60	CE	C			00349	Administered Units
8	60	CE	O			00350	Administered Dosage Form
9	200	CE	O	Y		00351	Administration Notes
10	200	XCN	O	Y		00352	Administering Provider
11	200	CM	C			00353	Administered-at Location
12	20	ST	C			00354	Administered Per (Time Unit)
13	20	NM	O			01134	Administered Strength
14	60	CE	O			01135	Administered Strength Units
15	20	ST	O	Y		01129	Substance Lot Number
16	26	TS	O	Y		01130	Substance Expiration Date
17	60	CE	O	Y	0227	01131	Substance Manufacturer Name
18	200	CE	O	Y		01136	Substance Refusal Reason
19	200	CE	O	Y		01123	Indication
20	2	ID	O		0322	01223	Completion Status
21	2	ID	O		0323	01224	Action Code
22	26	TS	O			01225	System Entry Date/Time

4.13.1 Vaccines administered

Use in *RXA-5-administered code* to identify the particular vaccine administered. The codes listed are used by immunization registries in the U.S. Entries will be added as needed to accommodate international requirements.

Table 0292 - Vaccines administered (code = CVX)(parenteral, unless oral is noted)

Code	Description	Vaccine Name/Description
54	Adenovirus, type 4	Adenovirus vaccine, type 4, live, oral
55	Adenovirus, type 7	Adenovirus vaccine, type 7, live, oral
82	Adenovirus, NOS	Adenovirus vaccine, NOS
24	Anthrax	Anthrax vaccine
19	BCG	Bacillus Calmette-Guerin vaccine
27	Botulinum antitoxin	Botulinum antitoxin
26	Cholera	Cholera vaccine
29	CMVIG	Cytomegalovirus immune globulin, intravenous
56	Dengue fever	Dengue fever vaccine
12	Diphtheria antitoxin	Diphtheria antitoxin
28	DT(pediatric)	Diphtheria and tetanus toxoids, adsorbed for pediatric use
20	DTaP	Diphtheria, tetanus, and acellular pertussis vaccine
50	DtaP-Hib	DTaP – <i>Haemophilus influenzae</i> type b conjugate vaccine
01	DTP	Diphtheria, tetanus toxoids and pertussis vaccine
22	DTP-Hib	DTP- <i>Haemophilus influenzae</i> type b conjugate vaccine
57	Hantavirus	Hantavirus vaccine
52	Hep A - adult	Hepatitis A vaccine, adult dosage
83	Hep A, ped/adol, 2 dose	Hepatitis A vaccine, pediatric/ adolescent dosage, 2 dose schedule
84	Hep A, ped/adol, 3 dose	Hepatitis A vaccine, pediatric/ adolescent dosage, 3 dose schedule
31	Hep A, pediatric, NOS	Hepatitis A vaccine, pediatric dosage, NOS
85	Hep A, NOS	Hepatitis A vaccine, NOS
30	HBIG	Hepatitis B immune globulin

Code	Description	Vaccine Name/Description
08	Hep B, adolescent or pediatric	Hepatitis B vaccine, pediatric or pediatric/adolescent dosage
42	Hep B, adolescent/high risk infant	Hepatitis B vaccine, adolescent/high risk infant dosage
43	Hep B, adult	Hepatitis B vaccine, adult dosage
44	Hep B, dialysis	Hepatitis B—dialysis patient dosage
45	Hep B, NOS	Hepatitis B— NOS
58	Hep C	Hepatitis C vaccine
59	Hep E	Hepatitis E vaccine
60	Herpes simplex 2	Herpes simplex type 2 vaccine
46	Hib (PRP-D)	<i>Haemophilus influenzae</i> type b vaccine, PRP-D conjugate
47	Hib (HbOC)	<i>Haemophilus influenzae</i> type b vaccine, HbOC conjugate
48	Hib (PRP-T)	<i>Haemophilus influenzae</i> type b vaccine, PRP-T conjugate
49	Hib (PRP-OMP)	<i>Haemophilus influenzae</i> type b vaccine, PRP-OMP conjugate
17	Hib, NOS	<i>Haemophilus influenzae</i> type b vaccine, conjugate NOS
51	Hib-Hep B	<i>Haemophilus influenzae</i> type b conjugate and Hepatitis-B vaccine
61	HIV	Human immunodeficiency virus vaccine
62	HPV	Human papilloma virus vaccine
86	IG	Immune globulin, intramuscular
87	IGIV	Immune globulin, intravenous
14	IG, NOS	Immune globulin, NOS
15	Influenza—split (incl. purified surface antigen)	Influenza virus vaccine, split virus (incl. purified surface antigen)
16	Influenza—whole	Influenza virus vaccine, whole virus
88	Influenza, NOS	Influenza virus vaccine, NOS
10	IPV	Poliovirus vaccine, inactivated
02	OPV	Poliovirus vaccine, live, oral
89	Polio, NOS	Poliovirus vaccine, NOS
39	Japanese encephalitis	Japanese encephalitis vaccine
63	Junin virus	Junin virus vaccine
64	Leishmaniasis	Leishmaniasis vaccine
65	Leprosy	Leprosy vaccine
66	Lyme disease	Lyme disease vaccine
03	MMR	Measles-mumps-rubella virus vaccine
04	M/R	Measles & rubella virus vaccine
67	Malaria	Malaria vaccine
05	Measles	Measles virus vaccine
68	Melanoma	Melanoma vaccine
32	Meningococcal	Meningococcal polysaccharide vaccine
07	Mumps	Mumps virus vaccine
69	Parainfluenza-3	Parainfluenza-3 virus vaccine
11	Pertussis	Pertussis vaccine
23	Plague	Plague vaccine
33	Pneumococcal	Pneumococcal polysaccharide vaccine
70	Q fever	Q fever vaccine
18	Rabies, intramuscular injection	Rabies vaccine for intramuscular injection
40	Rabies, intradermal injection	Rabies vaccine for intradermal injection
90	Rabies, NOS	Rabies vaccine, NOS

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Code	Description	Vaccine Name/Description
72	Rheumatic fever	Rheumatic fever vaccine
73	Rift Valley fever	Rift Valley fever vaccine
34	RIG	Rabies immune globulin
74	Rotavirus	Rotavirus vaccine, tetravalent, live, oral
71	RSV-IGIV	Respiratory syncytial virus immune globulin, intravenous
06	Rubella	Rubella virus vaccine
38	Rubella/Mumps	Rubella and Mumps virus vaccine
75	Smallpox	Smallpox vaccine
76	<i>Staphylococcus</i> bacterio lysate	<i>Staphylococcus</i> bacteriophage lysate
09	Td (Adult)	Tetanus and diphtheria toxoids, adsorbed for adult use
35	Tetanus toxoid	Tetanus toxoid
77	Tick-borne encephalitis	Tick-borne encephalitis vaccine
13	TIG	Tetanus immune globulin
78	Tularemia vaccine	Tularemia vaccine
25	Typhoid—oral	Typhoid vaccine, live, oral
41	Typhoid—parenteral	Typhoid vaccine, parenteral, other than acetone killed, dried
53	Typhoid, parenteral, AKD (U.S. military)	Typhoid vaccine, parenteral, acetone killed, dried (U.S. Military)
91	Typhoid, NOS	Typhoid vaccine, NOS
79	Vaccinia immune globulin	Vaccinia immune globulin
21	Varicella	Varicella virus vaccine
81	VEE, inactivated	Venezuelan equine encephalitis virus vaccine, inactivated
80	VEE, live	Venezuelan equine encephalitis virus vaccine, live, attenuated
92	VEE, NOS	Venezuelan equine encephalitis virus vaccine, NOS
36	VZIG	Varicella zoster immune globulin
37	Yellow fever	Yellow fever vaccine
NOS=not otherwise specified; avoid using NOS codes except to record historical records that lack the indicated specificity.		

The codes in *HL7 table 0292* represent the first revision (January 14, 1998) of the initial content of the external code set CVX. Since vaccines may have to be added to this table more quickly than new versions of HL7 are released, this code system will be maintained by the Centers for Disease Control and Prevention. (Contact the Chief, Systems Development Branch, National Immunization Program, Centers for Disease Control and Prevention, 1600 Clifton Road, MS E-62, Atlanta, GA 30333; 1-800-799-7062, <http://www.cdc.gov/nip/registry>.) When using this code system to identify vaccines, the coding system component of the CE field should be valued as “CVX”, not as “HL70292.”

4.13.2 Vaccine manufacturer

Use in *RXA-17-substance manufacturer name* to identify the manufacturer or distributor of the particular vaccine administered. The codes listed are used by immunization registries in the U.S. Entries will be added as needed to accommodate international requirements.

Table 0227 - Manufacturers of vaccines (code=MVX)

Code	Vaccine Manufacturer
AB	Abbott Laboratories

Code	Vaccine Manufacturer
AD	Adams Laboratories
ALP	Alpha Therapeutic Corporation
AR	Armour (Inactive – use CEN)
AVI	Aviron
BA	Baxter Healthcare Corporation
BAY	Bayer Corporation (includes Miles, Inc. and Cutter Laboratories)
BP	Berna Products (Inactive – use BPC)
BPC	Berna Products Corporation (includes Swiss Serum and Vaccine Institute Berna)
CEN	Centeon L.L.C. (includes Armour Pharmaceutical Company)
CHI	Chiron Corporation
CON	Connaught (inactive – use PMC)
EVN	Evans Medical Limited
GRE	Greer Laboratories, Inc.
IAG	Immuno International AG
IM	Merieux (inactive – Use PMC)
IUS	Immuno-US, Inc.
JPN	The Research Foundation for Microbial Diseases of Osaka University (BIKEN)
KGC	Korea Green Cross Corporation
LED	Lederle (inactive – use WAL)
MA	Massachusetts Public Health Biologic Laboratories)
MED	Medimmune, Inc.
MIL	Miles (inactive – use BAY)
MIP	Michigan Biologic Products Institute
MSD	Merck & Co., Inc.
NAB	NABI (formerly North American Biologicals, Inc.)
NYB	New York Blood Center
NAV	North American Vaccine, Inc.
NOV	Novartis Pharmaceutical Corporation
OTC	Organon Teknika Corporation
ORT	Ortho Diagnostic Systems, Inc.
PD	Parkdale Pharmaceuticals (formerly Parke-Davis)
PMC	Pasteur Merieux Connaught (includes Connaught Laboratories and Pasteur Merieux)
PRX	Praxis Biologics (inactive – use WAL)
SCL	Sclavo, Inc.
SI	Swiss Serum and Vaccine Inst. (inactive – use BPC)
SKB	SmithKline Beecham
USA	United States Army Medical Research and Materiel Command
WA	Wyeth-Ayerst (inactive – use WAL)
WAL	Wyeth-Ayerst (includes Wyeth-Lederle Vaccines and Pediatrics, Wyeth Laboratories, Lederle Laboratories, and Praxis Biologics)
OTH	Other

Code	Vaccine Manufacturer
UNK	Unknown manufacturer

The codes in *HL7 table 0227* represent the first revision (January 14, 1998) of the initial content of the external code set MVX. Since vaccine manufacturers may have to be added to this table more quickly than new versions of HL7 are released, this code system will be maintained by the Centers for Disease Control and Prevention. (Contact the CDC, as noted in Section 4.13.1, “Vaccines administered”). When using this code system to identify vaccines, the coding system component of the CE field should be valued as “MVX”, not as “HL70227.”

4.14 VACCINATION - EXAMPLE TRANSACTIONS

4.14.1 VXQ - query for vaccination record

```
MSH|^~\&||GAVACREC||AZVACREC|199505221605||VXQ^V01|950522GA40|T|2.3.1|||AL<cr>
QRD|199505221605|R|I|950522GA40||1000^RD|JONES^JOHN^RICHARD|VXI|SIIS<cr>
QRF|AZVACREC|||256946789~19900607~CA~CA99999999~88888888~JONES^MARY^SUE~SMITH~
898666725~JONES^MATHEW^LEE~822546618<cr>
```

In this query, Georgia Vaccine Records is sending a request to Arizona Vaccine Records for an immunization record. The request is being sent on May 22, 1995, at 4:05 p.m. Identifiers other than patient name are defined in the query by giving positional meaning to the repeat delimiters in the *QRF-5-other query subject filter* segment, as specified in 4.11, “QUERIES FOR IMMUNIZATION RECORDS (QRF SEGMENTS).” The responding system is expected to return all query items in their response. The *QRD* segment, at *QRD-8-who subject filter*, identifies the patient name. *QRD-9-what subject filter* reflects the new *VXI* category of Vaccination Information. *QRD-10-what department data code* shows *SIIS*.

In our example, we are sending a query for the record of John Richard Jones. The patient’s Social Security number is 256-94-6789; the patient birth date is June 7, 1990; the patient birth state is CA; the patient birth registration number is CA99999999; and the patient Medicaid number is 88888888. The patient’s mother is Mary Sue Jones, whose maiden name is Smith. Her Social Security number is 898-66-6725. The patient’s father is Mathew Lee Jones, and the father’s Social Security number is 822-54-6618.

4.14.2 VXX - response to vaccination query with multiple PID matches

```
MSH|...
MSA|...
QRD|199505221605|R|I|950522GA40||1000^RD|JONES^RICHARD|VXI|SIIS<cr>
QRF|AZVACREC|||~~~~~JONES^MARY<cr>
PID|1|123456789^^^AZ||JONES^RICHARD^ROBERT||19910607|M^MALE^HL70001<cr>
NK1||JONES^MARY^SUE|M^MOTHER^HL70063|||265909900^^^SS<cr>
PID|2|987654321^^^AZ||JONES^JOHN^RICHARD||19900607|M^MALE^HL70001<cr>
NK1|1|JONES^MARY|M^MOTHER^HL70063|||898666725^^^SS<cr>
NK1|2|JONES^MATHEW^LEE|F^FATHER^HL70063|||822546618^^^SS
<cr>
PID|3|231453675^^^AZ||JONES^RICHARD^CURTIS||19901225|M^MALE^HL70001<cr>
NK1|1|JONES^MARY^ANN|M^MOTHER^HL70063|||288763102<cr>
PID|4|908786564^^^AZ||JONES^RICHARD^ALAN||19870205|M^MALE^HL70001<cr>
NK1|1|JONES^MARY^SUE|M^MOTHER^HL70063|||190966725^^^SS<cr>
NK1|2|JONES^CHRISTOPHER|F^FATHER^HL70063|||786118768^^^SS
<cr>
```

The example shows the response when multiple PIDs match a query. In the QRD, the sender is querying Arizona Vaccine Records for information on Richard Jones; the only further identifying information supplied in the QRF is that the mother's name is Mary Jones. For each record which matches this information, a PID is returned along with its associated NK1. The system initiating the query may then re-send a more precise query.

4.14.3 VXR - vaccination record response

```
MSH|...
MSA|...
QRD|...
QRF|...
PID|...
NK1|1|JONES^MARY^SUE|M^MOTHER^HL70063|||898666725^^^SS<cr>
>
NK1|2|JONES^MATHEW^LEE|F^FATHER^HL70063|||822546618^^^SS<cr>
ORC|RE|V43^AZVAC<cr>
RXA|0|4|19910607||01^DTP^CVX|.5|MG^^ISO+||1234567891^GOLDSTEIN^HAROLD^A^^DR|
&&&CHILD HEALTHCARE CLINIC^101 MAIN STREET&&METROPOLIS&AZ|||W46932777|19910813|
SKB^SMTHKLINE^MX<cr>
ORC|RE|V44^AZVAC<cr>
RXA|0|1|19910607||03^MMR^CVX|.5|MG^^ISO+||1234567891^GOLDSTEIN^HAROLD^A^^DR|
&&&CHILD HEALTHCARE CLINIC^101 MAIN STREET&&METROPOLIS&AZ|||W23487909876456|
19910725|MSD^MERCK^MX<cr>
ORC|RE|V87^AZVAC<cr>
RXA|0|5|19950520||01^DTP^CVX|.5|MG^^ISO+||1234567891^GOLDSTEIN^HAROLD^A^^DR|
&&&CHILD HEALTHCARE CLINIC^101 MAIN STREET&&METROPOLIS&AZ|||W22532806|19950705|
SKB^SMTHKLINE^MX<cr>
ORC|RE|V88^AZVAC<cr>
RXA|0|2|19950520||03^MMR^CVX|.5|MG^^ISO+||1234567891^GOLDSTEIN^HAROLD^A^^DR|
&&&CHILD HEALTHCARE CLINIC^101 MAIN
STREET&&METROPOLIS&AZ|||W2341234567|19950630|
MSD^MERCK^MX<cr>
```

The example reflects a vaccination record return as might be expected by a public health agency reporting from one immunization registry to another. It shows repeating RXA segments reporting the first and second doses of MMR and the fourth and fifth doses of DTP, including the manufacturer, lot number, and expiration date. If the vaccination had been refused by the patient or guardian, *RXA-18-substance refusal reason* would record the vaccine refusal reason, utilizing a user-defined table.

4.14.4 VXU - unsolicited vaccination record update

```
MSH|...
PID|...
NK1|...
NK1|...
PV1|...
PV2|...
IN2||||JONES^ALICE^P|909686637A<cr>
ORC|...
```



```
RXA|0|1|19950901115500|19950901115500|03^MR^CVX|.5|MG^^ISO+|||  
1234567891^GOLDSTEIN^HAROLD^A^^DR|&&&CHILD HEALTHCARE CLINIC^101 MAIN  
STREET&&METROPOLIS&AZ|||W23487909876456|19951125|MSD^MERCK^MX<cr>  
RXR|IM^INTRAMUSCULAR^0162|LG^LEFT GLUTEUS MEDIUS^0163<cr>  
OBX|1|CE|1000.3^TEMP. RECTAL^AS4||102.9|DEGF^^ANSI+|||||19950901153000<cr>  
NTE||PATIENT DEVELOPED HIGH FEVER APPROX 3 HRS AFTER VACCINE INJECTION. PROBABLE  
ADVERSE REACTION<cr>
```

This message shows an unsolicited update of a vaccination record. The message type is VXU--Unsolicited Vaccination Record Update, with event code V04 (unsolicited vaccination record update). This example is given to show possible uses for some of the optional segments in the message.

4.14.5 Query acknowledgment with no records found

```
MSH|^~\&||AZVACREC||GAVACREC|19950522130550^S||ACK|950522GA40|T|2.3.1<cr>  
MSA|AA|950522GA40<cr>  
QAK||NF<cr>
```

The example shows the response to a query which was successfully processed, but no qualifying data were found.

4.15 OUTSTANDING ISSUES

None.

5. Query

The information formerly carried in Chapter 5 - Query is now contained in Chapter 2 Control/Query. *This page serves as a placeholder for backward compatibility with HL7 version 2.1.*

6.

Financial Management

Chapter Chair/Editor	Freida B. Hall McKessonHBOC
Editor	Francine L. Kitchen, Ph.D. Software Technologies Corporation

6.1 PURPOSE

The Finance chapter describes patient accounting transactions. Other financial transactions may be added in the future. Financial transactions can be sent between applications either in batches or online. As defined in Chapter 2 on batch segments, multiple transactions may be grouped and sent through all file transfer media or programs when using the HL7 Encoding Rules.

This chapter defines the transactions that take place at the seventh level, that is, the abstract messages. The examples included in this chapter were constructed using the HL7 Encoding Rules.

6.2 PATIENT ACCOUNTING MESSAGE SET

The patient accounting message set provides for the entry and manipulation of information on billing accounts, charges, payments, adjustments, insurance, and other related patient billing and accounts receivable information.

This Standard includes all of the data defined in the National Uniform Billing Field Specifications (as adapted by the National Uniform Billing Commission, May 21, 1982 and revised on November 8, 1984 and 1992). We have excluded state-specific coding and suggest that, where required, it be implemented in site-specific “Z” segments. State-specific fields may be included in the Standard at a later time. In addition, no attempt has been made to define data that have traditionally been required for the proration of charges. The requirement for proration is unique to a billing system and not a part of an interface.

We recognize that a wide variety of billing and accounts receivable systems exist today. Therefore, in an effort to accommodate the needs of the most comprehensive systems, we have defined an extensive set of transaction segments.

6.3 TRIGGER EVENTS AND MESSAGE DEFINITIONS

The triggering events that follow are served by Detail Financial Transaction (DFT), Add/Change Billing Account (BAR), and General Acknowledgment (ACK) messages.

Each trigger event is documented below, along with the applicable form of the message exchange. The notation used to describe the sequence, optionality, and repetition of segments is described in Chapter 2, “Format for Defining Abstract Messages.”

6.3.1 BAR/ACK - add patient account (event P01)

Data are sent from some application (usually a Registration or an ADT system) for example, to the patient accounting or financial system to establish an account for a patient's billing/accounts receivable record. Many of the segments associated with this event are optional. This optionality allows those systems needing these fields to set up transactions that fulfill their requirements and yet satisfy the HL7 requirements.

When an account's start and end dates span a period greater than any particular visit, the P01 (add account) event should be used to transmit the opening of an account. The A01 (admit/visit notification) event can notify systems of the creation of an account as well as notify them of a patient's arrival in the healthcare facility. In order to create a new account without notifying systems of a patient's arrival, use the P01 trigger event.

From Standard Version 2.3 onward, the P01 event should only be used to add a new account that did not exist before, not to update an existing account. The new P05 (update account) event should be used to update an existing account. The new P06 (end account) event should be used to close an account. With the P01 event, *EVN-2-recorded date/time* should contain the account start date.

<u>BAR^P01</u>	<u>Add Billing Account</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
{		
[PV1]	Patient Visit	3
[PV2]	Patient Visit - Additional Info	3
[{DB1}]	Disability Information	3
[{ OBX }]	Observation/Result	7
[{ AL1 }]	Allergy Information	3
[{ DG1 }]	Diagnosis	6
[DRG]	Diagnosis Related Group	6
[{ PR1	Procedures	6
[{ ROL }]	Role	12
}]		
[{ GT1 }]	Guarantor	6
[{ NK1 }]	Next of Kin/Associated Parties	3
[
{		
IN1	Insurance	6
[IN2]	Insurance - Additional Info.	6
[{IN3}]	Insurance - Add'l Info. - Cert.	6
}		
]		
[ACC]	Accident Information	6
[UB1]	Universal Bill Information	6
[UB2]	Universal Bill 92 Information	6
}		

The set ID field in the insurance, diagnosis, and procedure segments should be set the first time these segments are sent and can be used in subsequent transactions to update them.

<u>ACK^P01</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

The error segment will indicate the fields that caused a transaction to be rejected.

6.3.2 BAR/ACK - purge patient accounts (event P02)

Generally, the elimination of all billing/accounts receivable records will be an internal function controlled, for example, by the patient accounting or financial system. However, on occasion, there will be a need to correct an account, or a series of accounts, that may require that a notice of account deletion be sent from

another sub-system and processed, for example, by the patient accounting or financial system. Although a series of accounts may be purged within this one event, we recommend that only one PID segment be sent per event.

<u>BAR^P02</u>	<u>Purge Billing Account</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
{		
PID	Patient Identification	3
[PD1]	Additional Demographics	3
[PV1]	Patient Visit	3
[{DB1}]	Disability Information	3
}		

<u>ACK^P02</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

The error segment indicates the fields that caused a transaction to be rejected.

6.3.3 DFT/ACK - post detail financial transactions (event P03)

The Detail Financial Transaction (DFT) message is used to describe a financial transaction transmitted between systems, that is, to the billing system for ancillary charges, ADT to billing system for patient deposits, etc.

<u>DFT^P03</u>	<u>Detail Financial Transaction</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
[PV1]	Patient Visit	3
[PV2]	Patient Visit - Additional Info	3
[{DB1}]	Disability Information	3
[{OBX}]	Observation/Result	7
{FT1	Financial Transaction	6
[{PR1	Procedure	6
[{ROL}]	Role	12
}]		
}		
[{ DG1 }]	Diagnosis	6
[DRG]	Diagnosis Related Group	6
[{GT1}]	Guarantor	6
[
{		
IN1	Insurance	6
[IN2]	Insurance - Additional Info.	6
[{IN3}]	Insurance - Add'l Info. - Cert.	6
}		
]		
[ACC]	Accident Information	6

Special codes in the Event Type record are used for updating.

<u>ACK^P03</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

The error segment indicates the fields that caused a transaction to be rejected.

6.3.4 QRY/DSR - generate bills and accounts receivable statements (event P04)

For patient accounting systems that support demand billing, the QRY/DSR transaction, as defined in Chapter 2, will provide the mechanism with which to request a copy of the bill for printing or viewing by the requesting system.

Note: This is a display-oriented response. That is why the associated messages are defined in Chapter 2.

6.3.5 BAR/ACK - update account (event P05)

The P05 event is sent when an existing account is being updated. From Standard Version 2.3 onward, the P01 (add account) event should no longer be used for updating an existing account, but only for creating a new account.

<u>BAR^P05</u>	<u>Update Billing Account</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
{		
[PV1]	Patient Visit	3
[PV2]	Patient Visit - Additional Info	3
[{DB1}]	Disability Information	3
[{ OBX }]	Observation/Result	7
[{ AL1 }]	Allergy Information	3
[{ DG1 }]	Diagnosis	6
[DRG]	Diagnosis Related Group	6
[{ PR1	Procedures	6
[{ ROL }]	Role	12
}]		
[{ GT1 }]	Guarantor	6
[{ NK1 }]	Next of Kin/Associated Parties	3
[
{		
IN1	Insurance	6
[IN2]	Insurance - Additional Info.	6
[{IN3}]	Insurance - Add'l Info. - Cert.	6
}		
]		
[ACC]	Accident Information	6
[UB1]	Universal Bill Information	6
[UB2]	Universal Bill 92 Information	6
}		

<u>ACK^P05</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

The error segment indicates the fields that caused a transaction to be rejected.

6.3.6 BAR/ACK - end account (event P06)

The P06 event is a notification that the account is no longer open, that is, no new charges can accrue to this account. This notification is not related to whether or not the account is paid in full. *EVN-2-recorded date/time* must contain the account end date.

<u>BAR^P06</u>	<u>End Billing Account</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
{		
PID	Patient Identification	3

[PV1]	Patient Visit	3
}		

ACK^P06	General Acknowledgment	Chapter
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

The error segment indicates the fields that caused a transaction to be rejected.

6.4 MESSAGE SEGMENTS

6.4.1 FT1 - financial transaction segment

The FT1 segment contains the detail data necessary to post charges, payments, adjustments, etc. to patient accounting records.

Figure 6-1. FT1 attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	SI	O			00355	Set ID - FT1
2	12	ST	O			00356	Transaction ID
3	10	ST	O			00357	Transaction Batch ID
4	26	TS	R			00358	Transaction Date
5	26	TS	O			00359	Transaction Posting Date
6	8	IS	R		0017	00360	Transaction Type
7	80	CE	R		0132	00361	Transaction Code
8	40	ST	B			00362	Transaction Description
9	40	ST	B			00363	Transaction Description - Alt
10	6	NM	O			00364	Transaction Quantity
11	12	CP	O			00365	Transaction Amount - Extended
12	12	CP	O			00366	Transaction Amount - Unit
13	60	CE	O		0049	00367	Department Code
14	60	CE	O		0072	00368	Insurance Plan ID
15	12	CP	O			00369	Insurance Amount
16	80	PL	O			00133	Assigned Patient Location
17	1	IS	O		0024	00370	Fee Schedule
18	2	IS	O		0018	00148	Patient Type
19	60	CE	O	Y	0051	00371	Diagnosis Code - FT1
20	120	XCN	O	Y	0084	00372	Performed By Code
21	120	XCN	O	Y		00373	Ordered By Code
22	12	CP	O			00374	Unit Cost
23	22	EI	O			00217	Filler Order Number
24	120	XCN	O	Y		00765	Entered By Code
25	80	CE	O		0088	00393	Procedure Code
26	80	CE	O	Y	0340	01316	Procedure Code Modifier

6.4.1.0 FT1 field definitions

6.4.1.1 Set ID - FT1 (SI) 00355

Definition: This field contains the number that identifies this transaction. For the first occurrence of the segment the sequence number shall be 1, for the second occurrence it shall be 2, etc.

6.4.1.2 Transaction ID (ST) 00356

Definition: This field contains a number assigned by the sending system for control purposes. The number can be returned by the receiving system to identify errors.

6.4.1.3 Transaction batch ID (ST) 00357

Definition: This field uniquely identifies the batch in which this transaction belongs.

6.4.1.4 Transaction date (TS) 00358

Definition: This field contains the date of the transaction. For example, this field would be used to identify the date a procedure, item, or test was conducted or used. It may be defaulted to today's date.

6.4.1.5 Transaction posting date (TS) 00359

Definition: This field contains the date of the transaction that was sent to the financial system for posting.

6.4.1.6 Transaction type (IS) 00360

Definition: This field contains the code that identifies the type of transaction. Refer to *user-defined table 0017 - Transaction type* for suggested values.

User-defined Table 0017 - Transaction type

Values	Description
CG	Charge
CD	Credit
PY	Payment
AJ	Adjustment

6.4.1.7 Transaction code (CE) 00361

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the code assigned by the institution for the purpose of uniquely identifying the transaction. For example, this field would be used to uniquely identify a procedure, supply item, or test for charging purposes. Refer to *user-defined table 0132 - Transaction code* for suggested values. See Chapter 7 for a discussion of the universal service ID.

6.4.1.8 Transaction description (ST) 00362

Definition: ***This field has been retained for backward compatibility only.*** As of Version 2.3, *FT1-7-transaction code* contains a component for the transaction description. When used for backward compatibility, *FT1-8-transaction description* contains a description of the transaction associated with the code entered in *FT1-7-transaction code*.

6.4.1.9 Transaction description - alt (ST) 00363

Definition: ***This field has been retained for backward compatibility only.*** As of Version 2.3, *FT1-7-transaction code* contains a component for the alternate transaction description. When used for backward compatibility, *FT1-9-transaction description-alt* contains an alternate description of the transaction associated with the code entered in *FT1-7-transaction code*.

6.4.1.10 Transaction quantity (NM) 00364

Definition: This field contains the quantity of items associated with this transaction.

6.4.1.11 Transaction amount - extended (CP) 00365

Components: <price (MO)> ^ <price type (ID)> ^ <from value (NM)> ^ <to value (NM)> ^ <range units (CE)> ^ <range type (ID)>

Subcomponents of price: <quantity (NM)> & <denomination (ID)>

Subcomponents of range units: <identifier (ST)> & <text (ST)> & <name of coding system (ST)> & <alternate identifier (ID)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Definition: This field contains the amount of a transaction. It may be left blank if the transaction is automatically priced. Total price for multiple items.

6.4.1.12 Transaction amount - unit (CP) 00366

Components: <price (MO)> ^ <price type (ID)> ^ <from value (NM)> ^ <to value (NM)> ^ <range units (CE)> ^ <range type (ID)>

Subcomponents of price: <quantity (NM)> & <denomination (ID)>

Subcomponents of range units: <identifier (ST)> & <text (ST)> & <name of coding system (ST)> & <alternate identifier (ID)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Definition: This field contains the unit price of a transaction. Price of a single item.

6.4.1.13 Department code (CE) 00367

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the department code that controls the transaction code described above. *User-defined table 0049 - Department code is used for the user-defined table of values for this field.*

6.4.1.14 Insurance plan ID (CE) 00368

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the identifier of the primary insurance plan with which this transaction should be associated. *User-defined table 0072 - Insurance plan ID is used as the HL7 identifier for the user-defined table of values for this field.*

6.4.1.15 Insurance amount (CP) 00369

Components: <price (MO)> ^ <price type (ID)> ^ <from value (NM)> ^ <to value (NM)> ^ <range units (CE)> ^ <range type (ID)>

Subcomponents of price: <quantity (NM)> & <denomination (ID)>

Subcomponents of range units: <identifier (ST)> & <text (ST)> & <name of coding system (ST)> & <alternate identifier (ID)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Definition: This field contains the amount to be posted to the insurance plan referenced above.

6.4.1.16 Assigned patient location (PL) 00133

Components: <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <person location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <location description (ST)>

Subcomponents of facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the current patient location. This can be the location of the patient when the charge item was ordered or when the charged service was rendered. For the current assigned patient location, use *PVI-3-assigned patient location*.

6.4.1.17 Fee schedule (IS) 00370

Definition: This field contains the code used to select the appropriate fee schedule to be used for this transaction posting. *User-defined table 0024 - Fee schedule is the HL7 identifier for the user-defined table of values for this field.*

6.4.1.18 Patient type (IS) 00148

Definition: This field contains the type code assigned to the patient for this episode of care (visit or stay). *User-defined table 0018 - Patient type is used as the HL7 identifier for the user-defined table of values for this field.* This is for use when the patient type for billing purposes is different than the visit patient type in *PVI-18-patient type*.

6.4.1.19 Diagnosis code - FT1 (CE) 00371

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the primary diagnosis code for billing purposes. ICD9-CM is assumed for all diagnosis codes. This is the most current diagnosis code that has been assigned to the patient. ICD10 can also be used. The name of coding system (third component) indicates which coding system is used. *User-defined table 0051 - Diagnosis code is used as the HL7 identifier for the user-defined table of values for this field.*

6.4.1.20 Performed by code (XCN) 00372

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code(ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the composite number/name of the person/group that performed the test/procedure/transaction, etc. This is the service provider. *User-defined table 0084 - Performed by is used as the HL7 identifier for the user-defined table of values for this field.* Multiple names and identifiers for the same practitioner may be sent in this field, not multiple practitioners. The legal name is assumed to be in the first repetition. When the legal name is not sent, a repeat delimiter must be sent first for the first repetition. The components of this field are described in Chapter 2.

6.4.1.21 Ordered by code (XCN) 00373

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code(ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the composite number/name of the person/group that ordered the test/ procedure/transaction, etc. Multiple names and identifiers for the same practitioner may be sent in this field, not multiple practitioners. The legal name is assumed to be in the first repetition. When the legal name is not sent, a repeat delimiter must be sent first for the first repetition. The components for this field are described in Chapter 2.

6.4.1.22 Unit cost (CP) 00374

Components: <price (MO)> ^ <price type (ID)> ^ <from value (NM)> ^ <to value (NM)> ^ <range units (CE)> ^ <range type (ID)>

Subcomponents of price: <quantity (NM)> & <denomination (ID)>

Subcomponents of range units: <identifier (ST)> & <text (ST)> & <name of coding system (ST)> & <alternate identifier (ID)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Definition: This field contains the unit cost of transaction. The cost of a single item.

6.4.1.23 Filler order number (EI) 00217

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field is used when the billing system is requesting observational reporting justification for a charge. This is the number used by a filler to uniquely identify a result. See Chapter 4 for a complete description.

6.4.1.24 Entered by code (XCN) 00765

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field identifies the composite number/name of the person who entered the insurance information.

6.4.1.25 Procedure code (CE) 00393

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains a unique identifier assigned to the procedure, if any, associated with the charge. *User-defined table 0088 - Procedure code is used as the HL7 identifier for the user-defined table of values for this field.* This field is a CE data type for compatibility with clinical and ancillary systems.

6.4.1.26 Procedure code modifier (CE) 01316

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the procedure code modifier to the procedure code reported in *FTI-25-procedure code*, when applicable. Procedure code modifiers are defined by regulatory agencies such as HCFA and the AMA. Multiple modifiers may be reported. Refer to *user-defined table 0340 - Procedure code modifier* for suggested values.

6.4.2 DG1 - diagnosis segment

The DG1 segment contains patient diagnosis information of various types, for example, admitting, primary, etc. The DG1 segment is used to send multiple diagnoses (for example, for medical records encoding). It is also used when the *FT1-19-diagnosis code-FT1* does not provide sufficient information for a billing system. This diagnosis coding should be distinguished from the clinical problem segment used by caregivers to manage the patient (see Chapter 12, Patient Care). Coding methodologies are also defined.

Figure 6-2. DG1 attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	SI	R			00375	Set ID - DG1
2	2	ID	(B) R		0053	00376	Diagnosis Coding Method
3	60	CE	O		0051	00377	Diagnosis Code - DG1
4	40	ST	B			00378	Diagnosis Description
5	26	TS	O			00379	Diagnosis Date/Time
6	2	IS	R		0052	00380	Diagnosis Type
7	60	CE	B		0118	00381	Major Diagnostic Category
8	60	CE	B		0055	00382	Diagnostic Related Group
9	1	ID	B		0136	00383	DRG Approval Indicator
10	2	IS	B		0056	00384	DRG Grouper Review Code
11	60	CE	B		0083	00385	Outlier Type
12	3	NM	B			00386	Outlier Days
13	12	CP	B			00387	Outlier Cost
14	4	ST	B			00388	Grouper Version And Type
15	2	ID	O		0359	00389	Diagnosis Priority
16	60	XCN	O	Y		00390	Diagnosing Clinician
17	3	IS	O		0228	00766	Diagnosis Classification
18	1	ID	O		0136	00767	Confidential Indicator
19	26	TS	O			00768	Attestation Date/Time

6.4.2.0 DG1 field definitions

6.4.2.1 Set ID - DG1 (SI) 00375

Definition: This field contains the number that identifies this transaction. For the first occurrence of the segment the sequence number shall be 1, for the second occurrence it shall be 2, etc.

6.4.2.2 Diagnosis coding method (ID) 00376

Definition: ***This field has been retained for backward compatibility only.*** Use the components of *DG1-3-diagnosis code-DG1* instead of this field. When used for backward compatibility, ICD9 is the recommended coding methodology. Refer to *HL7 table 0053 - Diagnosis coding method* for valid values.

6.4.2.3 Diagnosis code - DG1 (CE) 00377

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: Use this field instead of *DG1-2-diagnosis coding method* and *DG1-4-diagnosis description*. (Those two fields have been retained for backward compatibility only.) *DG1-3-diagnosis code DG1* contains the diagnosis code assigned to this diagnosis. *User-defined table 0051- Diagnosis code is used as the HL7 identifier for the user-defined table of values for this field.* This field is a CE data type for compatibility with clinical and ancillary systems.

See Chapter 7 for suggested diagnosis codes. For the name of the coding system, refer to Chapter 7, Section 7.14, "Coding schemes," *Figure 7-2-Diagnostic Coding Schemes*.

6.4.2.4 Diagnosis description (ST) 00378

Definition: ***This field has been retained for backward compatibility only.*** Use the components of *DG1-3-diagnosis code-DG1* field instead of this field. When used for backward compatibility, *DG1-4-diagnosis description* contains a description that best describes the diagnosis.

6.4.2.5 Diagnosis date/time (TS) 00379

Definition: This field contains the date/time that the diagnosis was determined.

6.4.2.6 Diagnosis type (IS) 00380

Definition: This field contains a code that identifies the type of diagnosis being sent. Refer to *user-defined table 0052 - Diagnosis type*. This field should no longer be used to indicate “DRG” because the DRG fields have moved to the new DRG segment.

User-defined Table 0052 - Diagnosis type

Values	Description
A	Admitting
W	Working
F	Final

6.4.2.7 Major diagnostic category (CE) 00381

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: ***This field has been retained for backward compatibility only.*** This field should only be used in a master file transaction. *User-defined table 0118 - Major diagnostic category is used as the HL7 identifier for the user-defined table of values for this field.*

6.4.2.8 Diagnostic related group (CE) 00382

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: ***This field has been retained for backward compatibility only.*** This field has moved to the new DRG segment. It contains the DRG for the transaction. Interim DRG's could be determined for an encounter. *User-defined table 0055 - DRG code is used as the HL7 Identifier for the user-defined table of values for this field.*

6.4.2.9 DRG approval indicator (ID) 00383

Definition: ***This field has been retained for backward compatibility only.*** This field has moved to the new DRG segment. This field indicates if the DRG has been approved by a reviewing entity. Refer to *HL7 table 0136 - Yes/no indicator* for valid values.

6.4.2.10 DRG grouper review code (IS) 00384

Definition: ***This field has been retained for backward compatibility only.*** This field has moved to the new DRG segment. *User-defined table 0056 - DRG grouper review code is used as the HL7 identifier for the user-defined table of values for this field.* This code indicates that the grouper results have been reviewed and approved.

6.4.2.11 Outlier type (CE) 00385

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: ***This field has been retained for backward compatibility only.*** This field has moved to the new DRG segment. When used for backward compatibility, this field contains the type of outlier that has been paid. Refer to *user-defined table 0083 - Outlier type* for suggested values.

6.4.2.12 Outlier days (NM) 00386

Definition: ***This field has been retained for backward compatibility only.*** This field has moved to the new DRG segment. When used for backward compatibility, this field contains the number of days that have been approved for an outlier payment.

6.4.2.13 Outlier cost (CP) 00387

Components: <price (MO)> ^ <price type (ID)> ^ <from value (NM)> ^ <to value (NM)> ^ <range units (CE)> ^ <range type (ID)>

Subcomponents of price: <quantity (NM)> & <denomination (ID)>

Subcomponents of range units: <identifier (ST)> & <text (ST)> & <name of coding system (ST)> & <alternate identifier (ID)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Definition: ***This field has been retained for backward compatibility only.*** This field has moved to the new DRG segment. When used for backward compatibility, this field contains the amount of money that has been approved for an outlier payment.

6.4.2.14 Grouper version and type (ST) 00388

Definition: ***This field has been retained for backward compatibility only.*** This field has moved to the new DRG segment; refer to the field definition 6.4.3.0. When used for backward compatibility, this field contains the grouper version and type.

6.4.2.15 Diagnosis priority (ID) 00389

Definition: This field contains the number that identifies the significance or priority of the diagnosis code. Refer to *HL7 table 0359 – Diagnosis priority* for valid values.

Table 0359 – Diagnosis priority

Value	Description
0	not included in diagnosis ranking
1	the primary diagnosis
2 and higher	for ranked secondary diagnoses

6.4.2.16 Diagnosing clinician (XCN) 00390

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the individual responsible for generating the diagnosis information. Multiple names and identifiers for the same person may be sent in this field, not multiple diagnosing clinicians.

The legal name is assumed to be in the first repetition. When the legal name is not sent, a repeat delimiter must be sent first for the first repetition. The components for this field are described in Chapter 2.

6.4.2.17 Diagnosis classification (IS) 00766

Definition: This field indicates if the patient information is for a diagnosis or a non-diagnosis code. Refer to *user-defined table 0228 - Diagnosis classification* for suggested values.

User-defined Table 0228 - Diagnosis classification

Value	Description
C	Consultation
D	Diagnosis
M	Medication (antibiotic)
O	Other
R	Radiological scheduling (not using ICDA codes)
S	Sign and symptom
T	Tissue diagnosis
I	Invasive procedure not classified elsewhere (I.V., catheter, etc.)

6.4.2.18 Confidential indicator (ID) 00767

Definition: This field indicates whether the diagnosis is confidential. Refer to *HL7 table 0136 - Yes/no indicator* for valid values.

Y the diagnosis is a confidential diagnosis

N the diagnosis does not contain a confidential diagnosis

6.4.2.19 Attestation date/time (TS) 00768

Definition: This field contains the time stamp that indicates the date and time that the attestation was signed.

6.4.3 DRG - diagnosis related group segment

The DRG segment contains diagnoses-related grouping information of various types. The DRG segment is used to send the DRG information, for example, for billing and medical records encoding.

Figure 6-3. DRG attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	60	CE	O		0055	00382	Diagnostic Related Group
2	26	TS	O			00769	DRG Assigned Date/Time
3	1	ID	O		0136	00383	DRG Approval Indicator
4	2	IS	O		0056	00384	DRG Grouper Review Code
5	60	CE	O		0083	00385	Outlier Type
6	3	NM	O			00386	Outlier Days
7	12	CP	O			00387	Outlier Cost
8	1	IS	O		0229	00770	DRG Payor
9	9	CP	O			00771	Outlier Reimbursement
10	1	ID	O		0136	00767	Confidential Indicator

6.4.3.0 DRG field definitions

6.4.3.1 Diagnostic related group (CE) 00382

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the DRG for the transaction. Interim DRG's could be determined for an encounter. For the identifier component, *user-defined table 0055-DRG is used as the identifier for the user-defined table of values for this field.* For the name of coding system component, send the grouper version and type.

6.4.3.2 DRG assigned date/time (TS) 00769

Definition: This field contains the time stamp to indicate the date and time that the DRG was assigned.

6.4.3.3 DRG approval indicator (ID) 00383

Definition: This field indicates if the DRG has been approved by a reviewing entity. Refer to *HL7 table 0136 - Yes/no indicator* for valid values.

6.4.3.4 DRG grouper review code (IS) 00384

Definition: *User-defined table 0056 - DRG grouper review code is used as the HL7 identifier for the user-defined table of values for this field.* This code indicates that the grouper results have been reviewed and approved.

6.4.3.5 Outlier type (CE) 00385

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: Refer to *user-defined table 0083 - Outlier type* for suggested values. Refers to the type of outlier that has been paid.

User-defined Table 0083 - Outlier type

Values	Description
D	Outlier days
C	Outlier cost

6.4.3.6 Outlier days (NM) 00386

Definition: This field contains the number of days that have been approved as an outlier payment.

6.4.3.7 Outlier cost (CP) 00387

Components: <price (M0)> ^ <price type (ID)> ^ <from value (NM)> ^ <to value (NM)> ^ <range units (CE)> ^ <range type (ID)>

Subcomponents of price: <quantity (NM)> & <denomination (ID)>

Subcomponents of range units: <identifier (ST)> & <text (ST)> & <name of coding system (ST)> & <alternate identifier (ID)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Definition: This field contains the amount of money that has been approved for an outlier payment.

6.4.3.8 DRG payor (IS) 00770

Definition: This field indicates the associated DRG Payor. Refer to *user-defined table 0229 - DRG payor* for suggested values.

User-defined Table 0229 - DRG payor

Value	Description
M	Medicare
C	Champus
G	Managed Care Organization

6.4.3.9 Outlier reimbursement (CP) 00771

Components: <price (M0)> ^ <price type (ID)> ^ <from value (NM)> ^ <to value (NM)> ^ <range units (CE)> ^ <range type (ID)>

Subcomponents of price: <quantity (NM)> & <denomination (ID)>

Subcomponents of range units: <identifier (ST)> & <text (ST)> & <name of coding system (ST)> & <alternate identifier (ID)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Definition: Where applicable, the outlier reimbursement amount indicates the part of the total reimbursement designated for reimbursement of outlier conditions (day or cost).

6.4.3.10 Confidential indicator (ID) 00767

Definition: This field indicates if the DRG contains a confidential diagnosis. Refer to *HL7 table 0136 - Yes/no indicator* for valid values.

Y the DRG contains a confidential diagnosis

N the DRG does not contain a confidential diagnosis

6.4.4 PR1 - procedures segment

The PR1 segment contains information relative to various types of procedures that can be performed on a patient. The PR1 segment can be used to send procedure information, for example: Surgical, Nuclear Medicine, X-ray with contrast, etc. The PR1 segment is used to send multiple procedures, for example, for medical records encoding or for billing systems.

Figure 6-4. PR1 attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	SI	R			00391	Set ID - PR1
2	2	IS	(B) R		0089	00392	Procedure Coding Method
3	80	CE	R		0088	00393	Procedure Code
4	40	ST	B			00394	Procedure Description
5	26	TS	R			00395	Procedure Date/Time
6	2	IS	R		0230	00396	Procedure Functional Type
7	4	NM	O			00397	Procedure Minutes
8	120	XCN	B	Y	0010	00398	Anesthesiologist
9	2	IS	O		0019	00399	Anesthesia Code
10	4	NM	O			00400	Anesthesia Minutes
11	120	XCN	B	Y	0010	00401	Surgeon
12	230	XCN	B	Y	0010	00402	Procedure Practitioner
13	60	CE	O		0059	00403	Consent Code
14	2	NM	O			00404	Procedure Priority
15	80	CE	O		0051	00772	Associated Diagnosis Code
16	80	CE	O	Y	0340	01316	Procedure Code Modifier

6.4.4.0 PR1 field definitions

6.4.4.1 Set ID - PR1 (SI) 00391

Definition: This field contains the number that identifies this transaction. For the first occurrence of the segment the sequence number shall be 1, for the second occurrence it shall be 2, etc.

6.4.4.2 Procedure coding method (IS) 00392

Definition: *This field has been retained for backward compatibility only.* Use the components of *PR1-3-procedure code* instead of this field.

When used for backward compatibility, *PR1-2-procedure coding method* contains the methodology used to assign a code to the procedure (CPT4, for example). If more than one coding method is needed for a single procedure, this field and the associated values in *PR1-3-procedure code* and *PR1-4-procedure description* may repeat. In this instance, the three fields (*PR1-2* through *4*) are directly associated with one another. *User-defined table 0089 - Procedure coding is used as the HL7 identifier for the user-defined table of values for this field.*

6.4.4.3 Procedure code (CE) 00393

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: Use this field instead of *PR1-2-procedure coding method* and *PR1-4-procedure description*. Those two fields have been retained for backward compatibility only. This field contains a unique identifier assigned to the procedure. *User-defined table 0088 - Procedure code is used as the HL7 identifier for the user-defined table of values for this field.* This field is a CE data type for compatibility with clinical and ancillary systems.

6.4.4.4 Procedure description (ST) 00394

Definition: ***This field has been retained for backward compatibility only.*** Use the components of *PR1-3-procedure code* instead of this field. The field contains a text description that describes the procedure.

6.4.4.5 Procedure date/time (TS) 00395

Definition: This field contains the date/time that the procedure was performed.

6.4.4.6 Procedure functional type (IS) 00396

Definition: This field contains the optional code that further defines the type of procedure. Refer to *user-defined table 0230 - Procedure functional type* for suggested values.

User-defined Table 0230 - Procedure functional type

Value	Description
A	Anesthesia
P	Procedure for treatment (therapeutic, including operations)
I	Invasive procedure not classified elsewhere (e.g., IV, catheter, etc.)
D	Diagnostic procedure

6.4.4.7 Procedure minutes (NM) 00397

Definition: This field indicates the length of time in whole minutes that the procedure took to complete.

6.4.4.8 Anesthesiologist (XCN) 00398

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: HL7 has introduced the ROL segment to report a wide range of practitioner roles related to a single procedure. This segment is described in Chapter 12. When using trigger events introduced in HL7 Version 2.3, it is recommended that the ROL segment be used to report all practitioner roles related to the procedure.

However, in order to maintain backward compatibility, the practitioner roles existing in HL7 Version 2.2 (*PR1-8-anesthesiologist*, *PR1-11-surgeon*, and *PR1-12-procedure practitioner*) should also be populated in the PR1 segment as per the HL7 2.2 specifications. You may additionally report the practitioner information in the ROL segment (See Chapter 12, Section 12.3.3, "ROL - role segment").

When this field is used for backward compatibility, the XCN data type applies. It contains the anesthesiologist who administered the anesthesia. Use values in *user-defined table 0010 - Physician ID* for first component. Multiple names and identifiers for the same person should be sent in this field, not multiple anesthesiologists. The legal name is assumed to be in the first repetition. When the legal name is not sent, a repeat delimiter must be sent first for the first repetition. The components for this data type are described in Chapter 2.

6.4.4.9 Anesthesia code (IS) 00399

Definition: This field contains a unique identifier of the anesthesia used during the procedure. *User-defined table 0019 - Anesthesia code is used as the HL7 identifier for the user-defined table of values for this field.*

6.4.4.10 Anesthesia minutes (NM) 00400

Definition: This field contains the length of time in minutes that the anesthesia was administered.

6.4.4.11 Surgeon (XCN) 00401

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code(ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: HL7 has introduced the ROL segment to report a wide range of practitioner roles related to a single procedure. This segment is described in Chapter 12. When using trigger events introduced in HL7 Version 2.3, it is recommended that the ROL segment be used to report all practitioner roles related to the procedure.

However, in order to maintain backward compatibility, the practitioner roles existing in HL7 Version 2.2 (*PR1-8-anesthesiologist, PR1-11-surgeon, and PR1-12-procedure practitioner*) should also be populated in the PR1 segment as per the HL7 2.2 specifications. You may additionally report the practitioner information in the ROL segment (See Chapter 12, Section 12.3.3, “ROL - role segment”).

When this field is being used for backward compatibility, the XCN data type applies. It contains the surgeon who performed the procedure. Use the values in *user-defined table 0010 - Physician ID* for the first component. Multiple names and identifiers for the same person should be sent in this field, not multiple surgeons. The legal name is assumed to be in the first repetition. When the legal name is not sent, a repeat delimiter must be sent first for the first repetition. The components for this data type are described in Chapter 2.

6.4.4.12 Procedure practitioner (XCN) 00402

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code(ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: HL7 has introduced the ROL segment to report a wide range of practitioner roles related to a single procedure. This segment is described in Chapter 12. When using trigger events introduced in HL7 Version 2.3, it is recommended that the ROL segment be used to report all practitioner roles related to the procedure.

However, in order to maintain backward compatibility, the practitioner roles existing in HL7 Version 2.2 (*PR1-8-anesthesiologist*, *PR1-11-surgeon*, and *PR1-12-procedure practitioner*) should also be populated in the PR1 segment as per the HL7 2.2 specifications. You may additionally report the practitioner information in the ROL segment (See Chapter 12, Section 12.3.3, “ROL - role segment”).

This field contains the different types of practitioners associated with this procedure. The ID and name components follow the standard rules defined for a composite name (XCN) field. The last component, identifier type code, indicates which type of procedure practitioner is shown. When the identifier type component is unvalued, it is assumed that the practitioner identified is a resident. Use values in *user-defined table 0010 - Physician ID* for the first component. Refer to *user-defined table 0133 - Procedure practitioner identifier code type* for suggested values for the identifier type code component. The components of this data type are described in Chapter 2.

User-defined Table 0133 - Procedure practitioner identifier code type

Value	Description
AN	Anesthesiologist
PR	Procedure MD (surgeon)
RD	Radiologist
RS	Resident
NP	Nurse Practitioner
CM	Certified Nurse Midwife
SN	Scrub Nurse
PS	Primary Surgeon
AS	Assistant Surgeon

6.4.4.13 Consent code (CE) 00403

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the type of consent that was obtained for permission to treat the patient. *User-defined table 0059 - Consent code is used as the HL7 identifier for the user-defined table of values for this field.*

6.4.4.14 Procedure priority (NM) 00404

Definition: This field contains a number that identifies the significance or priority of the procedure code.

0	the admitting procedure
1	the primary procedure
2 and higher	for ranked secondary procedures

6.4.4.15 Associated diagnosis code (CE) 00772

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the diagnosis which is the primary reason this procedure was performed, e.g., Medicare wants to know for which diagnosis this procedure is submitted for inclusion on HCFA 1500 form. *User-defined table 0051 - Diagnosis code is used as the HL7 identifier for the user-defined table of values for this field.*

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6.4.4.16 Procedure code modifier (CE) 01316

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the procedure code modifier to the procedure code reported in field 3, when applicable. Procedure code modifiers are defined by regulatory agencies such as HCFA and the AMA. Multiple modifiers may be reported. Refer to *user-defined table 0340 - Procedure code modifier* for suggested values.

6.4.5 GT1 - guarantor segment

The GT1 segment contains guarantor (e.g., the person or the organization with financial responsibility for payment of a patient account) data for patient and insurance billing applications.

Figure 6-5. GT1 attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	SI	R			00405	Set ID - GT1
2	59	CX	O	Y		00406	Guarantor Number
3	48	XPN	R	Y		00407	Guarantor Name
4	48	XPN	O	Y		00408	Guarantor Spouse Name
5	106	XAD	O	Y		00409	Guarantor Address
6	40	XTN	O	Y		00410	Guarantor Ph Num-Home
7	40	XTN	O	Y		00411	Guarantor Ph Num-Business
8	26	TS	O			00412	Guarantor Date/Time Of Birth
9	1	IS	O		0001	00413	Guarantor Sex
10	2	IS	O		0068	00414	Guarantor Type
11	80	CE	O		0063	00415	Guarantor Relationship
12	11	ST	O			00416	Guarantor SSN
13	8	DT	O			00417	Guarantor Date - Begin
14	8	DT	O			00418	Guarantor Date - End
15	2	NM	O			00419	Guarantor Priority
16	130	XPN	O	Y		00420	Guarantor Employer Name
17	106	XAD	O	Y		00421	Guarantor Employer Address
18	40	XTN	O	Y		00422	Guarantor Employer Phone Number
19	20	CX	O	Y		00423	Guarantor Employee ID Number
20	2	IS	O		0066	00424	Guarantor Employment Status
21	130	XON	O	Y		00425	Guarantor Organization Name
22	1	ID	O		0136	00773	Guarantor Billing Hold Flag
23	80	CE	O		0341	00774	Guarantor Credit Rating Code
24	26	TS	O			00775	Guarantor Death Date And Time
25	1	ID	O		0136	00776	Guarantor Death Flag
26	80	CE	O		0218	00777	Guarantor Charge Adjustment Code
27	10	CP	O			00778	Guarantor Household Annual Income
28	3	NM	O			00779	Guarantor Household Size
29	20	CX	O	Y		00780	Guarantor Employer ID Number
30	80	CE	O		0002	00781	Guarantor Marital Status Code
31	8	DT	O			00782	Guarantor Hire Effective Date
32	8	DT	O			00783	Employment Stop Date
33	2	IS	O		0223	00755	Living Dependency
34	2	IS	O	Y	0009	00145	Ambulatory Status
35	80	CE	O	Y	0171	00129	Citizenship
36	60	CE	O		0296	00118	Primary Language

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
37	2	IS	O		0220	00742	Living Arrangement
38	80	CE	O		0215	00743	Publicity Code
39	1	ID	O		0136	00744	Protection Indicator
40	2	IS	O		0231	00745	Student Indicator
41	80	CE	O		0006	00120	Religion
42	48	XPN	O	Y		00109	Mother's Maiden Name
43	80	CE	O		0212	00739	Nationality
44	80	CE	O	Y	0189	00125	Ethnic Group
45	48	XPN	O	Y		00748	Contact Person's Name
46	40	XTN	O	Y		00749	Contact Person's Telephone Number
47	80	CE	O		0222	00747	Contact Reason
48	2	IS	O		0063	00784	Contact Relationship
49	20	ST	O			00785	Job Title
50	20	JCC	O		0327/ 0328	00786	Job Code/Class
51	130	XON	O	Y		01299	Guarantor Employer's Organization Name
52	2	IS	O		0295	00753	Handicap
53	2	IS	O		0311	00752	Job Status
54	50	FC	O		0064	01231	Guarantor Financial Class
55	80	CE	O	Y	0005	01291	Guarantor Race

6.4.5.0 GT1 field definitions

6.4.5.1 Set ID - GT1 (SI) 00405

Definition: *GT1-1-set ID*-contains a number that identifies this transaction. For the first occurrence of the segment the sequence shall be 1, for the second occurrence it shall be 2, etc.

6.4.5.2 Guarantor number (CX) 00406

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility (HD)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the primary identifier, or other identifiers, assigned to the guarantor. The assigning authority and identifier type code are strongly recommended for all CX data types.

6.4.5.3 Guarantor name (XPN) 00407

Components: <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <name type code (ID)>

Definition: This field contains the name of the guarantor. Multiple names for the same guarantor may be sent in this field. The legal name is assumed to be in the first repetition. When the legal name is not sent, a repeat delimiter must be sent first for the first repetition. The components for this data type are described in Chapter 2.

Beginning with Version 2.3, if the guarantor is an organization, send a null value ("") in *GT1-3-guarantor name* and put the organization name in *GT1-21-guarantor organization name*. Either guarantor name or guarantor organization name is required.

6.4.5.4 Guarantor spouse name (XPN) 00408

Components: <family name (ST)> ^ <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <name type code (ID)>

Definition: This field contains the name of the guarantor's spouse. Multiple names for the same guarantor spouse may be sent in this field. The legal name is assumed to be in the first repetition. When the legal name is not sent, a repeat delimiter must be sent first for the first repetition. The components for this data type are described in Chapter 2.

6.4.5.5 Guarantor address (XAD) 00409

Components: <street address (ST)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code (ST)> ^ <country (ID)> ^ <address type (ID)> ^ <other geographic designation (ST)> ^ <county/parish code (IS)> ^ <census tract (IS)> ^ <address representation code (ID)>

Definition: This field contains the guarantor's address. Multiple addresses for the same person may be sent in this field. The mailing address is assumed to be in the first repetition. When the mailing address is not sent, a repeat delimiter must be sent first for the first repetition.

6.4.5.6 Guarantor ph num - home (XTN) 00410

components: [NNN] [(999)]999-9999 [X99999] [B99999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Definition: This field contains the guarantor's home phone number. All personal phone numbers for the guarantor may be sent in this field. The primary telephone number is assumed to be in the first repetition. When the primary telephone number is not sent, a repeat delimiter must be sent first for the first repetition. The components for this data type are described in Chapter 2.

6.4.5.7 Guarantor ph num - business (XTN) 00411

Components: [NNN] [(999)]999-9999 [X99999] [B99999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Definition: This field contains the guarantor's business phone number. All business phone numbers for the guarantor may be sent in this field. The primary telephone number is assumed to be in the first repetition. When the primary telephone number is not sent, a repeat delimiter must be sent first for the first repetition. The components for this data type are described in Chapter 2.

6.4.5.8 Guarantor date/time of birth (TS) 00412

Definition: This field contains the guarantor's date of birth.

6.4.5.9 Guarantor sex (IS) 00413

Definition: This field contains the guarantor's gender. Refer to *user-defined table 0001 - Sex* for valid values.

6.4.5.10 Guarantor type (IS) 00414

Definition: This field indicates the type of guarantor, e.g., individual, institution, etc. *User-defined table 0068 - Guarantor type is used as the HL7 identifier for the user-defined table of values for this field.*

6.4.5.11 Guarantor relationship (CE) 00415

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field indicates the relationship of the guarantor with the patient, e.g., parent, child, etc. *User-defined table 0063 – Relationship is used for the user-defined table of values for this field.*

6.4.5.12 Guarantor SSN (ST) 00416

Definition: This field contains the guarantor's social security number.

6.4.5.13 Guarantor date - begin (DT) 00417

Definition: This field contains the date that the guarantor becomes responsible for the patient's account.

6.4.5.14 Guarantor date - end (DT) 00418

Definition: This field contains the date that the guarantor stops being responsible for the patient's account.

6.4.5.15 Guarantor priority (NM) 00419

Definition: This field is used to determine the order in which the guarantors are responsible for the patient's account. "1" = primary guarantor, "2" = secondary guarantor, etc.

6.4.5.16 Guarantor employer name (XPN) 00420

Components: <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <name type code (ID)>

Definition: This field contains the name of the guarantor's employer, if the employer is a person. When the guarantor's employer is an organization, use *GT1-51-guarantor employer's organization name*. Multiple names for the same person may be sent in this field, not multiple employers. The legal name must be sent first in the repetition. When the legal name is not sent, a repeat delimiter must be sent first for the first repetition. The components for this data type are described in Chapter 2.

6.4.5.17 Guarantor employer address (XAD) 00421

Components: <street address (ST)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code (ST)> ^ <country (ID)> ^ <address type (ID)> ^ <other geographic designation (ST)> ^ <county/parish code (IS)> ^ <census tract (IS)> ^ <address representation code (ID)>

Definition: This field contains the guarantor's employer's address. Multiple addresses for the same employer may be sent in this field. The mailing address must be sent first in the repetition. When the mailing address is not sent, a repeat delimiter must be sent first for the first repetition.

6.4.5.18 Guarantor employer phone number (XTN) 00422

Components: [NNN] [(999)]999-9999 [X99999] [B99999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Definition: This field contains the guarantor's employer's phone number. Multiple phone numbers for the same employer may be sent in this field. The primary telephone number must be sent first in the sequence. When the primary telephone number is not sent, a repeat delimiter must be sent first for the first repetition. The components for this data type are described in Chapter 2.

6.4.5.19 Guarantor employee ID number (CX) 00423

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility (HD)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the guarantor's employee number. The assigning authority and identifier type code are strongly recommended for all CX data types.

6.4.5.20 Guarantor employment status (IS) 00424

Definition: This field contains the code that indicates the guarantor's employment status, e.g., full time, part time, self-employed, etc. *User-defined table 0066 - Employment status*

Is used as the HL7 identifier for the user-defined table of values for this field..

6.4.5.21 Guarantor organization name (XON) 00425

Components: <organization name (ST)> ^ <organization name type code (ID)> ^ <ID number (ID)> ^ <check digit (NM)> ^ <check digit scheme (ID)> ^ <assigning authority (HD)> ^ <identifier type code (ID)> ^ <assigning facility ID (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the name of the guarantor when the guarantor is an organization. Multiple names for the same guarantor may be sent in this field, not multiple guarantors. The legal name is assumed to be in the first repetition. When the legal name is not sent, a repeat delimiter must be sent first for the first repetition. The components for this data type are described in Chapter 2.

Beginning with Version 2.3, if the guarantor is a person, send a null value ("") in *GT1-21-guarantor organization name* and put the person name in *GT1-3-guarantor name*. Either guarantor person name or guarantor organization name is required.

6.4.5.22 Guarantor billing hold flag (ID) 00773

Definition: Refer to *HL7 table 0136 - Yes/no indicator* for valid values. This field indicates whether or not a system should suppress printing of the guarantor's bills.

Y a system should suppress printing of guarantor's bills

N a system should not suppress printing of guarantor's bills

6.4.5.23 Guarantor credit rating code (CE) 00774

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the guarantor's credit rating. Refer to *user-defined table 0341 - Guarantor credit rating code* for suggested values.

6.4.5.24 Guarantor death date and time (TS) 00775

Definition: This field is used to indicate the date and time at which the guarantor's death occurred.

6.4.5.25 Guarantor death flag (ID) 00776

Definition: This field indicates whether or not the guarantor is deceased. Refer to *HL7 table 0136 - Yes/no indicator* for valid values.

Y the guarantor is deceased

N the guarantor is living

6.4.5.26 Guarantor charge adjustment code (CE) 00777

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains user-defined codes that indicate which adjustments should be made to this guarantor's charges. For example, when the hospital agrees to adjust this guarantor's charges to a sliding scale. *User-defined table 0218 - Charge adjustment is used as the HL7 identifier for the user-defined table of values for this field.*

Example: This field would contain the value used for sliding-fee scale processing.

6.4.5.27 Guarantor household annual income (CP) 00778

Components: <price (MO)> ^ <price type (ID)> ^ <from value (NM)> ^ <to value (NM)> ^ <range units (CE)> ^ <range type (ID)>

Subcomponents of price: <quantity (NM)> & <denomination (ID)>

Subcomponents of range units: <identifier (ST)> & <text (ST)> & <name of coding system (ST)> & <alternate identifier (ID)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Definition: This field contains the combined annual income of all members of the guarantor's household.

6.4.5.28 Guarantor household size (NM) 00779

Definition: This field specifies the number of people living at the guarantor's primary residence.

6.4.5.29 Guarantor employer ID number (CX) 00780

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility (HD)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This is a code that uniquely identifies the guarantor's employer when the employer is a person. It may be a user-defined code or a code defined by a government agency (Federal Tax ID#).

When further breakdowns of employer information are needed, such as a division or plant, it is recommended that the coding scheme incorporate the relationships (e.g., define separate codes for each division). The assigning authority and identifier type code are strongly recommended for all CX data types.

6.4.5.30 Guarantor marital status code (CE) 00781

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the marital status of the guarantor. Refer to *user-defined table 0002 - Marital status* for suggested values.

6.4.5.31 Guarantor hire effective date (DT) 00782

Definition: This field contains the date that the guarantor's employment began.

6.4.5.32 Employment stop date (DT) 00783

Definition: This field indicates the date on which the guarantor's employment with a particular employer ended.

6.4.5.33 Living dependency (IS) 00755

Definition: Identifies the specific living conditions of the guarantor. Refer to *user-defined table 0223 - Living dependency* for suggested values.

User-defined Table 0223 - Living dependency

Value	Description
D	Spouse dependent
M	Medical Supervision Required
S	Small children
WU	Walk up
CB	Common Bath

6.4.5.34 Ambulatory status (IS) 00145

Definition: Identifies the transient state of mobility for the guarantor. Refer to *user-defined table 0009 - Ambulatory status* for suggested values.

6.4.5.35 Citizenship (CE) 00129

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the code to identify the guarantor's citizenship. HL7 recommends using ISO table 3166 as the suggested values in *user-defined table 0171 - Citizenship*.

6.4.5.36 Primary language (CE) 00118

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field identifies the guarantor's primary speaking language. HL7 recommends using ISO table 639 as the suggested values in *user-defined table 0296 - Language*.

6.4.5.37 Living arrangement (IS) 00742

Definition: This field identifies the situation in which the person lives at his residential address. Refer to *the user-defined table 0220- Living arrangement* for suggested values.

User-defined Table 0220 - Living arrangement

Value	Description
A	Alone
F	Family
I	Institution
R	Relative
U	Unknown
S	Spouse Only

6.4.5.38 Publicity code (CE) 00743

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains a user-defined code indicating what level of publicity is allowed (e.g., No Publicity, Family Only) for a guarantor. *User-defined table 0215 - Publicity code is used as the HL7 identifier for the user-defined table of values for this field.*

6.4.5.39 Protection indicator (ID) 00744

Definition: This field identifies the guarantor's protection, which determines whether or not access to information about this enrollee should be restricted from users who do not have adequate authority. Refer to *HL7 table 0136 - Yes/no indicator* for valid values.

Y restrict access

N do not restrict access

6.4.5.40 Student indicator (IS) 00745

Definition: This field indicates whether the guarantor is currently a student, and whether the guarantor is a full-time or part-time student. This field does not indicate the degree level (high school, college) of the student, or his/her field of study (accounting, engineering, etc.). Refer to *user-defined table 0231- Student status* for suggested values.

User-defined Table 0231 - Student status

Values	Description
F	Full-time student
P	Part-time student
N	Not a student

6.4.5.41 Religion (CE) 00120

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field indicates the type of religion practiced by the guarantor. *User-defined table 0006 - Religion is used as the HL7 identifier for the user-defined table of values for this field.*

6.4.5.42 Mother's maiden name (XPN) 00109

Components: <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <name type code (ID)>

Definition: This field indicates the guarantor's mother's maiden name.

6.4.5.43 Nationality (CE) 00739

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains a code that identifies the nation or national grouping to which the person belongs. This may be different from a person's citizenship in countries in which multiple nationalities are recognized (for example, Spain: Basque, Catalan, etc.). HL7 recommends using ISO table 3166 as suggested values in *user-defined table 0212 - Nationality*.

6.4.5.44 Ethnic group (CE) 00125

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the guarantor's ethnic group. ERISA has a published list of ethnic classifications that may be used by local agreement at a site. *User-defined table 0189 - Ethnic group* is used as the HL7 identifier for the user-defined table of values for this field. The second triplet of the CE data type for ethnic group (alternate identifier, alternate text, and name of alternate coding system) is reserved for governmentally assigned codes.

6.4.5.45 Contact person's name (XPN) 00748

Components: <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <name type code (ID)>

Definition: This field contains the name of the person who should be contacted regarding the guarantor bills, etc. This may be someone other than the guarantor. (Contact guarantor's wife regarding all bills - guarantor lives out of country). The components for this data type are described in Chapter 2.

This is a repeating field that allows for multiple names for the same person. The legal name is assumed to be in the first repetition. When the legal name is not sent, a repeat delimiter must be sent first for the first repetition.

6.4.5.46 Contact person's telephone number (XTN) 00749

Components: [NNN] [(999)]999-9999 [X999999] [B999999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Definition: This field contains the telephone number of the guarantor (person) to contact regarding guarantor bills, etc. Multiple phone numbers for that person may be sent in this sequence. The primary telephone number is assumed to be in the first repetition. When the primary telephone number is not sent, a repeat delimiter must be sent first for the first repetition. The components for this data type are described in Chapter 2.

6.4.5.47 Contact reason (CE) 00747

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains a user-defined code that identifies the reason for contacting the guarantor, for example, to phone the guarantor if payments are late. *User-defined table 0222 - Contact reason* is used as the HL7 identifier for the user-defined table of values for this field.

6.4.5.48 Contact relationship (IS) 00784

Definition: Identifies the guarantor relationship to the contact person specified above. Some examples of the relationship between the guarantor and the guarantor contact person might include wife, attorney, power

of attorney, self, and organization. *User-defined table 0063 – Relationship is used as the HL7 identifier for the user-defined table of values for this field.*

6.4.5.49 Job title (ST) 00785

Definition: This field contains a descriptive name of the guarantor's occupation (e.g., Sr. Systems Analyst, Sr. Accountant).

6.4.5.50 Job code/class (JCC) 00786

Components: <job code (IS)> ^ <job class (IS)>

Definition: This field contains the guarantor's job code and employee classification. Refer to *user-defined tables 0327 - Job code* and *0328 - Employee classification* for suggested values.

6.4.5.51 Guarantor employer's organization name (XON) 01299

Components: <organization name (ST)> ^ <organization name type code (ID)> ^ <ID number (ID)> ^ <check digit (NM)> ^ <check digit scheme (ID)> ^ <assigning authority (HD)> ^ <identifier type code (ID)> ^ <assigning facility ID (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the name of the guarantor's employer when the guarantor's employer is an organization. When the guarantor's employer is a person, use *GT1-16 guarantor employer name*. Multiple names for the same guarantor may be sent in this field. The legal name is assumed to be in the first repetition. When the legal name is not sent, a repeat delimiter must be sent first for the first repetition. The components of this data type are described in Chapter 2.

6.4.5.52 Handicap (IS) 00753

Definition: This field contains a code to describe the guarantor's disability. *User-defined table 0295 – Handicap is used as the HL7 identifier for the user-defined table of values for this field.*

6.4.5.53 Job status (IS) 00752

Definition: This field contains a code that identifies the guarantor's current job status, for example, part-time/workers comp, full-time/leave of absence, full-time/suspended. *User-defined table 0311 - Job status is used as the HL7 identifier for the user-defined tables of values for this field.*

6.4.5.54 Guarantor financial class (FC) 01231

Components: <financial class (IS)> ^ <effective date (TS)>

Definition: This field contains the financial class (FC) assigned to the guarantor for the purpose of identifying sources of reimbursement. It can be different than that of the patient. When the FC of the guarantor is different than the FC of the patient, and the guarantor's coverage for that patient has been exhausted, the source of reimbursement falls back onto the FC of the patient. *User-defined table 0064 - Financial class is used as the HL7 identifier for the user-defined table of values for this field.*

6.4.5.55 Guarantor race (CE) 01291

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field refers to the guarantor's race. *User-defined table 0005 – Race is used as the HL7 identifier for the user-defined table of values for this field.* The second triplet of the CE data type for race (alternate identifier, alternate text, and name of alternate coding system) is reserved for governmentally assigned codes.

6.4.6 IN1 - insurance segment

The IN1 segment contains insurance policy coverage information necessary to produce properly pro-rated and patient and insurance bills.

Figure 6-6. IN1 attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	SI	R			00426	Set ID - IN1
2	60	CE	R		0072	00368	Insurance Plan ID
3	59	CX	R	Y		00428	Insurance Company ID
4	130	XON	O	Y		00429	Insurance Company Name
5	106	XAD	O	Y		00430	Insurance Company Address
6	48	XPN	O	Y		00431	Insurance Co Contact Person
7	40	XTN	O	Y		00432	Insurance Co Phone Number
8	12	ST	O			00433	Group Number
9	130	XON	O	Y		00434	Group Name
10	12	CX	O	Y		00435	Insured's Group Emp ID
11	130	XON	O	Y		00436	Insured's Group Emp Name
12	8	DT	O			00437	Plan Effective Date
13	8	DT	O			00438	Plan Expiration Date
14	55	CM	O			00439	Authorization Information
15	3	IS	O		0086	00440	Plan Type
16	48	XPN	O	Y		00441	Name Of Insured
17	80	CE	O		0063	00442	Insured's Relationship To Patient
18	26	TS	O			00443	Insured's Date Of Birth
19	106	XAD	O	Y		00444	Insured's Address
20	2	IS	O		0135	00445	Assignment Of Benefits
21	2	IS	O		0173	00446	Coordination Of Benefits
22	2	ST	O			00447	Coord Of Ben. Priority
23	1	ID	O		0136	00448	Notice Of Admission Flag
24	8	DT	O			00449	Notice Of Admission Date
25	1	ID	O		0136	00450	Report Of Eligibility Flag
26	8	DT	O			00451	Report Of Eligibility Date
27	2	IS	O		0093	00452	Release Information Code
28	15	ST	O			00453	Pre-Admit Cert (PAC)
29	26	TS	O			00454	Verification Date/Time
30	60	XCN	O	Y		00455	Verification By
31	2	IS	O		0098	00456	Type Of Agreement Code
32	2	IS	O		0022	00457	Billing Status
33	4	NM	O			00458	Lifetime Reserve Days
34	4	NM	O			00459	Delay Before L.R. Day
35	8	IS	O		0042	00460	Company Plan Code
36	15	ST	O			00461	Policy Number
37	12	CP	O			00462	Policy Deductible
38	12	CP	B			00463	Policy Limit - Amount
39	4	NM	O			00464	Policy Limit - Days
40	12	CP	B			00465	Room Rate - Semi-Private

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
41	12	CP	B			00466	Room Rate - Private
42	60	CE	O		0066	00467	Insured's Employment Status
43	1	IS	O		0001	00468	Insured's Sex
44	106	XAD	O	Y		00469	Insured's Employer's Address
45	2	ST	O			00470	Verification Status
46	8	IS	O		0072	00471	Prior Insurance Plan ID
47	3	IS	O		0309	01227	Coverage Type
48	2	IS	O		0295	00753	Handicap
49	12	CX	O	Y		01230	Insured's ID Number

6.4.6.0 IN1 field definitions

6.4.6.1 Set ID - IN1 (SI) 00426

Definition: *IN1-I-set ID* contains the number that identifies this transaction. For the first occurrence the sequence number shall be 1, for the second occurrence it shall be 2, etc.

6.4.6.2 Insurance plan ID (CE) 00368

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains a unique identifier for the insurance plan. *User-defined table 0072 - Insurance plan ID is used as the HL7 identifier for the user-defined table of values for this field.* To eliminate a plan, the plan could be sent with null values in each subsequent element. If the respective systems can support it, a null value can be sent in the plan field.

6.4.6.3 Insurance company ID (CX) 00428

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility (HD)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains a unique identifier for the insurance company. The assigning authority and identifier type code are strongly recommended for all CX data types.

6.4.6.4 Insurance company name (XON) 00429

Components: <organization name (ST)> ^ <organization name type code (ID)> ^ <ID number (ID)> ^ <check digit (NM)> ^ <check digit scheme (ID)> ^ <assigning authority (HD)> ^ <identifier type code (ID)> ^ <assigning facility ID (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the name of the insurance company. Multiple names for the same insurance company may be sent in this field. The legal name is assumed to be in the first repetition. When the legal name is not sent, a repeat delimiter must be sent first for the first repetition. The components of this data type are described in Chapter 2.

6.4.6.5 Insurance company address (XAD) 00430

Components: <street address (ST)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code (ST)> ^ <country (ID)> ^ <address type (ID)> ^ <other geographic designation (ST)> ^ <county/parish code (IS)> ^ <census tract (IS)> ^ <address representation code (ID)>

Definition: This field contains the address of the insurance company. Multiple addresses for the same insurance company may be sent in this field. The mailing address is assumed to be in the first repetition. When the mailing address is not sent, a repeat delimiter must be sent first for the first repetition.

6.4.6.6 Insurance co contact person (XPN) 00431

Components: <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <name type code (ID)>

Definition: This field contains the name of the person who should be contacted at the insurance company. Multiple names for the same contact person may be sent in this field. The legal name is assumed to be in the first repetition. When the legal name is not sent, a repeat delimiter must be sent first for the first repetition. The components of this data type are described in Chapter 2.

6.4.6.7 Insurance co phone number (XTN) 00432

Components: [NNN] [(999)]999-9999 [X99999] [B99999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Definition: This field contains the phone number of the insurance company. Multiple phone numbers for the same insurance company may be sent in this field. The primary phone number is assumed to be in the first repetition. When the primary phone number is not sent, a repeat delimiter must be sent first for the first repetition. The components of this data type are described in Chapter 2.

6.4.6.8 Group number (ST) 00433

Definition: This field contains the group number of the insured's insurance.

6.4.6.9 Group name (XON) 00434

Components: <organization name (ST)> ^ <organization name type code (ID)> ^ <ID number (ID)> ^ <check digit (NM)> ^ <check digit scheme (ID)> ^ <assigning authority (HD)> ^ <identifier type code (ID)> ^ <assigning facility ID (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the group name of the insured's insurance. The components of this data type are described in Chapter 2.

6.4.6.10 Insured's group emp. ID (CX) 00435

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility (HD)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field holds the group employer ID for the insured's insurance. The assigning authority and identifier type code are strongly recommended for all CX data types.

6.4.6.11 Insured's group emp name (XON) 00436

Components: <organization name (ST)> ^ <organization name type code (ID)> ^ <ID number (ID)> ^ <check digit (NM)> ^ <check digit scheme (ID)> ^ <assigning authority (HD)> ^ <identifier type code (ID)> ^ <assigning facility ID (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the name of the employer that provides the employee's insurance. Multiple names for the same employer may be sent in this sequence. The legal name must be sent first. When the legal name is not sent, a repeat delimiter must be sent first for the first repetition. The components of this data type are described in Chapter 2.

6.4.6.12 Plan effective date (DT) 00437

Definition: This field contains the date that the insurance goes into effect.

6.4.6.13 Plan expiration date (DT) 00438

Definition: This field indicates the last date of service that the insurance will cover or be responsible for.

6.4.6.14 Authorization information (CM) 00439

Components: <authorization number (ST)> ^ <date (DT)> ^ <source (ST)>

Definition: Based on the type of insurance, some coverage plans require that an authorization number or code be obtained prior to all non-emergency admissions, and within 48 hours of an emergency admission. Insurance billing would not be permitted without this number. The date and source of authorization are the components of this field.

6.4.6.15 Plan type (IS) 00440

Definition: This field contains the coding structure that identifies the various plan types, for example, Medicare, Medicaid, Blue Cross, HMO, etc. *User-defined table 0086 - Plan ID is used as the HL7 identifier for the user-defined table of values for this field.*

6.4.6.16 Name of insured (XPN) 00441

Components: <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <name type code (ID)>

Definition: This field contains the name of the insured person. The insured is the person who has an agreement with the insurance company to provide healthcare services to persons covered by the insurance policy. Multiple names for the same insured person may be sent in this field. The legal name is assumed to be in the first repetition. When the legal name is not sent, a repeat delimiter must be sent first for the first repetition. The components of this data type are described in Chapter 2.

6.4.6.17 Insured's relationship to patient (CE) 00442

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

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Definition: This field indicates the insured's relationship to the patient. *User-defined table 0063 - Relationship is used as the HL7 identifier for the user-defined table of values for this field.*

6.4.6.18 Insured's date of birth (TS) 00443

Definition: This field contains the date of birth of the insured.

6.4.6.19 Insured's address (XAD) 00444

Components: <street address (ST)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code(ST)> ^ <country (ID)> ^ < address type (ID)> ^ <other geographic designation (ST)> ^ <county/parish code (IS)> ^ <census tract (IS)> ^ <address representation code (ID)>

Definition: This field contains the address of the insured person. The insured is the person who has an agreement with the insurance company to provide healthcare services to persons covered by an insurance policy. Multiple addresses for the same insured person may be in this field. The mailing address must be sent in the first repetition. When the legal name is not sent, a repeat delimiter must be sent first for the first repetition.

6.4.6.20 Assignment of benefits (IS) 00445

Definition: This field indicates whether the insured agreed to assign the insurance benefits to the healthcare provider. If so, the insurance will pay the provider directly. Refer to *user-defined table 0135 - Assignment of benefits* for suggested values.

User-defined Table 0135 - Assignment of benefits

Value	Description
Y	Yes
N	No
M	Modified assignment

6.4.6.21 Coordination of benefits (IS) 00446

Definition: This field indicates whether this insurance works in conjunction with other insurance plans, or if it provides independent coverage and payment of benefits regardless of other insurance that might be available to the patient. Refer to *user-defined table 0173 - Coordination of benefits* for suggested values.

User-defined Table 0173 - Coordination of benefits

Value	Description
CO	Coordination
IN	Independent

6.4.6.22 Coord of ben. priority (ST) 00447

Definition: If the insurance works in conjunction with other insurance plans, this field contains priority sequence. Values are: 1, 2, 3, etc.

6.4.6.23 Notice of admission flag (ID) 00448

Definition: This field indicates whether the insurance company requires a written notice of admission from the healthcare provider. Refer to *HL7 table 0136 - Yes/no indicator* for valid values.

6.4.6.24 Notice of admission date (DT) 00449

Definition: If a notice is required, this field indicates the date that it was sent.

6.4.6.25 Report of eligibility flag (ID) 00450

Definition: This field indicates whether this insurance carrier sends a report that indicates that the patient is eligible for benefits and whether it identifies those benefits. Refer to *HL7 table 0136 - Yes/no indicator* for valid values.

6.4.6.26 Report of eligibility date (DT) 00451

Definition: This field indicates whether a report of eligibility (ROE) was received, and also indicates the date that it was received.

6.4.6.27 Release information code (IS) 00452

Definition: This field indicates whether the healthcare provider can release information about the patient, and what information can be released. Refer to *user-defined table 0093 - Release information* for suggested values.

User-defined Table 0093 - Release information

Value	Description
Y	Yes
N	No
	or user-defined codes

6.4.6.28 Pre-admit cert. (PAC) (ST) 00453

Definition: This field contains the pre-admission certification code. If the admission must be certified before the admission, this is the code associated with the admission.

6.4.6.29 Verification date/time (TS) 00454

Definition: This field contains the date/time that the healthcare provider verified that the patient has the indicated benefits.

6.4.6.30 Verification by (XCN) 00455

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: Refers to the person who verified the benefits. Multiple names for the same insured person may be sent in this field. The legal name is assumed to be in the first repetition. When the legal name is not sent, a repeat delimiter must be sent first for the first repetition. The components of this data type are described in Chapter 2.

6.4.6.31 Type of agreement code (IS) 00456

Definition: This field is used to further identify an insurance plan.

User-defined Table 0098 - Type of agreement

Value	Description
S	Standard
U	Unified
M	Maternity

6.4.6.32 Billing status (IS) 00457

Definition: This field indicates whether the particular insurance has been billed and, if so, the type of bill.
User-defined table 0022 - Billing status is used as the HL7 identifier for the user-defined table of values for this field.

6.4.6.33 Lifetime reserve days (NM) 00458

Definition: This field contains the number of days left for a certain service to be provided or covered under an insurance policy.

6.4.6.34 Delay before L.R. day (NM) 00459

Definition: This field indicates the delay before lifetime reserve days.

6.4.6.35 Company plan code (IS) 00460

Definition: This field contains optional information to further define the data in *IN1-3-insurance company ID*. *User-defined table 0042 - Company plan code is used as the HL7 identifier for the user-defined table of values for this field.* This table contains codes used to identify an insurance company plan uniquely.

6.4.6.36 Policy number (ST) 00461

Definition: This field contains the individual policy number of the insured to uniquely identify this patient's plan. For special types of insurance numbers, there are also special fields in the IN2 segment for Medicaid, Medicare, Champus (i.e., *IN2-8-Medicaid case number*, *IN2-6-Medicare health ins card number*, *IN2-10-Military ID number*). But we recommend that this field (*IN1-36-policy number*) be filled even when the patient's insurance number is also passed in one of these other fields.

6.4.6.37 Policy deductible (CP) 00462

Components: <price (MO)> ^ <price type (ID)> ^ <from value (NM)> ^ <to value (NM)> ^ <range units (CE)> ^ <range type (ID)>

Subcomponents of price: <quantity (NM)> & <denomination (ID)>

Subcomponents of range units: <identifier (ST)> & <text (ST)> & <name of coding system (ST)> & <alternate identifier (ID)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Definition: This field contains the amount specified by the insurance plan that is the responsibility of the guarantor.

6.4.6.38 Policy limit - amount (CP) 00463

Components: <price (MO)> ^ <price type (ID)> ^ <from value (NM)> ^ <to value (NM)> ^ <range units (CE)> ^ <range type (ID)>

Subcomponents of price: <quantity (NM)> & <denomination (ID)>

Subcomponents of range units: <identifier (ST)> & <text (ST)> & <name of coding system (ST)> & <alternate identifier (ID)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Definition: ***This field has been retained for backward compatibility only. Use IN2-29 policy type/amount instead of this field.*** This field contains the maximum amount that the insurance policy will pay. In some cases, the limit may be for a single encounter.

6.4.6.39 Policy limit - days (NM) 00464

Definition: This field contains the maximum number of days that the insurance policy will cover.

6.4.6.40 Room rate - semi-private (CP) 00465

Components: <price (MO)> ^ <price type (ID)> ^ <from value (NM)> ^ <to value (NM)> ^ <range units (CE)> ^ <range type (ID)>

Subcomponents of price: <quantity (NM)> & <denomination (ID)>

Subcomponents of range units: <identifier (ST)> & <text (ST)> & <name of coding system (ST)> & <alternate identifier (ID)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Definition: ***This field has been retained for backward compatibility only. Use IN2-28-room coverage type/amount instead of this field.*** When used for backward compatibility, *IN1-40-room rate-semi-private* contains the average room rate that the policy covers.

6.4.6.41 Room rate - private (CP) 00466

Components: <price (MO)> ^ <price type (ID)> ^ <from value (NM)> ^ <to value (NM)> ^ <range units (CE)> ^ <range type (ID)>

Subcomponents of price: <quantity (NM)> & <denomination (ID)>

Subcomponents of range units: <identifier (ST)> & <text (ST)> & <name of coding system (ST)> & <alternate identifier (ID)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Definition: ***This field has been retained for backward compatibility only. Use IN2-28-room coverage type/amount instead of this field.*** When used for backward compatibility *IN1-41-room rate-private* contains the maximum private room rate that the policy covers.

6.4.6.42 Insured's employment status (CE) 00467

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: *User-defined table 0066 - Employment status is used as the HL7 identifier for the user-defined table of values for this field.*

6.4.6.43 Insured's sex (IS) 00468

Definition: This field contains the gender of the insured. Refer to *user-defined table 0001 - Sex* for valid values.

6.4.6.44 Insured's employer's address (XAD) 00469

Components: <street address (ST)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code (ST)> ^ <country (ID)> ^ <address type (ID)> ^ <other geographic designation (ST)> ^ <county/parish code (IS)> ^ <census tract (IS)> ^ <address representation code (ID)>

Definition: This field contains the address of the insured employee's employer. Multiple addresses for the same employer may be sent in this field. The mailing address must be sent first. When the mailing address is not sent, a repeat delimiter must be sent first for the first repetition.

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6.4.6.45 Verification status (ST) 00470

Definition: This field contains the status of this patient's relationship with this insurance carrier.

6.4.6.46 Prior insurance plan ID (IS) 00471

Definition: This field uniquely identifies the prior insurance plan when the plan ID changes. *User-defined table 0072 - Insurance plan ID is used as the HL7 identifier for the user-defined table of values for this field.*

6.4.6.47 Coverage type (IS) 01227

Definition: This field contains the coding structure that identifies the type of insurance coverage, or what types of services are covered for the purposes of a billing system. For example, a physician billing system will only want to receive insurance information for plans that cover physician/professional charges. Refer to *user-defined table 0309 - Coverage type* for suggested values.

User-defined Table 0309 - Coverage type

Value	Description
H	Hospital/institutional
P	Physician/professional
B	Both hospital and physician

6.4.6.48 Handicap (IS) 00753

Definition: This field contains a code to describe the insured's disability. *User-defined table 0295 - Handicap is used as the HL7 Identifier for the user-defined table of values for this field.*

6.4.6.49 Insured's ID number (CX) 01230

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility (HD)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This data element contains a healthcare institution's identifiers for the insured. The assigning authority and identifier type code are strongly recommended for all CX data types.

6.4.7 IN2 - insurance additional information segment

The IN2 segment contains additional insurance policy coverage and benefit information necessary for proper billing and reimbursement. Fields used by this segment are defined by HCFA or other regulatory agencies.

Figure 6-7. IN2 attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	59	CX	O	Y		00472	Insured's Employee ID
2	11	ST	O			00473	Insured's Social Security Number
3	130	XCN	O	Y		00474	Insured's Employer's Name and ID
4	1	IS	O		0139	00475	Employer Information Data

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
5	1	IS	O	Y	0137	00476	Mail Claim Party
6	15	ST	O			00477	Medicare Health Ins Card Number
7	48	XPN	O	Y		00478	Medicaid Case Name
8	15	ST	O			00479	Medicaid Case Number
9	48	XPN	O	Y		00480	Military Sponsor Name
10	20	ST	O			00481	Military ID Number
11	80	CE	O		0342	00482	Dependent Of Military Recipient
12	25	ST	O			00483	Military Organization
13	25	ST	O			00484	Military Station
14	14	IS	O		0140	00485	Military Service
15	2	IS	O		0141	00486	Military Rank/Grade
16	3	IS	O		0142	00487	Military Status
17	8	DT	O			00488	Military Retire Date
18	1	ID	O		0136	00489	Military Non-Avail Cert On File
19	1	ID	O		0136	00490	Baby Coverage
20	1	ID	O		0136	00491	Combine Baby Bill
21	1	ST	O			00492	Blood Deductible
22	48	XPN	O	Y		00493	Special Coverage Approval Name
23	30	ST	O			00494	Special Coverage Approval Title
24	8	IS	O	Y	0143	00495	Non-Covered Insurance Code
25	59	CX	O	Y		00496	Payor ID
26	59	CX	O	Y		00497	Payor Subscriber ID
27	1	IS	O		0144	00498	Eligibility Source
28	25	CM	O	Y	0145/ 0146	00499	Room Coverage Type/Amount
29	25	CM	O	Y	0147/ 0193	00500	Policy Type/Amount
30	25	CM	O			00501	Daily Deductible
31	2	IS	O		0223	00755	Living Dependency
32	2	IS	O	Y	0009	00145	Ambulatory Status
33	80	CE	O	Y	0171	00129	Citizenship
34	60	CE	O		0296	00118	Primary Language
35	2	IS	O		0220	00742	Living Arrangement
36	80	CE	O		0215	00743	Publicity Code
37	1	ID	O		0136	00744	Protection Indicator
38	2	IS	O		0231	00745	Student Indicator
39	80	CE	O		0006	00120	Religion
40	48	XPN	O	Y		00109	Mother's Maiden Name
41	80	CE	O		0212	00739	Nationality
42	80	CE	O	Y	0189	00125	Ethnic Group
43	80	CE	O	Y	0002	00119	Marital Status
44	8	DT	O			00787	Insured's Employment Start Date
45	8	DT	O			00783	Employment Stop Date
46	20	ST	O			00785	Job Title
47	20	JCC	O		0327/ 0328	00786	Job Code/Class
48	2	IS	O		0311	00752	Job Status
49	48	XPN	O	Y		00789	Employer Contact Person Name
50	40	XTN	O	Y		00790	Employer Contact Person Phone Number
51	2	IS	O		0222	00791	Employer Contact Reason
52	48	XPN	O	Y		00792	Insured's Contact Person's Name
53	40	XTN	O	Y		00793	Insured's Contact Person Phone Number

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SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
54	2	IS	O	Y	0222	00794	Insured's Contact Person Reason
55	8	DT	O			00795	Relationship To The Patient Start Date
56	8	DT	O	Y		00796	Relationship To The Patient Stop Date
57	2	IS	O		0232	00797	Insurance Co. Contact Reason
58	40	XTN	O			00798	Insurance Co Contact Phone Number
59	2	IS	O		0312	00799	Policy Scope
60	2	IS	O		0313	00800	Policy Source
61	60	CX	O			00801	Patient Member Number
62	80	CE	O		0063	00802	Guarantor's Relationship To Insured
63	40	XTN	O	Y		00803	Insured's Phone Number - Home
64	40	XTN	O	Y		00804	Insured's Employer Phone Number
65	60	CE	O		0343	00805	Military Handicapped Program
66	1	ID	O		0136	00806	Suspend Flag
67	1	ID	O		0136	00807	Copay Limit Flag
68	1	ID	O		0136	00808	Stoploss Limit Flag
69	130	XON	O	Y		00809	Insured Organization Name And ID
70	130	XON	O	Y		00810	Insured Employer Organization Name And ID
71	80	CE	O	Y	0005	00113	Race
72	60	CE	O		0344	00811	HCFA Patient's Relationship to Insured

6.4.7.0 IN2 field definitions

6.4.7.1 Insured's employee ID (CX) 00472

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility (HD)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the employee ID of the insured. The assigning authority and identifier type code are strongly recommended for all CX data types.

6.4.7.2 Insured's social security number (ST) 00473

Definition: This field contains the social security number of the insured.

6.4.7.3 Insured's employer's name and ID (XCN) 00474

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the name and ID of the insured's employer or the person who purchased the insurance for the insured, if the employer is a person. Multiple names and identifiers for the same person may be sent in this field, not multiple persons. The legal name is assumed to be in the first repetition.

When the legal name is not sent, a repeat delimiter must be sent first for the first repetition. When the em-

ployer is an organization use *IN2-70-Insured employer organization name and ID*. The components for this data type are described in Chapter 2.

6.4.7.4 Employer information data (IS) 00475

Definition: This field contains the required employer information data for UB82 form locator 71. *User-defined table 0139 - Employer information data is used as the HL7 identifier of the user-defined table of values for this field.*

6.4.7.5 Mail claim party (IS) 00476

Definition: This field contains the party to which the claim should be mailed. Refer to *user-defined table 0137 - Mail claim party* for suggested values.

User-defined Table 0137 - Mail claim party

Value	Description
E	Employer
G	Guarantor
I	Insurance company
O	Other
P	Patient

6.4.7.6 Medicare health ins card number (ST) 00477

Definition: This field contains the Medicare Health Insurance Number (HIN), defined by HCFA or other regulatory agencies.

6.4.7.7 Medicaid case name (XPN) 00478

Components: <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <name type code (ID) >

Definition: This field contains the Medicaid case name, defined by HCFA or other regulatory agencies. Multiple names for the same person may be sent in this field. The legal name is assumed to be in the first repetition. When the legal name is not sent, a repeat delimiter must be sent first for the first repetition. The components for this data type are described in Chapter 2.

6.4.7.8 Medicaid case number (ST) 00479

Definition: This field contains the Medicaid case number, defined by HCFA or other regulatory agencies, which uniquely identifies a patient's Medicaid policy.

6.4.7.9 Military sponsor name (XPN) 00480

Components: <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <name type code (ID) >

Definition: This field is defined by HCFA or other regulatory agencies. Multiple names for the same person may be sent in this field. The legal name is assumed to be in the first repetition. When the legal name is not sent, a repeat delimiter must be sent first for the first repetition.

6.4.7.10 Military ID number (ST) 00481

Definition: This field contains the military ID number, defined by HCFA or other regulatory agencies, which uniquely identifies a patient's military policy.

6.4.7.11 Dependent of military recipient (CE) 00482

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field is defined by HCFA or other regulatory agencies. Refer to *user-defined table 0342 - Military recipient* for suggested values.

6.4.7.12 Military organization (ST) 00483

Definition: This field is defined by HCFA or other regulatory agencies.

6.4.7.13 Military station (ST) 00484

Definition: This field is defined by HCFA or other regulatory agencies.

6.4.7.14 Military service (IS) 00485

Definition: This field is defined by HCFA or other regulatory agencies and refers to the military branch of service. Refer to *user-defined table 0140 - Military service* for suggested values. The UB codes listed may not represent a complete list; refer to a UB specification for additional information.

User-defined Table 0140 - Military service

Value	Description
USA	U.S. Army
USN	U.S. Navy
USAF	U.S. Air Force
USMC	U.S. Marines
USCG	U.S. Coast Guard
USPHS	U.S. Public Health Service
NOAA	National Oceanic and Atmospheric Administration
NATO	North Atlantic Treaty Organization

6.4.7.15 Military rank/grade (IS) 00486

Definition: This user-defined field identifies the military rank/grade of the insured. Refer to *user-defined table 0141 - Military rank/grade* for suggested values. The UB codes listed may not represent a complete list; refer to a UB specification for additional information

User-defined Table 0141 - Military rank/grade

Value	Description
E1 ... E9	Enlisted
O1 ... O10	Officers
W1 ... W4	Warrant Officers

6.4.7.16 Military status (IS) 00487

Definition: This field is defined by HCFA or other regulatory agencies. Refer to *user-defined table 0142 - Military status* for suggested values. The UB codes listed may not represent a complete list; refer to a UB specification for additional information

User-defined Table 0142 -Military status

Value	Description
ACT	Active duty
RET	Retired
DEC	Deceased

6.4.7.17 Military retire date (DT) 00488

Definition: This field is defined by HCFA or other regulatory agencies.

6.4.7.18 Military non-avail cert on file (ID) 00489

Definition: Refer to *HL7 table 0136 - Yes/no indicator* for valid values.

6.4.7.19 Baby coverage (ID) 00490

Definition: Refer to *HL7 table 0136 - Yes/no indicator* for valid values.

6.4.7.20 Combine baby bill (ID) 00491

Definition: Refer to *HL7 table 0136 - Yes/no indicator* for valid values.

6.4.7.21 Blood deductible (ST) 00492

Definition: Use this field instead of *UBI-2-blood deductible*, as the blood deductible can be associated with the specific insurance plan via this field.

6.4.7.22 Special coverage approval name (XPN) 00493

Components: <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <name type code (ID) >

Definition: This field contains the name of the individual who approves any special coverage. Multiple names for the same person may be sent in this field. The legal name is assumed to be in the first repetition. When the legal name is not sent, a repeat delimiter must be sent first for the first repetition.

6.4.7.23 Special coverage approval title (ST) 00494

Definition: This field contains the title of the person who approves special coverage.

6.4.7.24 Non-covered insurance code (IS) 00495

Definition: This field contains the code that describes why a service is not covered. *User-defined table 0143 - Non-covered insurance code is used as the HL7 identifier for the user-defined table of values for this field.*

6.4.7.25 Payor ID (CX) 00496

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility (HD)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field is required for NEIC processing, and it identifies the organization from which reimbursement is expected. This field can also be used to report the National Health Plan ID. The assigning authority and identifier type code are strongly recommended for all CX data types.

6.4.7.26 Payor subscriber ID (CX) 00497

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility (HD)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field is required for NEIC processing, and it identifies the specific office within the insurance carrier that is designated as responsible for the claim. The assigning authority and identifier type code are strongly recommended for all CX data types.

6.4.7.27 Eligibility source (IS) 00498

Definition: This field is required for NEIC processing, and it identifies the source of information about the insured's eligibility for benefits. Refer to *user-defined table 0144 - Eligibility source* for suggested values.

User-defined Table 0144 - Eligibility source

Value	Description
1	Insurance company
2	Employer
3	Insured presented policy
4	Insured presented card
5	Signed statement on file
6	Verbal information
7	None

6.4.7.28 Room coverage type/amount (CM) 00499

Components: <room type (IS)> ^ <amount type (IS)> ^ <coverage amount(NM)>

Definition: Use this field instead of *IN1-40-room rate-semi-private* and *IN1-41-room rate-private*. This field contains room type (e.g., private, semi-private), amount type (e.g., limit, percentage) and amount covered by the insurance. Refer to *user-defined tables 0145 - Room type* and *0146 - Amount type* for suggested values.

User-defined Table 0145 - Room type

Value	Description
PRI	Private room
2PRI	Second private room
SPR	Semi-private room
2SPR	Second semi-private room
ICU	Intensive care unit
2ICU	Second intensive care unit

User-defined Table 0146 - Amount type

Value	Description
DF	Differential
LM	Limit
PC	Percentage
RT	Rate
UL	Unlimited

6.4.7.29 Policy type/amount (CM) 00500

Components: <policy type (IS)> ^ <amount class (IS)> ^ <amount (NM)>

Definition: This field contains the policy type (e.g., ancillary, major medical) and amount (e.g., amount, percentage, limit) covered by the insurance. Use this field instead of *INI-38-policy limit-amount*. Refer to *user-defined tables 0147 - Policy type* and *0193 - Amount class* for suggested values.

User-defined Table 0147 - Policy type

Value	Description
ANC	Ancillary
2ANC	Second ancillary
MMD	Major medical
2MMD	Second major medical
3MMD	Third major medical

User-defined Table 0193 - Amount class

Value	Description
AT	Amount
LM	Limit
PC	Percentage
UL	Unlimited

6.4.7.30 Daily deductible (CM) 00501

Components: <delay days (NM)> ^ <amount (NM)> ^ <number of days (NM)>

Definition: This field contains the number of days after which the daily deductible begins, the amount of the deductible, and the number of days to apply the deductible.

6.4.7.31 Living dependency (IS) 00755

Definition: This field identifies the specific living conditions for the insured. Refer to *user-defined table 0223- Living dependency* for suggested values.

6.4.7.32 Ambulatory status (IS) 00145

Definition: This field identifies the insured's state of mobility. Refer to *user-defined table 0009 - Ambulatory status* for suggested values.

6.4.7.33 Citizenship (CE) 00129

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the code that identifies the insured's citizenship. HL7 recommends using ISO table 3166 as the suggested values in *user-defined table 0171 - Citizenship*.

6.4.7.34 Primary language (CE) 00118

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field identifies the insured's primary speaking language. HL7 recommends using ISO table 639 as the suggested values in *user-defined table 0296 - Language*.

6.4.7.35 Living arrangement (IS) 00742

Definition: This field indicates the situation in which the insured person lives at his primary residence. Refer to *user-defined table 0220 - Living arrangement* for suggested values.

6.4.7.36 Publicity code (CE) 00743

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains a user-defined code indicating what level of publicity is allowed (e.g., No Publicity, Family Only) for the insured. *User-defined table 0215 - Publicity code is used as the HL7 identifier for the user-defined table of values for this field.*

6.4.7.37 Protection indicator (ID) 00744

Definition: This field identifies the insured's protection, which determines whether or not access to information about this enrollee should be restricted from users who do not have adequate authority. Refer to *HL7 table 0136 - Yes/no indicator* for valid values.

Y restrict access

N do not restrict access

6.4.7.38 Student indicator (IS) 00745

Definition: This field identifies whether the insured is currently a student or not, and whether the insured is a full-time or a part-time student. This field does not indicate the degree level (high school, college) of stu-

dent, or his/her field of study (accounting, engineering, etc.). Refer to *user-defined table 0231 - Student status* for suggested values.

6.4.7.39 Religion (CE) 00120

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field indicates the type of religion practiced by the insured. *User-defined table 0006 – Religion is used as the HL7 identifier for the user-defined table of values for this field.*

6.4.7.40 Mother's maiden name (XPN) 00109

Components: <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <name type code (ID)>

Definition: This field indicates the insured's mother's maiden name.

6.4.7.41 Nationality (CE) 00739

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains a code that identifies the nation or national grouping to which the insured person belongs. This information may be different from a person's citizenship in countries in which multiple nationalities are recognized (for example, Spain: Basque, Catalan, etc.). HL7 recommends using ISO table 3166 as the suggested values in *user-defined table 0212 - Nationality*.

6.4.7.42 Ethnic group (CE) 00125

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field indicates the insured's ethnic group. ERISA has a published list of ethnic classifications that may be used by local agreement at a site. *User-defined table 0189 - Ethnic group is used as the HL7 identifier for the user-defined table of values for this field.* The second triplet of the CE data type for ethnic group (alternate identifier, alternate text, and name of alternate coding system) is reserved for governmentally assigned codes.

6.4.7.43 Marital status (CE) 00119

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the insured's marital status. Refer to *user-defined table 0002 - Marital status* for suggested values. Same values as those for *PID-16-marital status*.

6.4.7.44 Insured's employment start date (DT) 00787

Definition: This field indicates the date on which the insured's employment with a particular employer began.

6.4.7.45 Employment stop date (DT) 00783

Definition: This field indicates the date on which the person's employment with a particular employer ended.

6.4.7.46 Job title (ST) 00785

Definition: This field contains a descriptive name for the insured's occupation (for example, Sr. Systems Analyst, Sr. Accountant).

6.4.7.47 Job code/class (JCC) 00786

Components: <job code (IS)> ^ <job class (IS)>

Definition: This field indicates a code that identifies the insured's job code (for example, programmer, analyst, doctor, etc.). Refer to *user-defined tables 0327 - Job code* and *0328 - Employee classification* for suggested values.

6.4.7.48 Job status (IS) 00752

Definition: This field indicates a code that identifies the insured's current job status (for example, part-time/workers comp, full-time/leave of absence, full-time/suspended, etc.). *User-defined table 0311 - Job status is used as the HL7 identifier for the user-defined table of values for this field.*

6.4.7.49 Employer contact person name (XPN) 00789

Components: <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <name type code (ID)>

Definition: This field contains the name of the contact person that should be contacted at the insured's place of employment. (Joe Smith is the insured. He works at GTE. Contact Sue Jones at GTE regarding Joe Smith's policy). Multiple names for the same person may be sent in this sequence. The legal name is assumed to be in the first repetition. When the legal name is not sent, a repeat delimiter must be sent first for the first repetition. The components for this data type are described in Chapter 2.

6.4.7.50 Employer contact person phone number (XTN) 00790

Components: [NNN] [(999)]999-9999 [X99999] [B99999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Definition: This field contains the telephone number for Sue Jones who is the contact person at GTE (Joe Smith's place of employment). Joe Smith is the insured. Multiple phone numbers for the same contact person may be sent in this sequence, not multiple contacts. The primary telephone number is assumed to be in the first repetition. When no primary telephone number is sent, a repeat delimiter must be present for the first repetition. The components for this data type are described in Chapter 2.

6.4.7.51 Employer contact reason (IS) 00791

Definition: This field contains the reason(s) that Sue Jones should be contacted on behalf of Joe Smith, a GTE employer. *User-defined table 0222 - Contact reason is used as the HL7 identifier for the user-defined table of values for this field.*

6.4.7.52 Insured's contact person's name (XPN) 00792

Components: <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <name type code (ID)>

Definition: This field contains the contact person for the insured. The components for this data type are described in Chapter 2.

6.4.7.53 Insured's contact person phone number (XTN) 00793

Components: [NNN] [(999)]999-9999 [X99999] [B99999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Definition: This field contains the telephone number for the contact person for the insured. Multiple phone numbers for the same person may be sent in this contact, not multiple contacts. The primary telephone number is assumed to be in the first repetition. When the primary telephone number is not sent, a repeat delimiter must be sent first for the first repetition. The components for this data type are described in Chapter 2.

6.4.7.54 Insured's contact person reason (IS) 00794

Definition: This field contains the reason(s) the person should be contacted regarding the insured. *User-defined table - 0222 - Contact reason is used as the HL7 identifier for the user-defined table of values for this field.*

6.4.7.55 Relationship to the patient start date (DT) 00795

Definition: This field indicates the date on which the insured's patient relationship (defined in *INI-17-insured's relationship to patient*) became effective (began).

6.4.7.56 Relationship to the patient stop date (DT) 00796

Definition: This field indicates the date after which the relationship (defined in *INI-17-insured's relationship to patient*) is no longer effective.

6.4.7.57 Insurance co contact reason (IS) 00797

Definition: This field contains a user-defined code that specifies how the contact should be used. Refer to *user-defined table 0232 - Insurance company contact reason* for suggested values.

User-defined Table 0232 - Insurance company contact reason

Value	Description
01	Medicare claim status
02	Medicaid claim status
03	Name/address change

6.4.7.58 Insurance co contact phone number (XTN) 00798

Components: [NNN] [(999)]999-9999 [X99999] [B99999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Definition: This field contains the telephone number of the person who should be contacted at the insurance company for questions regarding an insurance policy/claim, etc. Multiple phone numbers for the insurance company may be sent in this sequence. The primary telephone number is assumed to be in the first repetition. When the primary telephone number is not sent, a repeat delimiter must be sent first for the first repetition. The components for this data type are described in Chapter 2.

6.4.7.59 Policy scope (IS) 00799

Definition: This field contains a user-defined code designating the extent of the coverage for a participating member (e.g., "single," "family," etc. *User-defined table 0312 - Policy scope is used as the HL7 identifier for the user-defined table of values for this field.*

6.4.7.60 Policy source (IS) 00800

Definition: This user-defined field identifies how the policy information got established. *User-defined table 0313 - Policy source is used as the HL7 identifier for the user-defined table of values for this field.*

6.4.7.61 Patient member number (CX) 00801

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility (HD)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains an identifying number assigned by the payor for each individual covered by the insurance policy issued to the insured. For example, each individual family member may have a different member number from the insurance policy number issued to the head of household. The assigning authority and identifier type code are strongly recommended for all CX data types.

6.4.7.62 Guarantor's relationship to insured (CE) 00802

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field specifies the relationship of the guarantor to the insurance subscriber. *User-defined table 0063-Relationship is used as the HL7 identifier for the user-defined table of values for this field.*

6.4.7.63 Insured's phone number - home (XTN) 00803

Components: [NNN] [(999)]999-9999 [X99999] [B99999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Definition: The value of this field represents the insured's telephone number. Multiple phone numbers may be sent in this sequence. The primary telephone number is assumed to be in the first repetition (PRN - Primary, PH - Telephone). When the primary telephone number is not sent, a repeat delimiter must be sent first for the first repetition. The components for this data type are described in Chapter 2.

6.4.7.64 Insured's employer phone number (XTN) 00804

Components: [NNN] [(999)]999-9999 [X99999] [B99999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Definition: The value of this field represents the insured's employer's telephone number. Multiple phone numbers may be sent in this sequence. The primary telephone number is assumed to be in the first repetition. When the primary telephone number is not sent, a repeat delimiter must be sent first for the first repetition. The components for this data type are described in Chapter 2.

6.4.7.65 Military handicapped program (CE) 00805

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field indicates the military program for the handicapped in which the patient is enrolled. Refer to *user-defined table 0343 - Military handicapped program code* for suggested values.

6.4.7.66 Suspend flag (ID) 00806

Definition: This field indicates whether charges should be suspended for a patient. Refer to *HL7 table 0136 - Yes/no indicator* for valid values.

Y charges should be suspended

N charges should NOT be suspended

6.4.7.67 Copay limit flag (ID) 00807

Definition: This field indicates if the patient has reached the co-pay limit so that no more co-pay charges should be calculated for the patient. Refer to *HL7 table 0136 - Yes/no indicator* for valid values.

Y the patient is at or exceeds the co-pay limit

N the patient is under the co-pay limit

6.4.7.68 Stoploss limit flag (ID) 00808

Definition: This field indicates if the patient has reached the stoploss limit established in the Contract Master. Refer to *HL7 table 0136 - Yes/no indicator* for valid values.

Y the patient has reached the stoploss limit

N the patient has not reached the stoploss limit

6.4.7.69 Insured organization name and ID (XON) 00809

Components: <organization name (ST)> ^ <organization name type code (ID)> ^ <ID number (ID)> ^ <check digit (NM)> ^ <check digit scheme (ID)> ^ <assigning authority (HD)> ^ <identifier type code (ID)> ^ <assigning facility ID (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field indicates the name of the insured if the insured/subscriber is an organization. Multiple names for the insured may be sent in this sequence, not multiple insured people. The legal name is assumed to be in the first repetition. When the legal name is not sent, a repeat delimiter must be sent first for the first repetition. The components for this data type are described in Chapter 2.

6.4.7.70 Insured employer organization name and ID (XON) 00810

Components: <organization name (ST)> ^ <organization name type code (ID)> ^ <ID number (ID)> ^ <check digit (NM)> ^ <check digit scheme (ID)> ^ <assigning authority (HD)> ^ <identifier type code (ID)> ^ <assigning facility ID (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field indicates the name of the insured's employer, or the organization that purchased the insurance for the insured, if the employer is an organization. Multiple names and identifiers for the same organization may be sent in this field, not multiple organizations. The legal name is assumed to be in the first repetition. When the legal name is not sent, a repeat delimiter must be sent first for the first repetition. The components for this data type are described in Chapter 2.

6.4.7.71 Race (CE) 00113

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: ERISA has a published list of ethnic classifications that may be used by local agreement at a site. *User-defined table 0005 – Race is used as the HL7 identifier for the user-defined table of values for this field.* The second triplet of the CE data type for race (alternate identifier, alternate text, and name of alternate coding system) is reserved for governmentally assigned codes.

6.4.7.72 HCFA Patient's relationship to insured (CE) 00811

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field indicates the relationship of the patient to the insured, as defined by HCFA or other regulatory agencies. Refer to *user-defined table 0344 - HCFA Patient's relationship to insured* for suggested values. The UB codes listed may not represent a complete list; refer to a UB specification for additional information.

User-defined Table 0344 - Patient's relationship to insured

Value	Description
01	Patient is insured
02	Spouse
03	Natural child/insured financial responsibility
04	Natural child/Insured does not have financial responsibility
05	Step child
06	Foster child
07	Ward of the court
08	Employee
09	Unknown
10	Handicapped dependent
11	Organ donor
12	Cadaver donor
13	Grandchild
14	Niece/nephew
15	Injured plaintiff
16	Sponsored dependent
17	Minor dependent of a minor dependent
18	Parent
19	Grandparent

6.4.8 IN3 - insurance additional information, certification segment

The IN3 segment contains additional insurance information for certifying the need for patient care. Fields used by this segment are defined by HCFA, or other regulatory agencies.

Figure 6-8. IN3 attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	SI	R			00502	Set ID - IN3
2	59	CX	O			00503	Certification Number
3	60	XCN	O	Y		00504	Certified By
4	1	ID	O		0136	00505	Certification Required
5	10	CM	O		0148	00506	Penalty
6	26	TS	O			00507	Certification Date/Time
7	26	TS	O			00508	Certification Modify Date/Time
8	60	XCN	O	Y		00509	Operator
9	8	DT	O			00510	Certification Begin Date
10	8	DT	O			00511	Certification End Date
11	3	CM	O		0149	00512	Days
12	60	CE	O		0233	00513	Non-Concur Code/Description
13	26	TS	O			00514	Non-Concur Effective Date/Time
14	60	XCN	O	Y	0010	00515	Physician Reviewer
15	48	ST	O			00516	Certification Contact
16	40	XTN	O	Y		00517	Certification Contact Phone Number
17	60	CE	O		0345	00518	Appeal Reason
18	60	CE	O		0346	00519	Certification Agency
19	40	XTN	O	Y		00520	Certification Agency Phone Number
20	40	CM	O	Y	0150/ 0136	00521	Pre-Certification Req/Window
21	48	ST	O			00522	Case Manager
22	8	DT	O			00523	Second Opinion Date
23	1	IS	O		0151	00524	Second Opinion Status
24	1	IS	O	Y	0152	00525	Second Opinion Documentation Received
25	60	XCN	O	Y	0010	00526	Second Opinion Physician

6.4.8.0 IN3 field definitions

6.4.8.1 Set ID - IN3 (SI) 00502

Definition: *IN3-1-set ID-IN3* contains the number that identifies this transaction. For the first occurrence of the segment the sequence number shall be 1, for the second occurrence it shall be 2, etc. The set ID in the IN3 segment is used when there are multiple certifications for the insurance plan identified in IN1-2.

6.4.8.2 Certification number (CX) 00503

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility (HD)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the number assigned by the certification agency. The assigning authority and identifier type code are strongly recommended for all CX data types.

6.4.8.3 Certified by (XCN) 00504

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code (ID)> ^ <identifier check digit (ST)> ^ <code identifying the

check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)>^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the party that approved the certification. Multiple names and identifiers for the same person may be sent in this sequence. The legal name is assumed to be in the first repetition. When the legal name is not sent, a repeat delimiter must be sent first for the first repetition. The components of this field are described in Chapter 2.

6.4.8.4 Certification required (ID) 00505

Definition: This field indicates whether certification is required. Refer to *HL7 table 0136 - Yes/no indicator* for valid values.

6.4.8.5 Penalty (CM) 00506

Components: <penalty type (IS)> ^ <penalty amount (NM)>

Definition: This field contains the penalty, in dollars or a percentage, that will be assessed if the pre-certification is not performed. Refer to *user-defined table 0148 - Penalty type* for suggested values.

User-defined Table 0148 - Penalty type

Value	Description
AT	Currency amount
PC	Percentage

6.4.8.6 Certification date/time (TS) 00507

Definition: This field contains the date and time stamp that indicates when insurance was certified to exist for the patient.

6.4.8.7 Certification modify date/time (TS) 00508

Definition: This field contains the date/time that the certification was modified.

6.4.8.8 Operator (XCN) 00509

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)>^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the name party who is responsible for sending this certification information. Multiple names for the same person may be sent in this sequence. The legal name is assumed to be in the first repetition. When the legal name is not sent, a repeat delimiter must be sent first for the first repetition. The components of this field are described in Chapter 2.

6.4.8.9 Certification begin date (DT) 00510

Definition: This field contains the date that this certification begins.

6.4.8.10 Certification end date (DT) 00511

Definition: This field contains date that this certification ends.

6.4.8.11 Days (CM) 00512

Components: <day type (IS)> ^ <number of days (NM)>

Definition: This field contains the number of days for which this certification is valid. This field applies to denied, pending, or approved days. Refer to *user-defined table 0149 - Day type* for suggested values.

User-defined Table 0149 - Day type

Value	Description
AP	Approved
DE	Denied
PE	Pending

6.4.8.12 Non-concur code/description (CE) 00513

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the non-concur code and description for a denied request. *User-defined table 0233 - Non-concur code/description is used as the HL7 identifier for the user-defined table of values for this field.*

6.4.8.13 Non-concur effective date/time (TS) 00514

Definition: This field contains the effective date of the non-concurrence classification.

6.4.8.14 Physician reviewer (XCN) 00515

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the physician who works with and reviews cases that are pending physician review for the certification agency. Multiple names for the same person may be sent in this sequence. The legal name is assumed to be in the first repetition. When the legal name is not sent, a repeat delimiter must be sent first for the first repetition. The components of this field are described in Chapter 2. *User-defined table 0010 - Physician ID is used as the HL7 identifier for the user-defined table of value for this field.*

6.4.8.15 Certification contact (ST) 00516

Definition: This field contains the name of the party contacted at the certification agency who granted the certification and communicated the certification number.

6.4.8.16 Certification contact phone number (XTN) 00517

Components: [NNN] [(999)]999-9999 [X99999] [B99999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Definition: This field contains the phone number of the certification contact. Multiple phone numbers for the same certification contact may be sent in this sequence. The primary phone number is assumed to be in the first repetition. When the primary telephone number is not sent, a repeat delimiter must be sent first for the first repetition. The components of this field are described in Chapter 2.

6.4.8.17 Appeal reason (CE) 00518

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the reason that an appeal was made on a non-concur for certification. Refer to *user-defined table 0345 - Appeal reason* for suggested values.

6.4.8.18 Certification agency (CE) 00519

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the certification agency. Refer to *user-defined table 0346 - Certification agency* for suggested values.

6.4.8.19 Certification agency phone number (XTN) 00520

Components: [NNN] [(999)]999-9999 [X99999] [B99999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Definition: This field contains the phone number of the certification agency. The components of this field are described in Chapter 2.

6.4.8.20 Pre-certification req/window (CM) 00521

Components: <pre-certification patient type (IS)> ^ <pre-certification required (ID)> ^ <pre-certification window (TS)>

Definition: This field indicates whether pre-certification is required for particular patient types, and the time window for obtaining the certification. The following components of this field are defined as follows:

- pre-certification patient type refers to user-defined table 0150 - Pre-certification patient type for suggested values
- pre-certification required refers to HL7 table 0136 - Yes/no indicator for valid values
- pre-certification window is the amount of time required to attain certification from arrival at the institution. Its format follows the time stamp (TS) data type rules.

User-defined Table 0150 - Pre-certification patient type

Value	Description
ER	Emergency
IPE	Inpatient elective
OPE	Outpatient elective

Value	Description
UR	Urgent

6.4.8.21 Case manager (ST) 00522

Definition: This field contains the name of the entity who/which is handling this particular patient's case (e.g., UR nurse, or a specific facility location).

6.4.8.22 Second opinion date (DT) 00523

Definition: This field contains the date that the second opinion was obtained.

6.4.8.23 Second opinion status (IS) 00524

Definition: This field contains the code that represents the status of the second opinion. *User-defined table 0151 - Second opinion status is used as the HL7 identifier for the user-defined table for this field..*

6.4.8.24 Second opinion documentation received (IS) 00525

Definition: Use this field if accompanying documentation has been received by the provider. *User-defined table 0152 - Second opinion documentation received is used as the HL7 identifier for the user-defined table of values for this field.*

6.4.8.25 Second opinion physician (XCN) 00526

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code(ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains an identifier and name of the physician who provided the second opinion. Multiple names and identifiers for the same person may be sent in this sequence. The legal name is assumed to be in the first repetition. When the legal name is not sent, a repeat delimiter must be sent first for the first repetition. The components of this field are described in Chapter 2. *User-defined table 0010 - Physician ID is used as the HL7 identifier for the user-defined table of values for this field.*

6.4.9 ACC - accident segment

The ACC segment contains patient information relative to an accident in which the patient has been involved.

Figure 6-9. ACC attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	26	TS	O			00527	Accident Date/Time
2	60	CE	O		0050	00528	Accident Code
3	25	ST	O			00529	Accident Location
4	60	CE	O		0347	00812	Auto Accident State
5	1	ID	O		0136	00813	Accident Job Related Indicator
6	12	ID	O		0136	00814	Accident Death Indicator

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6.4.9.0 ACC field definitions

6.4.9.1 Accident date/time (TS) 00527

Definition: This field contains the date/time of the accident.

6.4.9.2 Accident code (CE) 00528

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the type of accident. *User-defined table 0050 - Accident code is used as the HL7 identifier for the user-defined table of values for this field.* ICD accident codes are recommended.

6.4.9.3 Accident location (ST) 00529

Definition: This field contains the location of the accident.

6.4.9.4 Auto accident state (CE) 00812

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field specifies the state in which the auto accident occurred. (HCFA 1500 requirement.) Refer to *user-defined table 0347 - Auto accident state* for suggested values.

6.4.9.5 Accident job related indicator (ID) 00813

Definition: This field indicates if the accident was related to a job. Refer to *HL7 table 0136 - Yes/no indicator* for valid values.

Y the accident was job related

N the accident was not job related

6.4.9.6 Accident death indicator (ID) 00814

Definition: This field indicates whether or not a patient has died as a result of an accident. Refer to *HL7 table 0136 - Yes/no indicator* for valid values.

Y the patient has died as a result of an accident

N the patient has not died as a result of an accident

6.4.10 UB1 - UB82 data segment

The UB1 segment contains the data necessary to complete UB82 bills. Only UB82 fields that do not exist in other HL7 defined segments appear in this segment. Patient Name and Date of Birth are required for UB82 billing; however, they are included in the PID segment and therefore do not appear here. The UB codes listed as examples are not an exhaustive or current list. Refer to a UB specification for additional information.

Figure 6-10. UB1 attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	SI	O			00530	Set ID - UB1
2	1	NM	B			00531	Blood Deductible (43)
3	2	NM	O			00532	Blood Furnished-Pints Of (40)
4	2	NM	O			00533	Blood Replaced-Pints (41)
5	2	NM	O			00534	Blood Not Replaced-Pints(42)

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
6	2	NM	O			00535	Co-Insurance Days (25)
7	14	IS	O	Y/5	0043	00536	Condition Code (35-39)
8	3	NM	O			00537	Covered Days - (23)
9	3	NM	O			00538	Non Covered Days - (24)
10	12	CM	O	Y/8	0153	00539	Value Amount & Code (46-49)
11	2	NM	O			00540	Number Of Grace Days (90)
12	60	CE	O		0348	00541	Special Program Indicator (44)
13	60	CE	O		0349	00542	PSRO/UR Approval Indicator (87)
14	8	DT	O			00543	PSRO/UR Approved Stay-Fm (88)
15	8	DT	O			00544	PSRO/UR Approved Stay-To (89)
16	20	CM	O	Y/5	0350	00545	Occurrence (28-32)
17	60	CE	O		0351	00546	Occurrence Span (33)
18	8	DT	O			00547	Occur Span Start Date(33)
19	8	DT	O			00548	Occur Span End Date (33)
20	30	ST	O			00549	UB-82 Locator 2
21	7	ST	O			00550	UB-82 Locator 9
22	8	ST	O			00551	UB-82 Locator 27
23	17	ST	O			00552	UB-82 Locator 45

6.4.10.0 UB1 field definitions

6.4.10.1 Set ID - UB1 (SI) 00530

Definition: This field contains the number that identifies this transaction. For the first occurrence of the segment the sequence number shall be 1, for the second occurrence it shall be 2, etc.

6.4.10.2 Blood deductible (43) (NM) 00531

Definition: ***This field has been retained for backward compatibility only.*** Use IN2-21-blood deductible instead of this field, as the blood deductible can be associated with the specific insurance plan via that segment. This field is defined by HCFA or other regulatory agencies.

6.4.10.3 Blood furnished-pints of (40) (NM) 00532

Definition: This field identifies the amount of blood furnished to the patient for this visit. The (40) indicates the corresponding UB82 field number. This field is defined by HCFA or other regulatory agencies.

6.4.10.4 Blood replaced-pints (41) (NM) 00533

Definition: This field contains UB82 Field 41. This field is defined by HCFA or other regulatory agencies.

6.4.10.5 Blood not replaced- pints (42) (NM) 00534

Definition: This field contains the blood not replaced, as measured in pints. UB82 Field 42. This field is defined by HCFA or other regulatory agencies.

6.4.10.6 Co-insurance days (25) (NM) 00535

Definition: This field contains UB82 Field 25. This field is defined by HCFA or other regulatory agencies.

6.4.10.7 Condition code (35-39) (IS) 00536

Definition: The code in this field repeats five times. UB82 Fields (35), (36), (37), (38), and (39). Refer to *user-defined table 0043 - Condition code* in UB2-3 for suggested values. The UB codes listed as examples are not an exhaustive or current list; refer to a UB specification for additional information. This field is defined by HCFA or other regulatory agencies.

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6.4.10.8 Covered days - (23) (NM) 00537

Definition: This field contains UB82 Field 23. This field is defined by HCFA or other regulatory agencies.

6.4.10.9 Non-covered days - (24) (NM) 00538

Definition: This field contains UB82 Field 24. This field is defined by HCFA or other regulatory agencies.

6.4.10.10 Value amount & code (46-49) (CM) 00539

Components: <value code (IS)> ^ <value amount (NM)>

Definition: The pair in this field can repeat up to eight times (46A, 47A, 48A, 49A, 46B, 47B, 48B, and 49B). Refer to *user-defined table 0153 - Value code* in UB2-6 for suggested values. The UB codes listed as examples are not an exhaustive or current list; refer to a UB specification for additional information. This field is defined by HCFA or other regulatory agencies.

6.4.10.11 Number of grace days (90) (NM) 00540

Definition: This field contains UB82 Field 90. This field is defined by HCFA or other regulatory agencies.

6.4.10.12 Special program indicator (44) (CE) 00541

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the special program indicator. UB82 Field 44. This field is defined by HCFA or other regulatory agencies. Refer to *user-defined table 0348 - Special program indicator* for suggested values. The UB codes listed as examples are not an exhaustive or current list; refer to a UB specification for additional information

User-defined Table 0348 - Special program indicator

Value	Description
01	EPSDT-CHAP
02	Physically handicapped children's program
03	Special federal funding
04	Family planning
05	Disability
06	PPV/Medicare 100% payment
07	Induced abortion-danger to life
08	Induced abortion victim rape/incest

6.4.10.13 PSRO/UR approval indicator (87) (CE) 00542

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the PSRO/UR approval indicator. UB82 field 87. This field is defined by HCFA or other regulatory agencies. Refer to *user-defined table 0349 - PSRO/UR approval indicator* for suggested values. The UB codes listed as examples are not an exhaustive or current list; refer to a UB specification for additional information.

User-defined Table 0349 - PSRO/UR approval indicator

Value	Description
1	Approved by the PSRO/UR as billed
2	Automatic approval as billed based on focused review
3	Partial approval
4	Admission denied
5	Postpayment review applicable

6.4.10.14 PSRO/UR approved stay-fm (88) (DT) 00543

Definition: This field contains the PSRO/UR approved stay date (from). UB82 Field 88. This field is defined by HCFA or other regulatory agencies.

6.4.10.15 PSRO/UR approved stay-to (89) (DT) 00544

Definition: This field contains the PSRO/UR approved stay date (to). UB82 Field 89. This field is defined by HCFA or other regulatory agencies.

6.4.10.16 Occurrence (28-32) (CM) 00545

Components: <occurrence code (IS)> ^ <occurrence date (DT)>

Definition: The set of values in this field can repeat up to five times. UB82 Fields 28-32. This field is defined by HCFA or other regulatory agencies. *User-defined table 0350 - Occurrence code* (see UB2-7) is used as the HL7 identifier for the user-defined table of values for this field. Refer to a UB specification for additional information.

6.4.10.17 Occurrence span (33) (CE) 00546

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: UB82 Field 33. This field is defined by HCFA or other regulatory agencies. Refer to *user-defined table 0351- Occurrence span* in UB2-8 for suggested values. The UB codes listed as examples are not an exhaustive or current list; refer to a UB specification for additional information.

6.4.10.18 Occur span start date (33) (DT) 00547

Definition: This field contains the occurrence span start date. UB82 Field 33. This field is defined by HCFA or other regulatory agencies.

6.4.10.19 Occur span end date (33) (DT) 00548

Definition: This field contains the occurrence span end date. UB82 Field 33. This field is defined by HCFA or other regulatory agencies.

6.4.10.20 UB-82 locator 2 (ST) 00549

Definition: Defined by UB-82 HCFA specification.

6.4.10.21 UB-82 locator 9 (ST) 00550

Definition: Defined by UB-82 HCFA specification.

6.4.10.22 UB-82 locator 27 (ST) 00551

Definition: Defined by UB-82 HCFA specification.

6.4.10.23 UB-82 locator 45 (ST) 00552

Definition: Defined by UB-82 HCFA specification.

6.4.11 UB2 - UB92 data segment

The UB2 segment contains data necessary to complete UB92 bills. Only UB92 fields that do not exist in other HL7 defined segments appear in this segment. Just as with the UB82 billing, Patient Name and Date of Birth are required; they are included in the PID segment and therefore do not appear here. When the field locators are different on the UB92, as compared to the UB82, the element is listed with its new location in parentheses (). The UB codes listed as examples are not an exhaustive or current list; refer to a UB specification for additional information.

Figure 6-11. UB2 attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	SI	O			00553	Set ID - UB2
2	3	ST	O			00554	Co-Insurance Days (9)
3	2	IS	O	Y/7	0043	00555	Condition Code (24-30)
4	3	ST	O			00556	Covered Days (7)
5	4	ST	O			00557	Non-Covered Days (8)
6	11	CM	O	Y/12	0153	00558	Value Amount & Code
7	11	CM	O	Y/8	0350	00559	Occurrence Code & Date (32-35)
8	28	CM	O	Y/2	0351	00560	Occurrence Span Code/Dates (36)
9	29	ST	O	Y/2		00561	UB92 Locator 2 (State)
10	12	ST	O	Y/2		00562	UB92 Locator 11 (State)
11	5	ST	O			00563	UB92 Locator 31 (National)
12	23	ST	O	Y/3		00564	Document Control Number
13	4	ST	O	Y/23		00565	UB92 Locator 49 (National)
14	14	ST	O	Y/5		00566	UB92 Locator 56 (State)
15	27	ST	O			00567	UB92 Locator 57 (National)
16	2	ST	O	Y/2		00568	UB92 Locator 78 (State)
17	3	NM	O			00815	Special Visit Count

6.4.11.0 UB2 field definitions

6.4.11.1 Set ID - UB2 (SI) 00553

Definition: This field contains the number that identifies this transaction. For the first occurrence of the segment the sequence number shall be 1, for the second occurrence it shall be 2, etc.

6.4.11.2 Co-insurance days (9) (ST) 00554

Definition: This field contains UB92 field 9. This field is defined by HCFA or other regulatory agencies.

6.4.11.3 Condition code (24-30) (IS) 00555

Definition: The code in this field can repeat up to seven times. UB92 fields 24-30. Refer to *user-defined table 0043 - Condition code* for suggested values. The UB codes listed as examples are not an exhaustive or current list; refer to a UB specification for additional information. This field is defined by HCFA or other regulatory agencies.

User-defined Table 0043 - Condition code

Value	Description
01	Military service related

Value	Description
02	Condition is employment related
03	Patient covered by insurance not reflected here
04	HMO enrollee
05	Lien has been filed
06	ESRD patient in first 18 months of entitlement covered by employer group health insurance
07	Treatment of non-terminal condition for hospice patient
08	Beneficiary would not provide information concerning other insurance coverage
09	Neither patient nor spouse is employed
10	Patient and/or spouse is employed but no EGHP exists
11	Disabled beneficiary but no LGHP
12 ... 16	Payer codes.
18	Maiden name retained
19	Child retains mother's name
20	Beneficiary requested billing
21	Billing for Denial Notice
26	VA eligible patient chooses to receive services in a Medicare certified facility
27	Patient referred to a sole community hospital for a diagnostic laboratory test
28	Patient and/or spouse's EGHP is secondary to Medicare
29	Disabled beneficiary and/or family member's LGHP is secondary to Medicare
31	Patient is student (full time-day)
32	Patient is student (cooperative/work study program)
33	Patient is student (full time-night)
34	Patient is student (Part time)
36	General care patient in a special unit
37	Ward accommodation as patient request
38	Semi-private room not available
39	Private room medically necessary
40	Same day transfer
41	Partial hospitalization
46	Non-availability statement on file
48	Psychiatric residential treatment centers for children and adolescents
55	SNF bed not available
56	Medical appropriateness
57	SNF readmission
60	Day outlier
61	Cost outlier
62	Payer code
66	Provider does not wish cost outlier payment

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Value	Description
67	Beneficiary elects not to use life time reserve (LTR) days
68	Beneficiary elects to use life time reserve (LTR) days
70	Self-administered EPO
71	Full care in unit
72	Self-care in unit
73	Self-care training
74	Home
75	Home - 100% reimbursement
76	Back-up in facility dialysis
77	Provider accepts or is obligated/required due to a contractual arrangement or law to accept payment by a primary payer as payment in full
78	New coverage not implemented by HMO
79	Corf services provided off-site
80	Pregnant

6.4.11.4 Covered days (7) (ST) 00556

Definition: This field contains UB92 field 7. This field is defined by HCFA or other regulatory agencies.

6.4.11.5 Non-covered days (8) (ST) 00557

Definition: This field contains UB92 field 8. This field is defined by HCFA or other regulatory agencies.

6.4.11.6 Value amount & code (39-41) (CM) 00558

Components: <value code (IS)> ^ <value amount (NM)>

Definition: The pair in this field can repeat up to twelve times. UB92 fields 39a, 39b, 39c, 39d, 40a, 40b, 40c, 40d, 41a, 41b, 41c, and 41d. Refer to *user-defined table 0153 - Value code* for suggested values. The UB codes listed as examples are not an exhaustive or current list; refer to a UB specification for additional information. This field is defined by HCFA or other regulatory agencies.

User-defined Table 0153 - Value code

Value	Description
01	Most common semi-private rate
02	Hospital has no semi-private rooms
04	Inpatient professional component charges which are combined billed
05	Professional component included in charges and also billed separate to carrier
06	Medicare blood deductible
08	Medicare life time reserve amount in the first calendar year
09	Medicare co-insurance amount in the first calendar year
10	Lifetime reserve amount in the second calendar year
11	Co-insurance amount in the second calendar year
12	Working aged beneficiary/spouse with employer group health plan
13	ESRD beneficiary in a Medicare coordination period with an employer group health plan

Value	Description
14	No Fault including auto/other
15	Worker's Compensation
16	PHS, or other federal agency
17	Payer code
21	Catastrophic
22	Surplus
23	Recurring monthly incode
24	Medicaid rate code
30	Pre-admission testing
31	Patient liability amount
37	Pints of blood furnished
38	Blood deductible pints
39	Pints of blood replaced
40	New coverage not implemented by HMO (for inpatient service only)
41	Black lung
42	VA
43	Disabled beneficiary under age 64 with LGHP
44	Amount provider agreed to accept from primary payer when this amount is less than charges but higher than payment received,, then a Medicare secondary payment is due
45	Accident hour
46	Number of grace days
47	Any liability insurance
48	Hemoglobin reading
49	Hematocrit reading
50	Physical therapy visits
51	Occupational therapy visits
52	Speech therapy visits
53	Cardiac rehab visits
56	Skilled nurse - home visit hours
57	Home health aide - home visit hours
58	Arterial blood gas
59	Oxygen saturation
60	HHA branch MSA
67	Peritoneal dialysis
68	EPO-drug
70 ... 72	Payer codes
75 ... 79	Payer codes
80	Psychiatric visits
81	Visits subject to co-payment

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Value	Description
A1	Deductible payer A
A2	Coinsurance payer A
A3	Estimated responsibility payer A
X0	Service excluded on primary policy
X4	Supplemental coverage

6.4.11.7 Occurrence code & date (32-35) (CM) 00559

Components: <occurrence code (CE)> ^ <occurrence date (DT)>

Subcomponents of occurrence code: <identifier(ST)> & <name of coding system (ST)> & <alternate identifier (ST)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Definition: The set of values in this field can repeat up to eight times. UB92 fields 32a, 32b, 33a, 33b, 34a, 34b, 35a, and 35b. This field is defined by HCFA or other regulatory agencies. Refer to *user-defined table 0350 - Occurrence code* for suggested values. The UB codes listed as examples are not an exhaustive or current list; refer to a UB specification for additional information.

User-defined Table 0350 - Occurrence code

Value	Description
01	Auto accident
02	No fault insurance involved-including auto accident/other
03	Accident/tort liability
04	Accident/employment related
05	Other accident
06	Crime victim
09	Start of infertility treatment cycle
10	Last menstrual period
11	Onset of symptoms/illness
12	Date of onset for a chronically dependent individual
17	Date outpatient occupational therapy plan established or last reviewed
18	Date of retirement patient/beneficiary
19	Date of retirement spouse
20	Guarantee of payment began
21	UR notice received
22	Date active care ended
24	Date insurance denied
25	Date benefits terminated by primary payor
26	Date SNF bed available
27	Date home health plan established
28	Spouse's date of birth
29	Date outpatient physical therapy plan established or last reviewed
30	Date outpatient speech pathology plan established or last reviewed

Value	Description
31	Date beneficiary notified of intent to bill (accommodations)
32	Date beneficiary notified of intent to bill (procedures or treatments)
33	First day of the Medicare coordination period for ESRD beneficiaries covered by EGHP
34	Date of election of extended care facilities
35	Date treatment started for P.T.
36	Date of inpatient hospital discharge for covered transplant patients
37	Date of inpatient hospital discharge for non-covered transplant patient
40	Scheduled date of admission
41	Date of first test for pre-admission testing
42	Date of discharge
43	Scheduled date of canceled surgery
44	Date treatment started for O.T.
45	Date treatment started for S.T.
46	Date treatment started for cardiac rehab.
47 ... 49	Payer codes
50	Date lien released
51	Date treatment started for psychiatric care
70 ... 99	Occurrence span codes and dates
A1	Birthdate - insured A
A2	Effective date - insured A policy
A3	Benefits exhausted payer A

6.4.11.8 Occurrence span code/dates (36) (CM) 00560

Components: <occurrence span code (CE)> ^ <occurrence span start date (DT)> ^ <occurrence span stop date (DT)>

Subcomponents of occurrence span code: <identifier(ST)> & <name of coding system (ST)> & <alternate identifier (ST)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Definition: This field can repeat up to two times. UB92 field 36a, 36b. This field is defined by HCFA or other regulatory agencies. Refer to *user-defined table 0351 - Occurrence span* for suggested values. The UB codes listed as examples are not an exhaustive or current list; refer to a UB specification for additional information.

User-defined Table 0351 - Occurrence span

Value	Description
70	Qualifying stay dates for SNF
71	Prior stay dates
72	First/last visit
73	Benefit eligibility period
74	Non-covered level of care
75	SNF level of care

Value	Description
76	Patient liability
77	Provider liability period
78	SNF prior stay dates
79	Payer code
M0	PRO/UR approved stay dates

6.4.11.9 UB92 locator 2 (state) (ST) 00561

Definition: The value in this field may repeat up to two times. This field is defined by HCFA or other regulatory agencies.

6.4.11.10 UB92 locator 11 (state) (ST) 00562

Definition: The value in this field may repeat up to two times.

6.4.11.11 UB92 locator 31 (national) (ST) 00563

Definition: Defined by HCFA or other regulatory agencies.

6.4.11.12 Document control number (ST) 00564

Definition: This field contains the number assigned by payor that is used for rebilling/adjustment purposes. It may repeat up to three times. UB92 field 37

6.4.11.13 UB92 locator 49 (national) (ST) 00565

Definition: This field may repeat up to twenty-three times. This field is defined by HCFA or other regulatory agencies.

6.4.11.14 UB92 locator 56 (state) (ST) 00566

Definition: This field may repeat up to five times.

6.4.11.15 UB92 locator 57 (national) (ST) 00567

Definition: Defined by UB-92 HCFA specification.

6.4.11.16 UB92 locator 78 (state) (ST) 00568

Definition: This field may repeat up to two times.

6.4.11.17 Special visit count (NM) 00815

Definition: This field contains the total number of special therapy visits.

6.5 EXAMPLE TRANSACTIONS

6.5.1 Create a patient billing/accounts receivable record

```
MSH|^~\&|PATA|01|PATB|01|19930908135031||BAR^P01|641|P|2.3.1|0000000000000001|<cr>  
EVN|P01|1993090813503||<cr>
```

```

PID|1||8064993^^^PATA1^MR^A~6045681^^^PATA1^BN^A~123456789ABC^^^US^NI~123456789^^^USS
SA^SS||SMITH^PAT^J^^^^|19471007|F||1|1234
FANNIN^^HOUSTON^TX^77030^USA|HAR|||S||6045681<cr>

GT1|001||JOHNSON^SAM^J||8339 MDRVEN RD^^BALTIMORE^MD^
21234^US|||||193-22-1876<cr>

NK1|001|SMITH^WILLIAM|F|522 MAIN ST^^CUMBERLAND^MD
^28765^US|(301)555-2134<cr>

IN1|001|A|A357|BCMD||||132987<cr>

```

A patient has been registered by the ADT system (PATA) and notification is sent to the Patient Billing system (PATB). The patient's name is Pat J. Smith, a female Caucasian, born on October 7, 1947. Living at 1234 Fannin, Houston, TX.

Ms. Smith's medical record number is 8064993 and her billing number is 6045681. Her national identifier is 123456789ABC. Her social security number, assigned by the U.S. Social Security Administration, is 123456789. Ms. Smith has provided her father's name and address for next of kin. Ms. Smith is insured under plan ID A357 with an insurance company known to both systems as BCMD.

6.5.2 Post a charge to a patient's account

```

MSH|^~\&|PATA|01|PATB|01|19930908135031||DFT^P03|641|P|2.3.1|0000000000000001||<cr>
EVN|P03|1993090813503||<cr>
PID||0008064993^^^ENT^PE|0008064993^^^PAT^MR||0006045681^^^PATA^AN|SMITH^PAT^J^^^^|194
71007|F||1|1234 FANNIN^^HOUSTON^TX^77030^USA|HAR|||S||6045681^^^PATA^AN<cr>
FT1|1||19950715|19950716|CG|B1238^BIOPSY-
SKIN^SYSTEMA||||1||ONC|A357|||||P8765^KILDARE^BEN<cr>

```

A patient has been registered by the ADT system (PATA) and notification is sent to the Patient Billing system (PATB). The patient's name is Pat J. Smith, a female Caucasian, born on October 7, 1947. Living at 1234 Fannin, Houston, TX.

Ms. Smith's patient number is 8064993 and her billing number is 6045681. This transaction is posting a charge for a skin biopsy to her account.

6.5.3 Update patient accounts - update UB82 information

```

MSH|^~\&|UREV||PATB||||BAR^P05|MSG0018|P|2.3.1<cr>
EVN|P05|1993090813503
PID||||125976||JOHNSON^SAM^J|||||||125976011<cr>
UB1|1|1|5|3|1|39||01^500.00||1|19880501|19880507|10^19880501<cr>

```

Utilization review sends data for Patient Billing to the Patient Accounting system. The patient's insurance program has a 1-pint deductible for blood; the patient received five pints of blood, and three pints were replaced, with one pint not yet replaced.

The patient has been assigned to a medically necessary private room (UB condition code 39). The hospital's most common semi-private rate is \$500.00 (UB value code 01.)

The services provided for the period 05/01/88 through 05/07/88 are fully approved (PSRO/UR Approval Code 1). The patient's hospitalization is the result of an auto accident (UB occurrence code 01.)

6.5.4 Update patient accounts - update diagnosis and DRG information

```

MSH|^~\&|UREV||PATB||||BAR^P05|MSG0018|P|2.3.1<cr>
EVN|P05|1993090813503

```

```
PID|||125976||JOHNSON^SAM^J|||||||125976011<cr>
DG1|001|I9|1550|MAL NEO LIVER, PRIMARY|19880501103005|F<cr>
DRG|203|19880501103010|Y||D|5<cr>
```

The DG1 segment contains the information that the patient was diagnosed on May 1 as having a malignancy of the hepatobiliary system or pancreas (ICD9 code 1550). In the DRG segment, the patient has been assigned a Diagnostic Related Group (DRG) of 203 (corresponding to the ICD9 code of 1550). Also, the patient has been approved for an additional five days (five-day outlier).

6.6 IMPLEMENTATION CONSIDERATIONS

The Set-ID used to be needed to identify whether or not a record was to be used for deletion, update, or cancellation. This information was redundant since the event type indicates this fact. Consequently, the Set-ID is now only used to identify a segment.

Observation Reporting

Chapter Chair/Editor:	Clement J. McDonald, MD Regenstrief Institute and Indiana University School of Medicine
Chapter Chair/Editor:	Hans Buitendijk Shared Medical Systems
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7.1 INTRODUCTION AND OVERVIEW

This chapter describes the transaction set required for sending structured patient-oriented clinical data from one computer system to another. A common use of these transaction sets will be to transmit observations and results of diagnostic studies from the producing system (e.g., clinical laboratory system, EKG system) (the filler), to the ordering system (e.g., HIS order entry, physician's office system) (the placer). However, the transaction set is not limited to such transactions. Observations can be sent from producing systems to archival medical record systems (not necessarily the order placer) and from such medical record systems to other systems that were not part of the ordering loop, e.g., an office practice system of the referring physician for inpatient test results ordered by an inpatient surgeon. This chapter also provides mechanisms for registering clinical trials and methods for linking orders and results to clinical trials and for reporting experiences with drugs and devices.

These transaction sets permit the transmission of any kind of clinical observations including (but not limited to) clinical laboratory results, the results of imaging studies (excluding the image), EKG pulmonary function studies, measures of patient status and condition, vital signs, intake and output, severity and/or frequency of symptoms, drug allergies, problem lists, diagnostic lists, physician and nursing history, physicals, progress notes, operative notes and so on. These transaction sets carry information that is reported as text, numeric or categorical values. These messages do not carry the images themselves. (See ACR NEMA Publication 300-1988 *Digital Imaging and Communications Standard*, for image standards, and ASTM E1467.91 *Standard specification for transferring digital neurophysiological data between independent computer systems*, for transmitting EEG, EMG tracings).

Chapter 7: Observation Reporting

An observation can be one of many data types. The main ones are text, numbers and codes. This provides the flexibility needed to transmit observations that are recorded as continuous values (e.g., glucose, diastolic blood pressure), as categorical values, e.g., patient position (sitting, reclining or standing), VDRL (reactive, weakly reactive or nonreactive), or as text. An entire History and Physical could be transmitted as an observation whose value is one large chunk of formatted text.

This chapter provides mechanisms for transmitting *structured*, record-oriented reports. This means that individual observations are transmitted as separate logical entities (objects), and within this entity, separate fields are defined for identifying the observation, its values, its units, normal ranges, etc., such that the receiving system can “understand,” reorganize and/or react to the contents of these messages. Structured reports are to be distinguished from text-oriented reports which can also be transmitted via HL7 using the UDM message described in Chapter 2. The latter are ASCII images of nonstandard printed reports intended for display to humans. For practical purposes their contents are not understandable to the computer.

Observations may be transmitted in a solicited (in response to a query) or unsolicited mode. In the solicited mode, a user requests a set of observations according to criteria transmitted by the user. The sending system responds with existing data to satisfy the query (subject to access controls). Queries do not elicit new observations by the target system, they simply retrieve old observations. (See Chapter 2 for full discussion of the query transmission.)

The unsolicited mode is used primarily to transmit the values of new observations. It is the mode used by producing services to return the values of observations requested by an ordering system. A laboratory system, for example, would usually send the results of an AM electrolytes to the ordering HIS via the unsolicited mode. An intensive care system would send the blood pressures to the same HIS by the same mode. Calling such transactions unsolicited may sound like a misnomer, but is not. The placing service solicits the producing service to make the observation. It could also (through a query) solicit the value of that observation after it has been made. However, such an approach would demand continuous polling of the producing system until the result was produced. Using the unsolicited mode, the producing service returns the value of an observation as soon as it is available. The unsolicited mode can also be used to transmit new results to a system (e.g., an archival medical record system) that did not order the observation. The transactions that define these modes are more fully described in Section 7.2, “MESSAGE DEFINITIONS.”

Observations are usually ordered and reported as sets (batteries) of many separate observations. Physicians order electrolytes (consisting of sodium, potassium, chloride, bicarbonate) or vitals (consisting of diastolic blood pressure, systolic blood pressure, pulse, and temperature). Moreover, tests that we may think of as single entity, e.g., cardiac echo, usually yield multiple separate measurements, e.g., left ventricular diameter, left atrial diameter, etc. Moreover, observations that are usually reported as text (e.g., the review of systems from the history and physical) can also be considered a set of separately analyzable units (e.g., cardiac history, pulmonary history, genito-urinary history, etc.). We strongly suggest that all text clinical reports be broken down into such separate analyzable entities and that these individual entities be transmitted as separate OBX segments. Because many attributes of a set of observations taken at one time will be identical, one OBR segment serves as a header for the report and carries the information that applies to all of the individual observations in the set. In the case of ordered observations, the OBR segment is a “turn-around document” like the manual request forms it replaces. It carries information about the order to the producing service; a copy of the OBR with additional fields completed is returned with the observations to the requesting service.

Not all observations are preceded by an order. However, all observations whether explicitly ordered or initiated without an order are reported with an OBR segment as the report header.

The major segments (OBR, OBX) defined in this chapter, their fields, and the code tables have been defined in collaboration with ASTM E31.11 with the goal of keeping HL7 observation transmission the same as ASTM E1238 in pursuit of the goals of ANSI HISPP and the Message Standards Developers Subcommittee. (Some sections of this chapter have been taken with permission directly from the E1238-91 document and vice versa in pursuit of those goals).

The OBR segment provides information that applies to all of the observations that follow. It includes a field that identifies a particular battery (or panel or set) of observations (e.g., electrolytes, vital signs or Admission H&P). For

simplicity we will refer to the observation set as the battery. The battery usually corresponds to the entity that is ordered or performed as a unit. (In the case of a query, observation sets may be a more arbitrary collection of observations.) The OBX segment provides information about a single observation, and it includes a field that identifies that single observation (e.g., potassium, diastolic blood pressure or admission diagnosis). Both of these fields assume master tables that define coding systems (the universe of valid identifying codes) for batteries and observations, respectively. These tables will usually be part of the producing and sending services application and (usually) include many other useful pieces of information about the observation or battery. Segments for transmitting such master file information between systems that produce and systems that use clinical information are described in Chapter 8.

This Standard does not require the use of a particular coding system to identify either batteries or single observations. In the past, local institutions tended to invent their own unique code systems for identifying test and other clinical observations because standard codes were not available. Such local code systems sufficed for transmitting information within the institutions but presented high barriers to pooling data from many sources for research or for building medical record systems. However, standard code systems such as LOINC and SNOMED now exist for many of these purposes, and we strongly encourage their use in observation reporting. These codes can be sent either as the only code or they can be sent along with the local historic code as the second code system in a CE code.

In past versions of the HL7 standard, Appendix A to Chapter 7 presented suggestions for constructing clinical codes from existing procedure code systems such as CPT4. Appendix A is now part of the Implementation Guide and contains LOINC codes for most laboratory tests and many common clinical variables (e.g., vital signs, intake and output, cardiovascular measurements and others). The most recent version of the LOINC database, which includes records for more than 7,000 observations and includes codes, names, synonyms and other attributes (such as the molecular weights of chemical moieties) for each observation, is available from the HL7 file server at <http://dumccss.mc.duke.edu/standards/termcode/loinclub/loinc.html>. The Implementation Guide provides construction rules for many variables that are not yet covered by LOINC. Codes for Neurophysiologic variables (EEG, EMG, Evoked potentials) are provided in Appendix X2 of ASTM E1467.

Some parts of this document (the discussion and tables defining units, the discussion of the rules of mapping observations to OBX segments, and some of the examples at the end of the chapter have been copied (with permission) from ASTM E1238.

As is true throughout this Standard, the emphasis should be on the abstract messages, defined without regard to the encoding rules. The example messages, however, are based upon the HL7 encoding rules.

7.1.1 Glossary

7.1.1.1 Placer:

Person or service that requests (places order for) an observation battery, e.g., the physician, the practice, clinic, or ward service, that orders a lab test, X-ray, vital signs, etc. The meaning is synonymous with, and used interchangeably with, requestor. See *ORC-2-placer order number*, Section 4.3.1.2, "Placer order number."

7.1.1.2 Filler:

Person, or service, who produces the observations (fills the order) requested by the requestor. The word is synonymous with "producer" and includes diagnostic services and clinical services and care providers who report observations about their patients. The clinical laboratory is a producer of lab test results (filler of a lab order), the nursing service is the producer of vital signs observations (the filler of orders to measure vital signs), and so on. See *ORC-3-filler order number*, Section 4.3.1.3, "Filler order number."

7.1.1.3 Battery:

A set of one or more observations identified as by a single name and code number, and treated as a shorthand unit for ordering or retrieving results of the constituent observations. In keeping with the mathemati-

cal conventions about set, a battery can be a single observation. Vital signs, electrolytes, routine admission tests, and obstetrical ultrasound are all examples. Vital signs (conventionally) consist of diastolic and systolic blood pressure, pulse, and respiratory rate. Electrolytes usually consist of Na⁺, K⁺, Cl⁻, and HCO₃⁻. Routine admission tests might contain CBC, Electrolytes, SMA12, and Urinalysis. (Note that the elements of a battery for our purposes may also be batteries). Obstetrical ultrasound is a battery made up of traditional component measurements and the impression, all of which would be returned as separate results when returned to the requestor. A test involving waveform recording (such as an EKG) can be represented as a battery comprised of results of many categories, including digital waveform data, labels and annotations to the data, measurements, and the impression

The word battery is used in this specification synonymously with the word profile or panel. The individual observation elements within a battery may be characteristic of a physiologic system (e.g., liver function tests), or many different physiologic systems.

7.1.1.4 Observation:

A measurement of a single variable or a single value derived logically and/or algebraically from other measured or derived values. A test result, a diastolic blood pressure, and a single chest X-ray impression are examples of observations. In certain circumstances, tracings and images may be treated by HL7 as individual observations and sent as a single OBX. These include waveform data described in Section 7.14, "WAVEFORM SUMMARY," and encapsulated data aggregates using the ED data type described in Section 2.8.14, "ED - encapsulated data," (which can represent actual images, audio data, etc.).

7.1.1.5 Segment (record):

A typed aggregate of fields (fields) describing one complete aspect of a message. For example, the information about one order is sent as type of segment (OBR), the information related to an observation is sent as another segment (OBX).

The segment in a message is analogous to a record in a database, and in previous versions of the Standard we used record in place of the word segment. We have changed the nomenclature to be consistent with HL7 and other standards organizations in this version.

7.1.1.6 Field:

One specific attribute of a segment, for example, patient diagnosis, which may contain aggregates of fields further refining the basic attribute.

7.1.1.7 Repeated value:

Some fields may contain many repeat fields. For example, the diagnoses field may contain many different diagnoses.

7.1.1.8 Field components:

A field entry may also have discernible parts or components. For example, the patient's name is recorded as last name, first name, and middle initial, each of which is a distinct entity separated by a component delimiter (sub-subfield in ASTM E1238-94).

7.1.2 Narrative reports as batteries with many OBX

Narrative reports from services such as Radiology usually consist of a number of subcomponents (e.g., a chest X-ray report may consist of a description, an impression, and a recommendation). Other studies, such as echocardiograms, contain analogous components, as well as numeric observations (e.g., left ventricular and diastolic diameter). Surgical pathology reports may contain information about multiple specimens and reports: the anatomic source, the gross description, the microscopic description, and a diagnostic impression for each specimen.

The current Standard treats each component of a narrative report as a separate “test” or observation. Just as a CHEM12 is transmitted as an order segment (OBR) plus 12 OBX segments, a chest X-ray would be transmitted as an order (OBR) segment plus three OBX segments, one for the description, one for the impression, and one for the recommendations. Similarly, an EKG report would be transmitted as an order segment (OBR), two OBX segments for the impression and recommendation, and additional OBX segments for each EKG measurement, e.g. the PR interval, QR interval, QRS axis, and so on.

We have defined code suffixes for constructing observation IDs for the common components of narrative reports (see *Figure 7-1*). The observation identifier for each such component is obtained by concatenating the observation battery ID (the ID in *OBR-4-universal service ID* of the preceding OBR from any coding system) with the appropriate suffix. The observation ID for a chest X-ray impression, for example, would be the chest X-ray observation ID (if CPT4, it would be 71020), a subcomponent delimiter, and the suffix, IMP, i.e., 71020&IMP.

This same combining rule applies to other coding systems including local and universal procedural codes (see Chapter 4). For example, if a local code for EKG was E793, and the locally agreed upon designation for that local code was EKG, the impression would be identified as E793&IMP^^99EKG.

Note: The “99EKG” in the 3rd component is included to indicate a local code. The EKG’s description, in this case, would be E793&GDT^^99EKG.

Although it is strongly discouraged, the sender and receiver may agree to allow the omission of the observation ID component of a result segment when it is the same as the observation ID of the preceding OBR. In this case, only the ampersand and the suffix would have to be sent, e.g., &IMP or &REC, in *OBX-3-observation identifier* of a result segment. The full code would be assumed as the test identifier (recorded in the order segment) plus the category identifier recorded in the observation segment.

Figure 7-1. Observation ID suffixes

Coded Results	Suffix	Type
Diagnostic Impression	IMP	CE
Recommendation	REC	CE
Confirming procedures	CNP	CE
Procedure Medication	MED	CE
Anatomic Site	ANT	CE
Device/Instrument	DEV	CE
Serial # Device/Instrument	SER	ST
Bulk Text Reports		
Gross Or General Description Of The Study	GDT	TX or FT
Microscopic Or Secondary Description	MDT	TX or FT
Technician's Comment	TCM	TX or FT
Addendum Note	ADT	TX or FT
Other		
Diagnosis Onset Date/Time	ITM	TS
Diagnosis Resolution Date/Time	RTM	TS

Coded Results	Suffix	Type
Comparison Study	CMS	CE
Comparison Date/Time	CMT	TS
Comparison Results	CMR	CE
Comparison Change	CMC	CE
Predicted Value	PRD	ST
Percent Predicted	PPR	ST
After Drug Observed	AFD	ST
Predicted Value After Drug	ADP	ST
Percent Predicted After Drug	APP	ST
Timing Information	TIM	TS
Channel Definition Data	CHN	CD
Waveform Digital Data	WAS	NA or MA
Waveform Annotation	ANO	CE

7.1.3 Suffixes for defining observation IDs for common components of narrative reports

The following subsections define each of the suffixes except for the specialized waveform suffixes, which are defined in Section 7.16, “WAVEFORM SPECIFIC OBSERVATION ID SUFFIXES.”

7.1.3.1 Diagnostic impression (IMP)

When the suffix is IMP (*OBX-3-observation identifier*), the result is a diagnosis or finding, stored as a CE data type. Multiple result segments with an IMP suffix can be used if there are multiple parts to the study and each have an associated diagnosis (for example, the awake and sleep portion of an EEG). Each of these would have a different observation sub-ID. Multiple result segments with an IMP suffix can also be used if there are separate diagnoses corresponding to separate anatomic sites; in this case, the site for each diagnosis (each result segment with an IMP suffix) must be specified by an immediately preceding result segment with a suffix of ANT (see Section 7.1.3.5, “Anatomic site (ANT)”), which also has the same observation sub-ID. When multiple distinct diagnostic impressions are being reported, for example, mitral valve prolapse and aortic stenosis, each distinct impression should be sent in a separate OBX segment. More than one code may be included within one coded result segment, but only when such codes are modifiers of the principal impression, e.g., to report additional detail about the finding, not to report an entirely different finding. In this case, the *OBX-5-observation value* field may repeat, with each instance or repetition specifying one of the related coded impressions.

The coded data type for impressions does not mean that a reporting service must actually code all such impressions. The diagnostic impression can be sent as dictated text, but the text should be sent in the second component of the CE data type without a code to distinguish it from code, i.e. it should be preceded by a component delimiter, e.g., ^congestive heart failure.

When multiple separate text impressions are being reported, they should be reported in separate OBX segments to indicate that they are distinct impressions.

7.1.3.2 Recommendation (REC)

When the suffix is REC (*OBX-3-observation identifier*), the value is a CE result, representing the reading physician’s recommendations about repeat testing, follow up or therapy. For example, when an ambiguous lesion result is seen on a mammogram, the reading physician might recommend a repeat mammogram in

six months, or a needle biopsy immediately. The recommended procedures are recorded as codes and/or text descriptions in the coded identifier structure.

If more than one follow up study is recommended, each such recommendation is sent in a separate REC.

7.1.3.3 Confirming procedures (CNP)

The confirming procedure OBX suffix identifies additional studies used to confirm the diagnosis reported in the IMP OBX. If, for example, electron microscopy was done to confirm a surgical pathology diagnosis, the identifier for electron microscopy *OBX-3-observation identifier* would be stored as the value field of an observation ID with a confirming procedure suffix. Confirming procedures are most important in surgical pathology reports. But they might also be used by services such as endoscopy, to record the fact that a biopsy, culture, etc., was taken during the procedure. If more than one confirming procedure was used, each is sent in a separate result segment with observation ID suffix CNP.

7.1.3.4 Procedure medication (MED)

A coded result segment with a suffix of MED (*OBX-3-observation identifier*) indicates that the segment contained information about medication given as part of the procedure -- contrast medication, medication intended to invoke a physiologic response (e.g., to be used in stress testing) or premedication. When patients receive more than one procedure medication, each medication should be reported in a separate OBX medication segment. If the transmitting system has codes available for medications, they would be recorded as the first component of *OBX-3-observation identifier*. The name and/or the dosages could be included in the second component of *OBX-5-observation value*.

A coded result segment with a suffix of MED (procedure medication) may also be used to define a medication administered during recording of digital waveform data or other extended diagnostic procedure, e.g., exercise test. These may be displayed by the receiving system overlaid with the other events reported. The procedure medication is assumed to pertain to and be associated with the data recorded at the time specified in *OBX-14-date/time of the observation*, of the OBX segment labeled with MED, when present.

7.1.3.5 Anatomic site (ANT)

Some diagnostic studies include observations about more than one anatomic site within one report. If, for example, a patient had an appendectomy incidental to gallbladder surgery, the pathologist's assessment of both specimens would usually be included under a single specimen number in one report. Each distinct anatomic site would be reported as a separate OBX segment with a suffix of ANT (*OBX-3-observation identifier*). More than one coded anatomic location may be included within a single OBX segment only when such additional codes are used to construct an identity for a single site. In this case only, the *OBX-5-observation value* field may repeat, with each instance or repetition specifying one of the related locations. Each OBX segment with an ANT suffix could be followed by one or more OBX segments with an IMP or other suffix to transmit the diagnostic impression(s) associated with the anatomic site. These impressions or recommendations would be associated with a single anatomic site via a common observation ID.

7.1.3.6 Device/Instrument (DEV)

When required, the instrument or device which generated an observation can be transmitted as an additional result of the study. In this case, the suffix of *OBX-3-observation identifier* is DEV. Examples include: an automated instrument in the laboratory; an imaging device and model number in radiology; or an automatic blood pressure machine on the ward. The device is specified as a coded entry in anticipation that these identifiers could be specified as codes. Initially, we expect that most of the information about devices will be transmitted as text in the second component of the CE identifier.

7.1.3.7 Serial # Device/Instrument (SER)

Vendor's serial number of the device which generated the observation.

7.1.3.8 Gross or general description (GDT)

The general description suffix identifies the description component of a diagnostic study. In the case of anatomic pathology, it applies to the macroscopic (gross) description of the specimen. If the description consists of multiple paragraphs, the paragraphs should be separated by repeat delimiters so that the receiving computer can display them as paragraphs. It will not be necessary to include a description segment for a report when the impression segment says it all, e.g., for normal studies or studies such as EKG, whose reports are traditionally terse.

7.1.3.9 Microscopic or Secondary description (MDT)

For most studies, a secondary description will not be needed. In the case of surgical pathology, however, the microscopic description is a separate part of the report. It describes the histology as seen through the microscope. The microscopic description will be sent in a segment with the suffix MDT in *OBX-3-observation identifier*. If the microscopic description consists of multiple paragraphs, the paragraphs should be separated by repeat delimiters so that the receiving computer can display them as paragraphs.

7.1.3.10 Technician's comment (TCM)

This is free text stored in a result segment whose *OBX-3-observation identifier* has a suffix of TCM for technician comment. It is used to record information about technical performance of the procedure, usually recorded by the technician.

7.1.3.11 Addendum note (ADT)

Use to report information that is added as an addendum after the original dictation and sent as a separate labeled section of the report.

7.1.3.12 Diagnosis (problem) onset date/time (ITM)

Use to record the date-time that a problem was first perceived to exist.

7.1.3.13 Diagnosis (problem) resolution date/time (RTM)

Use to record the date-time that a problem became inactive, i.e., the problem was cured or remitted.

7.1.3.14 Comparison study (CMS)

When the reader of a diagnostic report compares the results for the current study with those of a previous study, this suffix allows them to report the nature of the comparison study as a separate result, i.e., an OBX segment with a segment whose observation ID has a suffix of CMS. Ordinarily, this would not be required because the observation ID in the other comparison OBX's would identify the test, if any of the other comparison values were transmitted.

7.1.3.15 Comparison date/time (CMT)

When the reader of a diagnostic procedure compares the current results with a previous study, this suffix allows them to report the date-time of the previous study (time optional) as a separate result within the current report.

7.1.3.16 Comparison results (CMR)

When the reader of a diagnostic procedure compares the current results with those of a previous study on the same patient, this suffix allows them to report the results (impression) of the previous study as a discrete result within the current report.

7.1.3.17 Comparison change (CMC)

When a diagnostic service reports a comparison between the current and a previous study, this suffix is used to report the degree of change (e.g., much worse, worse, minimal worsening, no change, slightly better, better, much better, returned to normal) as a separate result within the report.

In current dictation, information about comparison is usually contained in the descriptions of the study. The provision of the comparison suffixes listed above do not imply a *requirement* to send this information as separate components. The comparison variables are only meant to be enabling. When a system would like to transmit them as discrete report components, these suffixes give them the option.

7.1.3.18 Predicted Value (PRD)

When an observation has a predicted value as is the case for many spirometry tests, this suffix identifies the predicted observation as distinguished from the actual observation. The AS4 code for forced vital capacity is 94010.1 (see the HL7 Implementation Guide). The predicted forced vital capacity would be 94010.1&PRD.

7.1.3.19 Percent predicted (PPR)

This is a computed observation = (actual observation)/(predicted observation). For forced vital capacity the percent predicted would be identified as 94010.1&PPR.

7.1.3.20 After drug observed (AFD)

An observation might be taken before and after a drug is given. This occurs especially in Spirometry. The predose observation is identified by the base ID. The post drug measure is identified by the AFD suffix. Using the AS4 base code for the forced vital capacity the post drug result would be identified by 94010.1&AFD.

7.1.3.21 Predicted value after drug (ADP)

The post drug predicted value is identified by the suffix, ADP. Following the pattern of the above example, it would be 94010.1&ADP.

7.1.3.22 Percent predicted after drug (APP)

The percent predicted after drug is identified by applying the suffix, APP to the base code -- 94010.1&APP if using the AS4 code for forced vital capacity.

7.1.3.23 Timing Information (TIM)

This suffix is used only for transmitting waveform data. It is fully described in Section 7.16.1.

7.1.3.24 Channel Definition Data (CHN)

This suffix is used only for transmitting waveform data. It is fully described in Section 7.16.2.

7.1.3.25 Waveform Digital Data (WAS)

This suffix is used only for transmitting waveform data. It is fully described in Section 7.16.3.

7.1.3.26 Waveform Annotation (ANO)

This suffix is used only for transmitting waveform data. It is fully described in Section 7.16.4.

7.1.3.27 Clinical observation codes

In previous version of HL7, AS4 codes¹ have been recommended for identifying clinical observations. The recently introduced LOINC codes (See *Figure 7-2* for full information) may be more useful to many users. Code system information, including LOINC, has been moved from Appendix 7A to the Implementation Guide.

7.1.4 Coding schemes

Various fields of data type CE which are used in segments defined both in the current chapter and other chapters, are used to transmit information about diagnoses, observation results, procedures, health outcomes, and drugs administered. *Figures 7-2* and *7-3* (which were located in Chapter 2 in previous versions) list some common coding schemes for these types of information. The values in the second column of the table would be used in component 3 (and optionally, component 6) of a CE field to identify the coding scheme used.

Figure 7-2. Diagnostic coding schemes (from ASTM 1238-94 Table 3)

Name	Code	Source
American College of Radiology finding codes	ACR	Index for Radiological Diagnosis Revised, 3rd Edition 1986, American College of Radiology, Reston, VA.
AS4 Neurophysiology Codes	AS4E	ASTM's diagnostic codes and test result coding/grading systems for clinical neurophysiology. See ASTM Specification E1467, Appendix 2.
CEN ECG diagnostic codes	CE	CEN PT007. A quite comprehensive set of ECG diagnostic codes (abbreviations) and descriptions published as a pre-standard by CEN TC251. Available from CEN TC251 secretariat, c/o Georges DeMoor, State University Hospital Gent, De Pintelaan 185-5K3, 9000 Gent, Belgium or Jos Willems, University of Gathuisberg, 49 Herestraat, 3000 Leuven, Belgium.
CLIP	CLP	Simon Leeming, Beth Israel Hospital, Boston MA. Codes for radiology reports.
EUCLIDES	E	Available from Euclides Foundation International nv, Excelsiorlaan 4A, B-1930 Zaventem, Belgium; Phone: 32 2 720 90 60.
Home Health Care	HHC	Home Health Care Classification System; Virginia Saba, EdD, RN; Georgetown University School of Nursing; Washington, DC.
ICD9	I9	World Health Publications, Albany, NY.
ICD9-CM	I9C	Commission on Professional and Hospital Activities, 1968 Green Rd., Ann Arbor, MI 48105.
ICD-10	I10	World Health Publications, Albany, NY.
International Classification of Diseases for Oncology	ICDO	International Classification of Diseases for Oncology, 2nd Edition. World Health Organization: Geneva, Switzerland, 1990. Order from: College of American Pathologists, 325 Waukegan Road, Northfield, IL, 60093-2750. (847) 446-8800.
International Classification of Sleep Disorders	ICSD	International Classification of Sleep Disorders Diagnostic and Coding Manual, 1990, available from American Sleep Disorders Association, 604 Second Street SW, Rochester, MN 55902
Local general code	99zzz or L	Locally defined codes for purpose of sender or receiver. Local codes can be identified by L (for backward compatibility) or 99zzz (where z is an alphanumeric character).

¹ These AS4 codes are taken directly from ASTM 1238-91, and are printed/adopted with their permission.

Name	Code	Source
Local billing code	LB	Local billing codes/names (with extensions if needed).
Omaha	OHA	Omaha Visiting Nurse Association, Omaha, NB.
NANDA	NDA	North American Nursing Diagnosis Association, Philadelphia, PA.
Read Classification	RC	The Read Clinical Classification of Medicine, Park View Surgery, 26 Leicester Rd., Loughborough LE11 2AG (includes drug procedure and other codes, as well as diagnostic codes).
Systemized Nomenclature of Medicine (SNOMED)	SNM	Systemized Nomenclature of Medicine, 2nd Edition 1984 Vols 1, 2, College of American Pathologists, Skokie, IL.
SNOMED International	SNM3	SNOMED International, 1993 Vols 1-4, College of American Pathologists, Skokie, IL, 60077-1034..
SNOMED- DICOM Microglossary	SDM	College of American Pathologists, Skokie, IL, 60077-1034. (formerly designated as 99SDM).
Unified Medical Language	UML	National Library of Medicine, 8600 Rockville Pike, Bethesda, MD 20894.

Figure 7-3. Procedure/observation/drug ID/health outcomes coding systems (From ASTM 1238-88 Table 5)

Coding System	Code	Source/Description
ASTM E1238/ E1467 Universal	AS4	American Society for Testing & Materials and CPT4 (see Appendix X1 of Specification E1238 and Appendix X2 of Specification E1467).
American Type Culture Collection	ATC	Reference cultures (microorganisms, tissue cultures, etc.), related biological materials and associated data. American Type Culture Collection, 12301 Parklawn Dr, Rockville MD, 20852. (301) 881-2600. http://www.atcc.org
CPT-4	C4	American Medical Association, P.O. Box 10946, Chicago IL 60610.
CPT-5	C5	(under development - same contact as above)
CDC Surveillance	CDS	CDC Surveillance Codes. For data unique to specific public health surveillance requirements. Epidemiology Program Office, Centers for Disease Control and Prevention, 1600 Clifton Rd, Atlanta, GA, 30333. (404) 639-3661.
DICOM Class Label	DCL	From the Message Standards Classes table of the SNOMED-DICOM-Microglossary. College of American Pathologists, Skokie, IL, 60077-1034
DICOM modality codes	DCM	Dean Bidgood, MD; Duke University Medical Center, Durham NC. Digital Imaging and Communications in Medicine (DICOM). From NEMA Publications PS-3.1 - PS 3.12: The ACR-NEMA DICOM Standard. National Electrical Manufacturers Association (NEMA). Rosslyn, VA, 22209., 1992, 1993, 1995
DICOM Query Label	DQL	HL7 Image Management Special Interest Group, Health Level Seven, Ann Arbor, MI.
Enzyme Codes	ENZC	Enzyme Committee of the International Union of Biochemistry and Molecular Biology. Enzyme Nomenclature: Recommendations on the Nomenclature and Classification of Enzyme-Catalysed Reactions. London: Academic Press, 1992.
EUCLIDES	E	AFP codes. Available from Euclides Foundation International nv, Excelsiorlaan 4A, B-1930 Zaventem, Belgium; Phone: 32 2 720 90 60.

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Coding System	Code	Source/Description
FDA K10	FDK	Dept. of Health & Human Services, Food & Drug Administration, Rockville, MD 20857. (device & analyte process codes).
HCFA Procedure Codes (HCPCS)	HPC	Health Care Financing Administration (HCFA) Common Procedure Coding System (HCPCS) including modifiers. ²
ICD-10 Procedure Codes	I10P	Procedure Coding System (ICD-10-PCS.) See http://www.hcfa.gov/stats/icd10.icd10.htm for more information.
CDT-2 Codes	CD2	American Dental Association's Current Dental Terminology (CDT-2) code. American Dental Association, 211 E. Chicago Avenue, Chicago, Illinois 60611.
POS Codes	POS	HCFA Place of Service Codes for Professional Claims (see http://www.hcfa.gov/medicare/poscode.htm).
UPIN	UPIN	Medicare/HCFA's universal physician identification numbers, available from Health Care Financing Administration, U.S. Dept. of Health and Human Services, Bureau of Program Operations, 6325 Security Blvd., Meadows East Bldg., Room 300, Baltimore, MD 21207
Health Outcomes	HI	Health Outcomes Institute codes for outcome variables available (with responses) from Stratis Health (formerly Foundation for Health Care Evaluation and Health Outcomes Institute), 2901 Metro Drive, Suite 400, Bloomington, MN, 55425-1525; (612) 854-3306 (voice); (612) 853-8503 (fax); dziegen@winternet.com . See examples in the Implementation Guide.
HIBCC	HB	Health Industry Business Communications Council, 5110 N. 40th St., Ste 120, Phoenix, AZ 85018.
Home Health Care	HHC	Home Health Care Classification System; Virginia Saba, EdD, RN; Georgetown University School of Nursing; Washington, DC.
Logical Observation Identifier Names and Codes (LOINC)	LN	Regenstrief Institute, c/o Kathy Hutchins, 1001 West 10th Street RG-5, Indianapolis, IN 46202. 317/630-7433. Also available via HL7 file server: FTP/Gopher (www.mcis.duke.edu/standards/termcode/loinclub) and www.mcis.duke.edu/standards/termcode/loinclin) and World Wide Web (http://www.mcis.duke.edu/standards/termcode/loinclin.htm). January 1997 version has identifiers, synonyms and cross-reference codes for reporting over 8,500 laboratory and related observations and 1,500 clinical measures.
ICCS	ICS	Commission on Professional and Hospital Activities, 1968 Green Road, Ann Arbor, MI 48105.
ICD-9CM	I9C	Commission on Professional and Hospital Activities, 1968 Green Road, Ann Arbor, MI 48105 (includes all procedures and diagnostic tests).

² The HCPCS code is divided into three "levels." Level I includes the entire CPT-4 code by reference. Level II includes the American Dental Association's Current Dental Terminology (CDT-2) code by reference. Level II also includes the genuine HCPCS codes, approved and maintained jointly by the Alpha-Numeric Editorial Panel, consisting of HCFA, the Health Insurance Association of America, and the Blue Cross and Blue Shield Association. Level III are codes developed locally by Medicare carriers. The HCPCS modifiers are divided into the same three levels, I being CPT-4 modifiers, II CDT-2 and genuine HCPCS modifiers, and III being locally agreed modifiers.

The genuine HCPCS codes and modifiers of level II can be found at <http://www.hcfa.gov/stats/anhepcdl.htm>. HCFA distributes the HCPCS codes via the National Technical Information Service (NTIS, www.ntis.gov) and NTIS distribution includes the CDT-2 part of HCPCS Level II, but does not include the CPT-4 part (Level I). HCFA may distribute the CPT-4 part to its contractors.

Coding System	Code	Source/Description
ICHPPC-2	IC2	International Classification of Health Problems in Primary Care, Classification Committee of World Organization of National Colleges, Academies and Academic Associations of General Practitioners (WONCA), 3rd edition. An adaptation of ICD9 intended for use in General Medicine, Oxford University Press.
ISBT	IBT	International Society of Blood Transfusion. Blood Group Terminology 1990. VOX Sanguines 1990 58(2):152-169.
IUPAC/IFCC Property Codes	IUC IUPP	International Union of Pure and Applied Chemistry/International Federation of Clinical Chemistry. The Silver Book: Compendium of terminology and nomenclature of properties in clinical laboratory sciences. Oxford: Blackwell Scientific Publishers, 1995. Henrik Olesen, M.D., D.M.Sc., Chairperson, Department of Clinical Chemistry, KK76.4.2, Rigshospitalet, University Hospital of Copenhagen, DK-2200, Copenhagen. http://inet.uni-c.dk/~qukb7642/
IUPAC/IFCC Component Codes	IUPC	Codes used by IUPAC/IFF to identify the component (analyte) measured. Contact Henrik Olesen, as above for IUPP.
Japanese Chemistry	JC8	Clinical examination classification code. Japan Association of Clinical Pathology. Version 8, 1990. A multiaxial code including a subject code (e.g., Rubella = 5f395, identification code (e.g., virus ab IGG), a specimen code (e.g., serum =023) and a method code (e.g., ELISA = 022)
Local	99zzz or L	Locally defined codes for purpose of sender or receiver. If multiple local codes exist, the format should be 99zzz, where z is an alphanumeric character.
Medicare	MCR	Medicare billing codes/names.
Medicaid	MCD	Medicaid billing codes/names.
Nursing Interventions Classification	NIC	Iowa Intervention Project, College of Nursing, University of Iowa, Iowa City, Iowa
National Provider Identifier	NPI	Health Care Finance Administration, US Dep't. of Health and Human Services, 7500 Security Blvd., Baltimore, MD 21244.
Omaha System	OHA	Omaha Visiting Nurse Association, Omaha, NB.
UCDS	UC	Uniform Clinical Data Systems. Ms. Michael McMullan, Office of Peer Review Health Care Finance Administration, The Meadows East Bldg., 6325 Security Blvd., Baltimore, MD 21207; (301) 966 6851.
Universal Product Code	UPC	The Uniform Code Council. 8163 Old Yankee Road, Suite J, Dayton, OH 45458; (513) 435 3070
Euclides Lab method codes	E6	Available from Euclides Foundation International nv, Excelsiorlaan 4A, B-1930 Zaventem, Belgium; Phone: 32 2 720 90 60.
Euclides Lab equipment codes	E7	Available from Euclides Foundation International nv (see above)
SNOMED topology codes (anatomic sites)	SNT	College of American Pathologists, 5202 Old Orchard Road, Skokie, IL 60077-1034.
Euclides quantity codes	E5	Available from Euclides Foundation International nv (see above)
Drug codes:		
CDC Vaccine Codes	CVX	National Immunization Program, Centers for Disease Control and Prevention, 1660 Clifton Road, Atlanta, GA, 30333

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Coding System	Code	Source/Description
CDC Vaccine Manufacturer Codes	MVX	As above, for CVX
CDC Methods/Instruments Codes	CDCM	Public Health Practice Program Office, Centers for Disease Control and Prevention, 4770 Buford Highway, Atlanta, GA, 30421. Also available via FTP: ftp.cdc.gov/pub/laboratory_info/CLIA and Gopher: gopher://gopher.cdc.gov:70/11/laboratory_info/CLIA
CDC Analyte Codes	CDCA	As above, for CDCM
First DataBank Drug Codes	FDDC	National Drug Data File. Proprietary product of First DataBank, Inc. (800) 633-3453, or http://www.firstdatabank.com .
First DataBank Diagnostic Codes	FDDX	Used for drug-diagnosis interaction checking. Proprietary product of First DataBank, Inc. As above for FDDC.
Medispan GPI	MGPI	Medispan hierarchical drug codes for identifying drugs down to manufacturer and pill size. Proprietary product of MediSpan, Inc. 8425 Woodfield Crossing Boulevard, Indianapolis, IN 46240. Tel: (800) 428-4495.
Medispan Diagnostic Codes	MDDX	Codes Used for drug-diagnosis interaction checking. Proprietary product. Hierarchical drug codes for identifying drugs down to manufacturer and pill size. MediSpan, Inc. 8425 Woodfield Crossing Boulevard, Indianapolis, IN 46240. Tel: (800) 428-4495. WWW: http://www.espan.com/medispan/pages/medhome.html . As above for MGPI.
Medical Economics Drug Codes	MEDC	Proprietary Codes for identifying drugs. Proprietary product of Medical Economics Data, Inc. (800) 223-0581.
Medical Economics Diagnostic Codes	MEDX	Used for drug-diagnosis interaction checking. Proprietary product of Medical Economics Data, Inc. (800) 223-0581.
Chemical abstract codes	CAS	These include unique codes for each unique chemical, including all generic drugs. The codes do not distinguish among different dosing forms. When multiple equivalent CAS numbers exist, use the first one listed in USAN. USAN 1990 and the USP dictionary of drug names, William M. Heller, Ph.D., Executive Editor, United States Pharmacopeial Convention, Inc., 12601 Twinbrook Parkway, Rockville, MD 20852.
National drug codes	NDC	These provide unique codes for each distinct drug, dosing form, manufacturer, and packaging. (Available from the National Drug Code Directory, FDA, Rockville, MD, and other sources.)
COSTART	CST	International coding system for adverse drug reactions. In the USA, maintained by the FDA, Rockville, MD.
Medical Dictionary for Drug Regulatory Affairs (MEDDRA)	MEDR	Dr. Louise Wood, Medicines Control Agency, Market Towers, 1 Nine Elms Lane, London SW85NQ, UK Tel: (44)0 171-273-0000 WWW: http://www.open.gov.uk/mca/mcahome.htm
WHO rec# drug codes	W1, W2	World Health organization record number code. A unique sequential number is assigned to each unique single component drug and to each multi-component drug. Eight digits are allotted to each such code, six to identify the active agent, and 2 to identify the salt, of single content drugs. Six digits are assigned to each unique combination of drugs in a dispensing unit. The six digit code is identified by W1, the 8 digit code by W2.
WHO rec# code with ASTM extension	W4	With ASTM extensions (see Implementation Guide), the WHO codes can be used to report serum (and other) levels, patient compliance with drug usage instructions, average daily doses and more (see Appendix X1 the Implementation Guide).
WHO ATC	WC	WHO's ATC codes provide a hierarchical classification of drugs by therapeutic class. They are linked to the record number codes listed above.

Coding System	Code	Source/Description
WHO Adverse Reaction Terms	ART	WHO Collaborating Centre for International Drug Monitoring, Box 26, S-751 03, Uppsala, Sweden.
Note: The Read and NLM (National Library of Medicine) codes in Table 3 also include drugs. A number of sources of unique drug names exist: British Approved Names (BAN), French-approved nonproprietary names (DCF), and International Nonproprietary name (INN). These sources are now being reviewed. Those that also provide unique codes will be added to the registry of coding systems, using the abbreviations given in parentheses.		
Device code:		
MDNS	UMD	Universal Medical Device Nomenclature System. ECRI, 5200 Butler Pike, Plymouth Meeting, PA 19462 USA. Phone: 215-825-6000, Fax: 215-834-1275.

7.2 MESSAGE DEFINITIONS

The triggering events that follow are all served by the ORU (Observational report - Unsolicited) or the ORF (Observational Report Response) messages in combination with ACK and QRY. Each triggering event is listed below, along with the messages exchanged, and the segments that comprise the messages. The notation used to describe the sequence, optionality, and repeating of segments is described in Chapter 2, "Format for defining abstract messages."

7.2.1 ORU/ACK - unsolicited transmission of an observation message (event R01)

With the type (OBX) defined in this chapter, and the OBR defined in Chapter 4, one can construct almost any clinical report as a three-level hierarchy, with the PID segment defined in Chapter 3 at the upper level, an order record (OBR) at the next level and one or more observation records (OBX) at the bottom.

One result segment (OBX) is transmitted for each component of a diagnostic report, such as an EKG or obstetrical ultrasound or electrolyte battery.

<u>ORU^R01</u>	<u>Observational Results (Unsolicited)</u>	<u>Chapter</u>
MSH	Message Header	2
{		
[
PID	Patient Identification	3
[PD1]	Additional Demographics	3
[{NK1}]	Next of Kin/Associated Parties	3
[{NTE}]	Notes and Comments	2
[PV1]	Patient Visit	3
[PV2]]	Patient Visit - Additional Info	3
]		
{		
[ORC]	Order common	4
OBR	Observations Report ID	7
[{NTE}]	Notes and comments	2
{		
[OBX]	Observation/Result	7
[{NTE}]	Notes and comments	2
}		
[{CTI}]	Clinical Trial Identification	7
}		
}		
[DSC]	Continuation Pointer	2

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<u>ACK^R01</u>	<u>Acknowledgment</u>	<u>Chapter</u>
MSH	Message header	2
MSA	Message acknowledgment	2

Note: The ORC is permitted but not required in this message. Any information that could be included in either the ORC or the OBR must be included in the OBR on reporting. Notice also that the ORU (and the QRY) messages accommodate reports about many patients.

Many report headers (OBR) may be sent beneath each patient segment, with many separate observation segments (OBX) beneath each OBR. Note segments (NTE) may be inserted after any of the above segments. The note segment applies to the entity that immediately precedes it, i.e., the patient if it follows the PID segment, the observation if it follows the OBR segment, and the individual result if it follows the OBX segment.

7.2.2 QRY/ORF - query for results of observation (events R02, R04)

<u>QRY^R02</u>	<u>Query</u>	<u>Chapter</u>
MSH	Message Header	2
QRD	Query Definition	2
QRF	Query Filter	2

<u>ORF^R04</u>	<u>Observational Report</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
QRD	Query Definition	2
[QRF]	Query Filter	2
{ [PID	Patient ID	3
[{NTE}]]	Notes and Comments	3
{		
[ORC]	Order common	
OBR	Observation request	7
{ [NTE] }	Notes and comments	2
{		
[OBX]	Observation/Result	7
{ [NTE] }	Notes and comments	2
}		
{ [CTI] }	Clinical Trial Identification	7
} }		
[ERR]	Error	2
[QAK]	Query Acknowledgement	2
[DSC]	Continuation Pointer	2

7.2.2.0 Query usage notes

Display-oriented results reporting is described in Chapter 2, Section 2.14.1, "Display vs. record-oriented messages." The QRD and QRF segments are defined in Chapter 2, Section 2.24, "Messages Control Segments." Event R05 is used for queries for display results; event R06 is used in the unsolicited message for reporting display results.

The subject filters contained in the QRD and QRF segments are defined by local agreement between the inquiring system and the ancillary system.

The Set ID fields in the various segments (including PID) are used to count the number of segments of one kind transmitted at one level of the hierarchy.

The Query Result Level field of the QRD determines the amount of data requested. See Chapter 2, Section 2.24.4, "QRD - original style query definition segment."

7.3 SEGMENTS

The full definitions of many segments required for reporting clinical observations are included in other chapters. The patient identifying segment (PID) is provided in Chapter 3. The NTE segment is in Chapter 2.

7.3.1 OBR - observation request segment

In the reporting of clinical data, the OBR serves as the report header. It identifies the observation set represented by the following atomic observations. It includes the relevant ordering information when that applies. It contains many of the attributes that usually apply to all of the included observations.

When a set of observations is ordered, the order message contains an OBR segment. However, observations can be collected and reported without an antecedent order. When observations are reported, the report message also includes one or more OBR segments. So, the OBR segment is like a turn-around document. Some fields in the OBR segment apply only to the ordering message and some to the reporting message. To those familiar with healthcare procedures, these should be obvious from their names (e.g., transcriptionist or principal result interpreter could only apply to the reporting phase). However, we have also flagged them in *Figure 7-4* to indicate whether placer, filler, or both may send data in a given field.

Figure 7-4. OBR attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	4	SI	O			00237	Set ID - OBR
2	22	EI	C			00216	Placer Order Number
3	22	EI	C			00217	Filler Order Number +
4	200	CE	R			00238	Universal Service ID
5	2	ID	X			00239	Priority
6	26	TS	X			00240	Requested Date/Time
7	26	TS	C			00241	Observation Date/Time #
8	26	TS	O			00242	Observation End Date/Time #
9	20	CQ	O			00243	Collection Volume *
10	60	XCN	O	Y		00244	Collector Identifier *
11	1	ID	O		0065	00245	Specimen Action Code *
12	60	CE	O			00246	Danger Code
13	300	ST	O			00247	Relevant Clinical Info.
14	26	TS	C			00248	Specimen Received Date/Time *
15	300	CM	O		0070	00249	Specimen Source *
16	80	XCN	O	Y		00226	Ordering Provider
17	40	XTN	O	Y/2		00250	Order Callback Phone Number
18	60	ST	O			00251	Placer Field 1
19	60	ST	O			00252	Placer Field 2
20	60	ST	O			00253	Filler Field 1 +
21	60	ST	O			00254	Filler Field 2 +
22	26	TS	C			00255	Results Rpt/Status Chng - Date/Time +
23	40	CM	O			00256	Charge to Practice +
24	10	ID	O		0074	00257	Diagnostic Serv Sect ID
25	1	ID	C		0123	00258	Result Status +
26	400	CM	O			00259	Parent Result +
27	200	TQ	O	Y		00221	Quantity/Timing
28	150	XCN	O	Y/5		00260	Result Copies To
29	200	CM	O			00261	Parent *
30	20	ID	O		0124	00262	Transportation Mode
31	300	CE	O	Y		00263	Reason for Study

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SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
32	200	CM	O			00264	Principal Result Interpreter +
33	200	CM	O	Y		00265	Assistant Result Interpreter +
34	200	CM	O	Y		00266	Technician +
35	200	CM	O	Y		00267	Transcriptionist +
36	26	TS	O			00268	Scheduled Date/Time +
37	4	NM	O			01028	Number of Sample Containers *
38	60	CE	O	Y		01029	Transport Logistics of Collected Sample *
39	200	CE	O	Y		01030	Collector's Comment *
40	60	CE	O			01031	Transport Arrangement Responsibility
41	30	ID	O		0224	01032	Transport Arranged
42	1	ID	O		0225	01033	Escort Required
43	200	CE	O	Y		01034	Planned Patient Transport Comment
44	80	CE	O		0088	00393	Procedure Code
45	80	CE	O	Y	0340	01316	Procedure Code Modifier

Note: The complete description of these fields is provided below as well as in Chapter 4.

7.3.1.0 OBR field definitions

The daggered (+) items in this segment are not created by the placer known to the filler, not the placer. They are created by the filler and valued as needed when the OBR segment is returned as part of a report. Hence on a new order sent to the filler, they are not valued. There is an exception when the filler initiates the order. In that case, the filler order number is valued and the placer order number may be blank. They are valued by the filler as needed when the OBR segment is returned as part of a report.

The starred (*) fields are only relevant when an observation is associated with a specimen. These are completed by the placer when the placer obtains the specimen. They are completed by the filler when the filler obtains the specimen.

OBR-7-observation date/time and *OBR-8-observation end date/time* (flagged with #) are the physiologically relevant times. In the case of an observation on a specimen, they represent the start and end of the specimen collection. In the case of an observation obtained directly from a subject (e.g., BP, Chest X-ray), they represent the start and end time of the observation.

7.3.1.1 Set ID - OBR (SI) 00237

Definition: For the first order transmitted, the sequence number shall be 1; for the second order, it shall be 2; and so on.

7.3.1.2 Placer order number (EI) 00216

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field is a case of the Entity Identifier data type (See 2.8.13, "EI - Entity identifier"). The first component is a string that identifies an individual order (e.g., OBR). A limit of fifteen (15) characters is suggested but not required. It is assigned by the place (ordering application). It identifies an order uniquely among all orders from a particular ordering application. The second through fourth components contain the application ID of the placing application in the same form as the HD data type (Section 2.8.18, "HD - Hierarchic designator"). The second component, namespace ID, is a user-defined coded value that will be uniquely associated with an application. A limit of six (6) characters is suggested but not required. A given institution or group of intercommunicating institutions should establish a unique list of applications that may be potential placers and fillers and assign unique application IDs. The components are separated by component delimiters.

There are three situations in which the true placer is somewhat arbitrary (and thus not unique):

- a) in *ORC-1-order control* value of RO, following an RU replacement;
- b) in *ORC-1-order control* value of CH (child orders); and
- c) in *ORC-1-order control* value of SN (send number).

See the Table Notes under *ORC-1-order control* for the details of how the *ORC-2-placer order number* is assigned in these cases.

A given institution or group of intercommunicating institutions should establish a list of applications that may be potential placers and fillers of orders and assign each a unique application ID. The application ID list becomes one of the institution's master dictionary lists that is documented in Chapter 8. Since third-party applications (those other than the placer and filler of an order) can send and receive ORM and ORR messages, the placer application ID in this field may not be the same as any sending and receiving application on the network (as identified in the MSH segment).

ORC-2-placer order number is the same as *OBR-2-placer order number*. If the placer order number is not present in the ORC, it must be present in the associated OBR and vice versa. If both fields, *ORC-2-placer order number* and *OBR-2-placer order number*, are valued, they must contain the same value. When results are transmitted in an ORU message, an ORC is not required, and the identifying placer order number must be present in the OBR segments.

These rules apply to the few other fields that are present in both ORC and OBR for upward compatibility (e.g., quantity/timing, parent numbers, ordering provider, and ordering call back numbers).

7.3.1.3 Filler order number (EI) 00217

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field is the order number associated with the filling application. It is a case of the Entity Identifier data type (Section 2.8.13, "EI - Entity Identifier"). Its first component is a string that identifies an order detail segment (e.g., OBR). A limit of fifteen (15) characters is suggested but not required. It is assigned by the order filler (receiving) application. This string must uniquely identify the order (as specified in the order detail segment) from other orders in a particular filling application (e.g., clinical laboratory). This uniqueness must persist over time.

The second through fourth components contain the filler application ID, in the form of the HD data type (see Section 2.8.18, "HD - hierarchic designator"). The second component is a user-defined coded value that uniquely defines the application from other applications on the network. A limit of six (6) characters is suggested but not required. The second component of the filler order number always identifies the actual filler of an order.

A given institution or group of intercommunicating institutions should establish a list of applications that may be potential placers and fillers of orders and assign each a unique application ID. The application ID list becomes one of the institution's master dictionary lists that is documented in Chapter 8. Since third-party applications (those other than the placer and filler of an order) can send and receive ORM and ORR messages, the filler application ID in this field may not be the same as any sending and receiving application on the network (as identified in the MSH segment).

ORC-3-filler order number is the same as *OBR-3-filler order number*. If the filler order number is not present in the ORC, it must be present in the associated OBR. (This rule is the same for other identical fields in the ORC and OBR and promotes upward and ASTM compatibility.) This is particularly important when results are transmitted in an ORU message. In this case, the ORC is not required and the identifying filler order number must be present in the OBR segments.

The *filler order number (OBR-3 or ORC-3)* also uniquely identifies an order and its associated observations. For example, suppose that an institution collects observations from several ancillary applications into a common database and this common database is queried by yet another application for observations. In this case, the filler order number and placer order number transmitted by the common database application would be that of the original filler and placer, respectively, rather than a new one assigned by the common database application.

Similarly, if a third-party application, not the filler or placer, of an order were authorized to modify the status of an order (say, cancel it), the third-party application would send the filler an ORM message containing an ORC segment with *ORC-1-order control* equal to “CA” and containing the original placer order number and filler order number, rather than assign either itself.

7.3.1.4 Universal service ID (CE) 00238

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field is the identifier code for the requested observation/test/battery. This can be based on local and/or “universal” codes. We recommend the “universal” procedure identifier. The structure of this CE data type is described in the control section.

7.3.1.5 Priority (ID) 00239

Definition: ***This field has been retained for backward compatibility only.*** It is not used. Previously priority (e.g., STAT, ASAP), but that information is carried as the sixth component of *OBR-27-quantity/timing*.

7.3.1.6 Requested date/time (TS) 00240

Definition: ***This field has been retained for backward compatibility only.*** This is not used. Previously requested date/time. That information is now carried in the fourth component of the *OBR-27-quantity/timing*.

7.3.1.7 Observation date/time (TS) 00241

Definition: This field is the clinically relevant date/time of the observation. In the case of observations taken directly from a subject, it is the actual date and time the observation was obtained. In the case of a specimen-associated study, this field shall represent the date and time the specimen was collected or obtained. (This is a results-only field except when the placer or a third party has already drawn the specimen.) This field is conditionally required. When the OBR is transmitted as part of a report message, the field **must** be filled in. If it is transmitted as part of a request **and** a sample has been sent along as part of the request, this field must be filled in because this specimen time is the physiologically relevant date-time of the observation.

7.3.1.8 Observation end date/time (TS) 00242

Definition: This field is the end date and time of a study or timed specimen collection. If an observation takes place over a substantial period of time, it will indicate when the observation period ended. For observations made at a point in time, it will be null. This is a results field except when the placer or a party other than the filler has already drawn the specimen.

7.3.1.9 Collection volume (CQ) 00243

Components: <quantity (NM)> ^ <units (CE)>

Subcomponents of units: <identifier (ST)> & <test (ST)> & <name of coding system (ST)> & <alternate identifier (ST)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Definition: For laboratory tests, the collection volume is the volume of a specimen. The default unit is ML. Specifically, units should be expressed in the ISO Standard unit abbreviations (ISO-2955, 1977). This is a results-only field except when the placer or a party has already drawn the specimen. (See Chapter 7 for full details about units.)

7.3.1.10 Collector identifier (XCN) 00244

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility ID: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: When a specimen is required for the study, this field will identify the person, department, or facility that collected the specimen. Either name or ID code, or both, may be present.

7.3.1.11 Specimen action code (ID) 00245

Definition: This field is the action to be taken with respect to the specimens that accompany or precede this order. The purpose of this field is to further qualify (when appropriate) the general action indicated by the order control code contained in the accompanying ORC segment. For example, when a new order (ORC - "NW") is sent to the lab, this field would be used to tell the lab whether or not to collect the specimen ("L" or "O"). Refer to *HL7 table 0065 - Specimen action code* for valid values.

Table 0065 - Specimen action code

Value	Description
A	Add ordered tests to the existing specimen
G	Generated order; reflex order
L	Lab to obtain specimen from patient
O	Specimen obtained by service other than Lab
P	Pending specimen; Order sent prior to delivery
R	Revised order
S	Schedule the tests specified below

7.3.1.12 Danger code (CE) 00246

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field is the code and/or text indicating any known or suspected patient or specimen hazards, e.g., patient with active tuberculosis or blood from a hepatitis patient. Either code and/or text may be absent. However, the code is always placed in the first component position and any free text in the second component. Thus, free text without a code must be preceded by a component delimiter.

7.3.1.13 Relevant clinical information (ST) 00247

Definition: This field contains any additional clinical information about the patient or specimen. This field is used to report the suspected diagnosis and clinical findings on requests for interpreted diagnostic studies. Examples include reporting the amount of inspired carbon dioxide for blood gasses, the point in the menstrual cycle for cervical pap tests, and other conditions that influence test interpretations. For some orders

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this information may be sent on a more structured form as a series of OBX segments (see Chapter 7) that immediately follow the order segment.

7.3.1.14 Specimen received date/time (TS) 00248

Definition: For observations requiring a specimen, the specimen received date/time is the actual login time at the diagnostic service. This field must contain a value when the order is accompanied by a specimen, or when the observation required a specimen **and** the message is a report.

7.3.1.15 Specimen source (CM) 00249

Components: <specimen source name or code (CE)> ^ <additives (TX)> ^ <freetext (TX)> ^ <body site (CE)> ^ <site modifier (CE)> ^ <collection method modifier code (CE)>

Subcomponents of specimen source name or doe: <identifier (ST)> & <test (ST)> & <name of coding system (ST)> & <alternate identifier (ST)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Subcomponents of body site: <identifier (ST)> & <test (ST)> & <name of coding system (ST)> & <alternate identifier (ST)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Subcomponents of site modifier: <identifier (ST)> & <test (ST)> & <name of coding system (ST)> & <alternate identifier (ST)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Subcomponents of collection method modifier code: <identifier (ST)> & <test (ST)> & <name of coding system (ST)> & <alternate identifier (ST)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Definition: This field identifies the site where the specimen should be obtained or where the service should be performed.

The first component contains the specimen source name or code (as a CE data type component). (Even in the case of observations whose name implies the source, a source may be required, e.g., blood culture-heart blood.) Refer to *HL7 table 0070 - Specimen source codes* for valid entries.

The second component should include free text additives to the specimen such as Heparin, EDTA, or Oxalate, when applicable.

The third is a free text component describing the method of collection when that information is a part of the order. When the method of collection is logically an observation result, it should be included as a result segment.

The fourth component specifies the body site from which the specimen was obtained, and the fifth is the site modifier. For example, the site could be antecubital fossa, and the site modifier "right." The components of the CE fields become subcomponents. Refer to *HL7 table 0163 - Administrative site* for valid entries.

Table 0163 - Administrative site

Value	Description
BE	Bilateral Ears
OU	Bilateral Eyes
BN	Bilateral Nares
BU	Buttock
CT	Chest Tube

Value	Description
LA	Left Arm
LAC	Left Anterior Chest
LACF	Left Antecubital Fossa
LD	Left Deltoid
LE	Left Ear
LEJ	Left External Jugular
OS	Left Eye
LF	Left Foot
LG	Left Gluteus Medius
LH	Left Hand
LIJ	Left Internal Jugular
LLAQ	Left Lower Abd Quadrant
LLFA	Left Lower Forearm
LMFA	Left Mid Forearm
LN	Left Naris
LPC	Left Posterior Chest
LSC	Left Subclavian
LT	Left Thigh
LUA	Left Upper Arm
LUAQ	Left Upper Abd Quadrant
LUFA	Left Upper Forearm
LVG	Left Ventragluteal
LVL	Left Vastus Lateralis
NB	Nebulized
PA	Perianal
PERIN	Perineal
RA	Right Arm
RAC	Right Anterior Chest
RACF	Right Antecubital Fossa
RD	Right Deltoid
RE	Right Ear
REJ	Right External Jugular
OD	Right Eye
RF	Right Foot
RG	Right Gluteus Medius
RH	Right Hand
RIJ	Right Internal Jugular

Value	Description
RLAQ	Rt Lower Abd Quadrant
RLFA	Right Lower Forearm
RMFA	Right Mid Forearm
RN	Right Naris
RPC	Right Posterior Chest
RSC	Right Subclavian
RT	Right Thigh
RUA	Right Upper Arm
RUAQ	Right Upper Abd Quadrant
RUFA	Right Upper Forearm
RVL	Right Vastus Lateralis
RVG	Right Ventragluteal

The fifth component indicates whether the specimen is frozen as part of the collection method. Suggested values are F (Frozen); R (Refrigerated). If the component is blank, the specimen is assumed to be at room temperature.

Table 0070 - Specimen source codes

Value	Description
ABS	Abscess
AMN	Amniotic fluid
ASP	Aspirate
BPH	Basophils
BIFL	Bile fluid
BLDA	Blood arterial
BBL	Blood bag
BLDC	Blood capillary
BPU	Blood product unit
BLDV	Blood venous
BON	Bone
BRTH	Breath (use EXHLD)
BRO	Bronchial
BRN	Burn
CALC	Calculus (=Stone)
CDM	Cardiac muscle
CNL	Cannula
CTP	Catheter tip
CSF	Cerebral spinal fluid

Value	Description
CVM	Cervical mucus
CVX	Cervix
COL	Colostrum
CBLD	Cord blood
CNJT	Conjunctiva
CUR	Curettage
CYST	Cyst
DIAF	Dialysis fluid
DOSE	Dose med or substance
DRN	Drain
DUFL	Duodenal fluid
EAR	Ear
EARW	Ear wax (cerumen)
ELT	Electrode
ENDC	Endocardium
ENDM	Endometrium
EOS	Eosinophils
RBC	Erythrocytes
EYE	Eye
EXHLD	Exhaled gas (=breath)
FIB	Fibroblasts
FLT	Filter
FIST	Fistula
FLU	Body fluid, unsp
GAS	Gas
GAST	Gastric fluid/contents
GEN	Genital
GENC	Genital cervix
GENL	Genital lochia
GENV	Genital vaginal
HAR	Hair
IHG	Inhaled Gas
IT	Intubation tube
ISLT	Isolate
LAM	Lamella
WBC	Leukocytes
LN	Line

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Value	Description
LNA	Line arterial
LNV	Line venous
LIQ	Liquid NOS
LYM	Lymphocytes
MAC	Macrophages
MAR	Marrow
MEC	Meconium
MBLD	Menstrual blood
MLK	Milk
MILK	Breast milk
NAIL	Nail
NOS	Nose (nasal passage)
ORH	Other
PAFL	Pancreatic fluid
PAT	Patient
PRT	Peritoneal fluid /ascites
PLC	Placenta
PLAS	Plasma
PLB	Plasma bag
PLR	Pleural fluid (thoracentesis fld)
PMN	Polymorphonuclear neutrophils
PPP	Platelet poor plasma
PRP	Platelet rich plasma
PUS	Pus
RT	Route of medicine
SAL	Saliva
SEM	Seminal fluid
SER	Serum
SKN	Skin
SKM	Skeletal muscle
SPRM	Spermatozoa
SPT	Sputum
SPTC	Sputum - coughed
SPTT	Sputum - tracheal aspirate
STON	Stone (use CALC)
STL	Stool = Fecal
SWT	Sweat

Value	Description
SNV	Synovial fluid (Joint fluid)
TEAR	Tears
THRT	Throat
THRB	Thrombocyte (platelet)
TISS	Tissue
TISG	Tissue gall bladder
TLGI	Tissue large intestine
TLNG	Tissue lung
TISPL	Tissue placenta
TSMI	Tissue small intestine
TISU	Tissue ulcer
TUB	Tube NOS
ULC	Ulcer
UMB	Umbilical blood
UMED	Unknown medicine
URTH	Urethra
UR	Urine
URC	Urine clean catch
URT	Urine catheter
URNS	Urine sediment
USUB	Unknown substance
VOM	Vomit
BLD	Whole blood
BDY	Whole body
WAT	Water
WICK	Wick
WND	Wound
WNDA	Wound abscess
WNDE	Wound exudate
WNDD	Wound drainage
XXX	To be specified in another part of the message

7.3.1.16 Ordering provider (XCN) 00226

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

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Subcomponents of assigning facility ID: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field identifies the provider who ordered the test. Either the ID code or the name, or both, may be present. This is the same as *ORC-12-ordering provider*.

7.3.1.17 Order callback phone number (XTN) 00250

Components: [NNN] [(999)]999-9999 [X99999] [B99999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Definition: This field is the telephone number for reporting a status or a result using the standard format with extension and/or beeper number when applicable.

7.3.1.18 Placer field #1 (ST) 00251

Definition: This field is user field #1. Text sent by the placer will be returned with the results.

7.3.1.19 Placer field #2 (ST) 00252

Definition: This field is similar to placer field #1.

7.3.1.20 Filler field #1 (ST) 00253

Definition: This field is definable for any use by the filler (diagnostic service).

7.3.1.21 Filler field #2 (ST) 00254

Definition: This field is similar to filler field #1.

7.3.1.22 Results rpt/status chng - date/time (TS) 00255

Definition: This field specifies the date/time results reported or status changed. This field is used to indicate the date and time that the results are composed into a report and released, or that a status, as defined in *ORC-5-order status*, is entered or changed. (This is a results field only.) When other applications (such as office or clinical database applications) query the laboratory application for untransmitted results, the information in this field may be used to control processing on the communications link. Usually, the ordering service would want only those results for which the reporting date/time is greater than the date/time the inquiring application last received results.

7.3.1.23 Charge to practice (CM) 00256

Components: <dollar amount (MO)> ^ <charge code (CE)>

Subcomponents of dollar amount: <quantity (NM)> & <denomination (ID)>

Subcomponents of charge code: <identifier (ST)> & <test (ST)> & <name of coding system (ST)> & <alternate identifier (ST)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Definition: This field is the charge to the ordering entity for the studies performed when applicable. The first component is a dollar amount when known by the filler. The second is a charge code when known by the filler (results only).

7.3.1.24 Diagnostic serv sect ID (ID) 00257

Definition: This field is the section of the diagnostic service where the observation was performed. If the study was performed by an outside service, the identification of that service should be recorded here. Refer to *HL7 table 0074 - Diagnostic service section ID* for valid entries.

Table 0074 - Diagnostic service section ID

Value	Description
AU	Audiology
BG	Blood gases
BLB	Blood bank
CUS	Cardiac Ultrasound
CTH	Cardiac catheterization
CT	CAT scan
CH	Chemistry
CP	Cytopathology
EC	Electrocardiac (e.g., EKG, EEC, Holter)
EN	Electroneuro (EEG, EMG, EP, PSG)
HM	Hematology
ICU	Bedside ICU Monitoring
IMM	Immunology
LAB	Laboratory
MB	Microbiology
MCB	Mycobacteriology
MYC	Mycology
NMS	Nuclear medicine scan
NMR	Nuclear magnetic resonance
NRS	Nursing service measures
OUS	OB Ultrasound
OT	Occupational Therapy
OTH	Other
OSL	Outside Lab
PHR	Pharmacy
PT	Physical Therapy
PHY	Physician (Hx. Dx, admission note, etc.)
PF	Pulmonary function
RAD	Radiology
RX	Radiograph
RUS	Radiology ultrasound
RC	Respiratory Care (therapy)
RT	Radiation therapy
SR	Serology
SP	Surgical Pathology
TX	Toxicology

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Value	Description
VUS	Vascular Ultrasound
VR	Virology
XRC	Cineradiograph

7.3.1.25 Result status (ID) 00258

Definition: This field is the status of results for this order. This conditional field is required whenever the OBR is contained in a report message. It is not required as part of an initial order.

There are two methods of sending status information. If the status is that of the entire order, use *ORC-15-order effective date/time* and *ORC-5-order status*. If the status pertains to the order detail segment, use *OBR-25-result status* and *OBR-22-results report/status change - date/time*. If both are present, the OBR values override the ORC values.

This field would typically be used in a response to an order status query where the level of detail requested does not include the OBX segments. When the individual status of each result is necessary, *OBX-11-observ result status* may be used. Refer to *HL7 table 0123 - Result status* for valid entries.

Table 0123 - Result status

Value	Description
O	Order received; specimen not yet received
I	No results available; specimen received, procedure incomplete
S	No results available; procedure scheduled, but not done
A	Some, but not all, results available
P	Preliminary: A verified early result is available, final results not yet obtained
C	Correction to results
R	Results stored; not yet verified
F	Final results; results stored and verified. Can only be changed with a corrected result.
X	No results available; Order canceled.
Y	No order on record for this test. (Used only on queries)
Z	No record of this patient. (Used only on queries)

7.3.1.26 Parent result (CM) 00259

Components: <OBX-3-observation identifier of parent result (CE)> ^ <OBX-4-sub-ID of parent result (ST)> ^ <part of OBX-5 observation result from parent (TX) see discussion>

Subcomponents of OBX-3-observation identifier or parent result: <identifier (ST)> & <test (ST)> & <name of coding system (ST)> & <alternate identifier (ST)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Definition: This field is defined to make it available for other types of linkages (e.g., toxicology). This important information, together with the information in *OBR-29-parent*, uniquely identifies the parent result's OBX segment related to this order. The value of this OBX segment in the parent result is the organism or chemical species about which this battery reports. For example, if the current battery is an antimicrobial susceptibility, the parent result's identified OBX contains a result which identifies the organism on which the susceptibility were run. This indirect linkage is preferred because the name of the organism in the parent result may undergo several preliminary values prior to finalization.

The third component may be used to record the name of the microorganism identified by the parent result directly. The organism in this case should be identified exactly as it is in the parent culture.

We emphasize that this field does not take the entire result field from the parent. It is meant only for the text name of the organism or chemical subspecies identified. This field is included only to provide a method for linking back to the parent result for those systems which could not generate unambiguous Observation IDs and sub-IDs.

This field is present only when the parent result is identified by *OBR-29-parent* and the parent spawn child orders for each of many results. (See Chapter 7 for more details about this linkage.)

A second mode of conveying this information is to use a standard observation result segment (OBX). If more than one organism is present, *OBX-4-observation subID* is used to distinguish them. In this case, the first OBX with subID N will contain a value identifying the Nth microorganism, and each additional OBX with subID N will contain susceptibility values for a given antimicrobial test on this organism.

7.3.1.27 Quantity/timing (TQ) 00221

Components: <quantity (CQ)> ^ <interval (CM)> ^ <duration> ^ <start date/time (TS)> ^ <end date/time (TS)> ^ <priority (ID)> ^ <condition (ST)> ^ <text (TX)> ^ <conjunction (ID)> ^ <order sequencing> ^ <occurrence duration (CE)> ^ <total occurrences (NM)>

Definition: This field contains information about how many services to perform at one service time and how often the service times are repeated, and to fix duration of the request. See Section 4.4, “Quantity/Timing (TQ) Definition.”

7.3.1.28 Result copies to (XCN) 00260

Components: <ID number (ST)> ^ <family name (ST)> ^ <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Subcomponents of assigning facility ID: <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field is the people who are to receive copies of the results. By local convention, either the ID number or the name may be absent.

7.3.1.29 Parent (CM) 00261

Components: <parent's placer order number (EI)> ^ <parent's filler order number (EI)>

Subcomponents of parent's placer order number: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (IS)>

Subcomponents of parent's filler order number: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (IS)>

Definition: This field is identical to *ORC-8-parent*. This field relates a child to its parent when a parent/child relationship exists. For example, observations that are spawned by previous observations, e.g., antimicrobial susceptibilities spawned by blood cultures, need to record the parent (blood culture) filler order number here. The parent/child mechanism is described under the order control field notes (see Segment ORC field notes in Section 4.3.1.1.1, “Table notes for order control codes of ORC.” It is required when the order is a child.

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Parent is a two-component field. The first component contains the parent's placer order number. The second component is optional and contains the parent's filler order number. The components of the placer order number and the filler order number are transmitted in subcomponents of the two components of this field.

7.3.1.30 Transportation mode (ID) 00262

Definition: This field identifies how (or whether) to transport a patient, when applicable. Refer to *HL7 table 0124 - Transportation mode* for valid codes.

Table 0124 - Transportation mode

Value	Description
CART	Cart - patient travels on cart or gurney
PORT	The examining device goes to patient's location
WALK	Patient walks to diagnostic service
WHLC	Wheelchair

7.3.1.31 Reason for study (CE) 00263

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field is the code or text using the conventions for coded fields given in Chapter 2, Control/Query. This is required for some studies to obtain proper reimbursement.

7.3.1.32 Principal result interpreter (CM) 00264

Components: <name (CN)> ^ <start date/time (TS)> ^ <end date/time (TS)> ^ <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <patient location type (IS)> ^ <building (IS)> ^ <floor (IS)>

Subcomponents of name: <ID number (ST)> & <family name (ST)> & <given name (ST)> & <middle initial or name (ST)> & <suffix (e.g., JR. III) (ST)> & <prefix (e.g., DR)> & <degree (e.g., MD) (ST)> & <source table (IS)> & <assigning authority (HD)>

Subcomponents of facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field identifies the physician or other clinician who interpreted the observation and is responsible for the report content.

7.3.1.33 Assistant result interpreter (CM) 00265

Components: <name (CN)> ^ <start date/time (TS)> ^ <end date/time (TS)> ^ <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <patient location type (IS)> ^ <building (IS)> ^ <floor (IS)>

Subcomponents of name: <ID number (ST)> & <family name (ST)> & <given name (ST)> & <middle initial or name (ST)> & <suffix (e.g., JR. III) (ST)> & <prefix (e.g., DR)> & <degree (e.g., MD) (ST)> & <source table (IS)> & <assigning authority (HD)>

Subcomponents of facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field identifies the clinical observer who assisted with the interpretation of this study.

7.3.1.34 Technician (CM) 00266

Components: <name (CN)> ^ <start date/time (TS)> ^ <end date/time (TS)> ^ <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <patient location type (IS)> ^ <building (IS)> ^ <floor (IS)>

Subcomponents of name: <ID number (ST)> & <family name (ST)> & <given name (ST)> & <middle initial or name (ST)> & <suffix (e.g., JR. III) (ST)> & <prefix (e.g., DR)> & <degree (e.g., MD) (ST)> & <source table (IS)> & <assigning authority (HD)>

Subcomponents of facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field identifies the performing technician.

7.3.1.35 Transcriptionist (CM) 00267

Components: <name (CN)> ^ <start date/time (TS)> ^ <end date/time (TS)> ^ <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <patient location type (IS)> ^ <building (IS)> ^ <floor (IS)>

Subcomponents of name: <ID number (ST)> & <family name (ST)> & <given name (ST)> & <middle initial or name (ST)> & <suffix (e.g., JR. III) (ST)> & <prefix (e.g., DR)> & <degree (e.g., MD) (ST)> & <source table (IS)> & <assigning authority (HD)>

Subcomponents of facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field identifies the report transcriber.

7.3.1.36 Scheduled - date/time (TS) 00268

Definition: This field is the date/time the filler scheduled an observation, when applicable (e.g., action code in *OBR-11-specimen action code* = "S"). This is a result of a request to schedule a particular test and provides a way to inform the Placer of the date/time a study is scheduled (result only).

7.3.1.37 Number of sample containers (NM) 01028

Definition: This field identifies the number of containers for a given sample. For sample receipt verification purposes; may be different from the total number of samples which accompany the order.

7.3.1.38 Transport logistics of collected sample (CE) 01029

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field is the means by which a sample reaches the diagnostic service provider. This information is to aid the lab in scheduling or interpretation of results. Possible answers: routine transport van, public postal service, etc. If coded, requires a user-defined table.

7.3.1.39 Collector's comment (CE) 01030

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field is for reporting additional comments related to the sample. If coded, requires a user-defined table. If only free text is reported, it is placed in the second component with a null in the first component, e.g., ^difficult clotting after venepuncture and echymosis.

7.3.1.40 Transport arrangement responsibility (CE) 01031

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field is an indicator of who is responsible for arranging transport to the planned diagnostic service. Examples: Requester, Provider, Patient. If coded, requires a user-defined table.

7.3.1.41 Transport arranged (ID) 01032

Definition: This field is an indicator of whether transport arrangements are known to have been made. Refer to HL7 table 0224 - Transport arranged for valid codes.

Table 0224 - Transport arranged

Value	Description
A	Arranged
N	Not Arranged
U	Unknown

7.3.1.42 Escort required (ID) 01033

Definition: This field is an indicator that the patient needs to be escorted to the diagnostic service department. Note: The nature of the escort requirements should be stated in the *OBR-43-planned patient transport comment* field. See *HL7 table 0225 - Escort required* for valid values.

Table 0225 - Escort required

Value	Description
R	Required
N	Not Required
U	Unknown

7.3.1.43 Planned patient transport comment (CE) 01034

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field is the code or free text comments on special requirements for the transport of the patient to the diagnostic service department. If coded, requires a user-defined table.

7.3.1.44 Procedure code (CE) 00393

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains a unique identifier assigned to the procedure, if any, associated with the Universal Service ID reported in field 4. *User-defined table 0088 - Procedure code* is used as the HL7 identifier for the user-defined table of values for this field. This field is a CE data type for compatibility with clinical and ancillary systems. This field will usually contain the HCPCS code associated with the order.

7.3.1.45 Procedure code modifier (CE) 01316

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the procedure code modifier to the procedure code reported in field 44, when applicable. Procedure code modifiers are defined by regulatory agencies such as HCFA and the AMA. Multiple modifiers may be reported. *User-defined table 0088 - Procedure code modifier* is used as the HL7 identifier for the user-defined table of values for this field.

7.3.2 OBX - observation/result segment

The OBX segment is used to transmit a single observation or observation fragment. It represents the smallest indivisible unit of a report. Its structure is summarized in *Figure 7-5*.

Its principal mission is to carry information about observations in report messages. But the OBX can also be part of an observation order (see Section 4.2, “Order Message Definitions”). In this case, the OBX carries clinical information needed by the filler to interpret the observation the filler makes. For example, an OBX is needed to report the inspired oxygen on an order for a blood oxygen to a blood gas lab, or to report the menstrual phase information which should be included on an order for a pap smear to a cytology lab. Appendix 7A includes codes for identifying many of pieces of information needed by observation producing services to properly interpret a test result. OBX is also found in other HL7 messages that need to include patient clinical information.

Figure 7-5. OBX attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	SI	O			00569	Set ID - OBX
2	3	ID	C		0125	00570	Value Type
3	80	CE	R			00571	Observation Identifier
4	20	ST	C			00572	Observation Sub-ID
5	65536 ³	*	C	Y4		00573	Observation Value
6	60	CE	O			00574	Units
7	60	ST	O			00575	References Range
8	5	ID	O	Y/5	0078	00576	Abnormal Flags
9	5	NM	O			00577	Probability
10	2	ID	O	Y	0080	00578	Nature of Abnormal Test
11	1	ID	R		0085	00579	Observation Result Status
12	26	TS	O			00580	Date Last Obs Normal Values
13	20	ST	O			00581	User Defined Access Checks
14	26	TS	O			00582	Date/Time of the Observation
15	60	CE	O			00583	Producer's ID
16	80	XCN	O	Y		00584	Responsible Observer
17	60	CE	O	Y		00936	Observation Method

7.3.2.0 OBX field definitions

7.3.2.1 Set ID - OBX (SI) 00569

Definition: This field contains the sequence number. For compatibility with ASTM.

7.3.2.2 Value type (ID) 00570

Definition: This field contains the format of the observation value in OBX. It must be valued if *OBX-11-Observ result status* is not valued with an ‘X’. If the value is CE then the result must be a coded entry. When the value type is TX or FT then the results are bulk text. The valid values for the value type of an observation are listed in *HL7 table 0125 - Value type*.

The observation value must be represented according to the format for the data type defined in Chapter 2, Section 2.8, “Data Types.” For example, a PN consists of 6 components, separated by component delimiters.

Although NM is a valid type, observations which are usually reported as numbers will sometimes have the string (ST) data type because non-numeric characters are often reported as part of the result, e.g., >300 to indicate the result was off-scale for the instrument. In the example, ">300", ">" is a symbol and the digits

3 The length of the observation value field is variable, depending upon value type. See *OBX-2-value type*.

4 May repeat for multipart, single answer results with appropriate data types, e.g., CE, TX, and FT data types.

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are considered a numeric value. However, this usage of the ST type should be discouraged since the SN (structured numeric) data type now accommodates such reporting and, in addition, permits the receiving system to interpret the magnitude.

All HL7 data types are valid, and are included in Table 0125 except CM, CQ, SI, and ID. For a CM definition to have meaning, the specifics about the CM must be included in the field definition. *OBX-5-observation value* is a general field definition that is influenced by the data type *OBX-3*, so CMs are undefined in this context. CQ is invalid because units for *OBX-5-observation value* are always specified explicitly in an OBX segment with *OBX-6 units*. SI is invalid because it only applied to HL7 message segments, and ID because it requires a constant field definition.

The RP value (reference pointer) must be used if the actual observation value is not sent in OBX but exists somewhere else. For example, if the observation consists of an image (document or medical), the image itself cannot be sent in OBX. The sending system may in that case opt to send a reference pointer. The receiving system can use this reference pointer whenever it needs access to the actual image through other interface standards, e.g., DICOM, or through appropriate data base servers.

Table 0125 - Value type

Value	Description
AD	Address
CE	Coded Entry
CF	Coded Element With Formatted Values
CK	Composite ID With Check Digit
CN	Composite ID And Name
CP	Composite Price
CX	Extended Composite ID With Check Digit
DT	Date
ED	Encapsulated Data
FT	Formatted Text (Display)
MO	Money
NM	Numeric
PN	Person Name
RP	Reference Pointer
SN	Structured Numeric
ST	String Data.
TM	Time
TN	Telephone Number
TS	Time Stamp (Date & Time)
TX	Text Data (Display)
XAD	Extended Address
XCN	Extended Composite Name And Number For Persons
XON	Extended Composite Name And Number For Organizations
XPN	Extended Person Name

Value	Description
XTN	Extended Telecommunications Number

The full definition of these data types is given in Chapter 2, Section 2.8, “Data Types.” The structured numeric (SN) data type, new to version 2.3, provides for reporting ranges (e.g., 3-5 or 10-20), titres (e.g., 1:10), and out-of-range indicators (e.g., >50) in a structured and computer interpretable way.

We allow the FT data type in the OBX segment but its use is discouraged. Formatted text usually implies a meaningful structure e.g., a list of three independent diagnoses reported on different lines. But ideally, the structure in three independent diagnostic statements would be reported as three separate OBX segments.

TX should **not** be used except to send large amounts of text. In the TX data type, the repeat delimiter can only be used to identify paragraph breaks. Use ST to send short, and possibly encodable, text strings.

7.3.2.3 Observation identifier (CE) 00571

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains a unique identifier for the observation. The format is that of the Coded Element (CE). Example: 93000.3^P-R interval^A34.

In most systems the identifier will **point** to a master observation table that will provide other attributes of the observation that may be used by the receiving system to process the observations it receives. A set of message segments for transmitting such master observation tables is described in Chapter 8. The relation of an observation ID to a master observation table is analogous to the relationship between a charge code (in a billing record) and the charge master.

When local codes are used as the first identifier in this field we strongly encourage sending a universal identifier as well to permit receivers to equivalence results from different providers of the same service (e.g., a hospital lab and commercial lab that provides serum potassium to a nursing home). One possible **universal** identifier is LOINC codes for laboratory and clinical measurements (see *Figure 7-3* and the HL7 www list server); see Section 7.15, “WAVEFORM RESULT DATA TYPES,” and Appendix X2 of ASTM E1467 for neurophysiology tests.

7.3.2.4 Observation sub-ID (ST) 00572

Definition: This field is used to distinguish between multiple OBX segments with the same observation ID organized under one OBR. For example, a chest X-ray report might include three separate diagnostic impressions. The standard requires three OBX segments, one for each impression. By putting a 1 in the Sub-ID of the first of these OBX segments, 2 in the second, and 3 in the third, we can uniquely identify each OBX segment for editing or replacement.

The sub-identifier is also used to group related components in reports such as surgical pathology. It is traditional for surgical pathology reports to include all the tissues taken from one surgical procedure in one report. Consider, for example, a single surgical pathology report that describes the examination of gallbladder and appendix tissue. This report would be transmitted roughly as shown in *Figure 7-6*.

Figure 7-6. Example of sub-identifier usage

```

OBR|1|||88304&SURG PATH REPORT...
OBX|1|CE|88304&ANT|1|T57000^GALLBLADDER^SNM...
OBX|2|TX|88304&GDT|1|THIS IS A NORMAL GALLBLADDER...
OBX|3|TX|88304&MDT|1|MICROSCOPIC EXAM SHOWS HISTOLOGICALLY
NORMAL GALLBLADDER TISSUE...
OBX|4|CE|88304&IMP|1|M-00100^NML^SNM...
OBX|5|CE|88304&ANT|2|T66000^APPENDIX^SNM...
OBX|6|TX|88304&GDT|2|THIS IS A RED, INFLAMED, SWOLLEN, BOGGY APPENDIX...
OBX|7|TX|88304&MDT|2|INFILTRATION WITH MANY PMN's - INDICATING INFLAMMATORY CHANGE...
OBX|8|CE|88304&IMP|2|M-40000^INFLAMMATION NOS^SNM...

```

The example in *Figure 7-6* has two segments for each component of the report, one for each of the two tissues. Thus, there are two 88304&ANT segments; there are two 88304&GDT segments, and there are two 88304&MDT segments. Segments that apply to the gallbladder all have the sub-identifier 1. Segments that apply to the appendix all have sub-identifier 2.

The observation sub ID has other grouping uses. It can be used to organize the reporting of some kinds of fluid intakes and outputs. For example, when intake occurs through multiple intravenous lines, a number of separate observations (OBX segments), the intake volume, the type of intake (Blood, D5W, Plasma, etc.), the site of the IV line, etc. may be needed for each intravenous line, each requiring a separate OBX segment. If more than one IV line is running, we can logically link all of the OBX segments that pertain to the first IV line by assigning them an observation sub ID of 1. We can do the same with the second IV line by assigning them a sub ID 2 and so on. The same would apply to the outputs of surgical drains when there are multiple such drains.

The use of the sub ID to distinguish repeating OBXs for the same observation ID is really a special case of using the sub ID to group, as can be seen if we picture the OBX segments in *Figure 7-6* as part of a table where the rows correspond to a particular species of observation and the cells correspond to the sub ID numbers that would be associated with each corresponding OBX.

Distinct Observations	88304&ANT	88304&GDT	80304&MDT	80304&IMP
Sub ID 1st Group	1	1	1	1
Sub ID 2nd Group	2	2	2	2

The use of Sub IDs to group results is equivalent to defining a table, and the use of sub IDs to distinguish repeats is just a special case, represented by one column in this table.

However, this approach introduces ambiguities if we have a set of repeating observations within a group, e.g., if the appendix observations include two impressions as in the 8th and 9th OBXs shown in *Figure 7-7*. This really represents the existence of a row nested within a single cell of the table given above.

Figure 7-7. Example of sub-identifier usage

```

OBX|1|CE|880304&ANT|1|T57000^GALLBLADDER^SNM...
OBX|2|TX|880304&GDT|1|THIS IS A NORMAL GALL BLADDER...
OBX|3|TX|880304&MDT|1|MICROSCOPIC EXAMINATION SHOWS HISTOLOGICALLY
NORMAL GALLBLADDER TISSUE...
OBX|4|CE|880304&IMP|1|M-00100^NML^SNM...
OBX|5|CE|880304&ANT|2|T57000^APPENDIX^SNM...
OBX|6|TX|880304&GDT|2|THIS IS A RED, INFLAMED APPENDIX...

```

```
OBX|7|TX|880304&MDT|2|INFLAMMATION WITH MANY PUS CELLS- ACUTE INFLAMMATION. . .
OBX|8|CE|880304&IMP|2|M- 40000^INFLAMMATION NOS^SNM . .
OBX|9|CE|880304&IMP|2|M- 30280^FECALITH^SNM . .
```

The text under *OBX-5-observation value* provides guidance about dealing with two OBXs with the same observation ID and observation sub IDs. They are sent and replaced as a unit. However, some systems will take this to mean that the set of OBXs is to be combined into one composite observation in the receiving system. We suggest the use of a dot and a string (similar to the Dewey Decimal system) when users wish to distinguish each of the repeats within one type, or results within a cell for editing and correction purposes. Using this system, *Figure 7-7* would become 7-8. If there are cases where such nesting occurs at even deeper levels, this approach could be extended.

Figure 7-8. Example of sub-identifier usage

```
OBX|1|CE|880304&ANT|1|T57000^GALLBLADDER^SNM . .
OBX|2|TX|880304&GDT|1|THIS IS A NORMAL GALL BLADDER. . .
OBX|3|TX|880304&MDT|1|MICROSCOPIC EXAMINATION SHOWS HISTOLOGICALLY
NORMAL GALLBLADDER TISSUE. . .
OBX|4|CE|880304&IMP|1|M- 00100^NML^SNM . .
OBX|5|CE|880304&ANT|2|T57000^APPENDIX^SNM . .
OBX|6|TX|880304&GDT|2|THIS IS A RED, INFLAMED APPENDIX. . .
OBX|7|TX|880304&MDT|2|INFLAMMATION WITH MANY PUS CELLS- ACUTE INFLAMMATION. . .
OBX|8|CE|880304&IMP|2. 1|M- 40000^INFLAMMATION NOS^SNM . .
OBX|9|CE|880304&IMP|2. 2|M- 30280^FECALITH^SNM . .
```

Use a null or 1 when there is no need for multiples.

If the observation includes a number of OBXs with the same value for the observation ID OBX-3, then one must use different values for the sub-ID. This is in fact the case of the repeats depicted in *Figure 7-8*, but without any need to group sets of OBXs. Three such OBXs could be distinguished by using sub-IDs 1,2,e; alternatively, sub-IDs 1.1, 1.2, 1.3 could be used, as shown in *Figure 7-8*. *Figure 7-9* shows an example of an electrocardiograph chest radiograph report with three diagnostic impressions, using 1,2,3 in the sub-ID field to distinguish the three separate results.

Figure 7-9. Example of Sub-ID used to distinguish three independent results with the same observation ID

```
OBX|1|CE|8601-7^EKG IMPRESSION ^LN|1|^atrial fibrillation|. . .
OBX|2|CE|8601-7^EKG IMPRESSION ^LN|2|^OLD SEPTAL MYOCARDIAL INFARCT|. . .
OBX|3|CE|8601-7^EKG IMPRESSION ^LN|3|^poor R wave progression|. . .
```

7.3.2.5 Observation value (*) 00573

Definition: This field contains the value observed by the observation producer. *OBX-2-value type* contains the data type for this field according to which observation value is formatted. It is not a required field because some systems will report only the normalcy/abnormalcy (*OBX-8*), especially in product experience reporting.

Representation

This field contains the value of *OBX-3-observation identifier* of the same segment. Depending upon the observation, the data type may be a number (e.g., a respiratory rate), a coded answer (e.g., a pathology impression recorded as SNOMED), or a date/time (the date/time that a unit of blood is sent to the ward). An observation value is always represented as the data type specified in *OBX-2-value type* of the same segment. Whether numeric or short text, the answer shall be recorded in ASCII text.

Reporting logically independent observations

The main sections of dictated reports, such as radiologic studies or history and physicals, are reported as separate OBX segments. In addition, each logically independent observation should be reported in a separate OBX segment, i.e. one OBX segment should not contain the **result** of more than one logically independent observation. This requirement is included to assure that the contents of *OBX-6-units*, *OBX-8-abnormal flags*, and *OBX-9-probability* can be interpreted unambiguously. The electrolytes and vital signs batteries, for example, would each be reported as four separate OBX segments. Two diagnostic impressions, e.g., congestive heart failure and pneumonia, would also be reported as two separate OBX segments whether reported as part of a discharge summary or chest X-ray report. Similarly, two bacterial organisms isolated in a single bacterial culture would be reported as two separate OBX segments.

Though two independent diagnostic **statements** cannot be reported in one OBX segment, multiple categorical responses are allowed (usually as CE data types separated by repeat delimiters), so long as they are fragments (modifiers) that together construct one diagnostic statement. Right upper lobe (recorded as one code) and pneumonia (recorded as another code), for example, could be both reported in one OBX segment. Such multiple “values” would be separated by repeat delimiters.

Multiple OBX segments with the same observation ID and Sub ID

In some systems, a single observation may include **fragments** of more than one data type. The most common example is a numeric result followed by coded comments (CE). In this case, the logical observation can be sent in more than one OBX segment. For example, one segment of numeric or string data type for the numeric result and another segment of CE data type for coded comments. If the producer was reporting multiple coded comments they would all be sent in one OBX segment separated by repeat delimiters because they all modified a single logical observation. Multiple OBX segments with the same observation ID and sub ID should always be sent in sequence with the most significant OBX segment (the one that has the normal flag/units and or reference range and status flag) first. The value of *OBX-6 through 12* should be null in any following OBX segments with the same *OBX-3-observation identifier* and *OBX-4-observation sub-ID*. For the purpose of replacement or deletion, multiple OBX segments with the same observation ID and sub ID are treated as a unit. If any are replaced or deleted, they all are replaced.

Coded values

When an OBX segment contains values of CE data types, the observations are stored as a combination of codes and/or text. In Section 7.4.4, “Example of narrative report messages,” examples of results that are represented as CE data types are shown in the first and second OBX segments of OBR 1 and the first and second OBX segments of OBR 2. The observation may be an observation battery ID (for recommended studies), a diagnostic code or finding (for a diagnostic impression), or an anatomic site for a pathology report, or any of the other kinds of coded results.

It is not necessary to always encode the information stored within a coded observation. For example, a chest X-ray impression could be transmitted as pure text even though it has a CE data type. In this case, the test must be recorded as the second component of the **result code**, e.g.,

```
OBX|1|CE|71020&IMP|1|^CONGESTIVE HEART FAILURE.
```

However, separate impressions, recommendations, etc., even if recorded as pure text, should be recorded in separate result segments. That is, congestive heart failure and pneumonia should not be sent as:

```
OBX|1|CE|71020&IMP|1|^CONGESTIVE HEART FAILURE AND PNEUMONIA|
```

but as:

```
OBX|1|CE|71020&IMP|1|^CONGESTIVE HEART FAILURE|
```

```
OBX|2|CE|71020&IMP|2|^PNEUMONIA|.
```


Even better would be fully-coded results that include computer understandable codes (component 1) instead of, or in addition to, the text description (component 2). One may include multiple values in a CE value and these can be mixtures of code and text, but only when they are needed to construct one diagnosis, impression, or concept. When text follows codes as an independent value it would be taken as a modifier or addenda to the codes. E.g.,

```
OBX|1|CE|710120&IMP^CXR|1|428.0^CONGESTIVE HEART FAILURE^I9C~^MASSIVE HEART
```

The text in component 2 should be an accurate description of the code in component 1. Likewise, if used, the text in component 5 should be an accurate description of the code in component 4.

7.3.2.6 Units (CE) 00574

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the units that have a data type of CE. The default coding system for the units codes consists of the ISO+ abbreviation for a single case unit (ISO 2955-83) plus extensions, that do not collide with ISO abbreviations (see introductory section to this chapter). We designate this coding system as ISO+. Both the ISO unit's abbreviations and the extensions are defined in Section 7.3.2.6.2, "ISO and ANSI customary units abbreviations," and listed in *Figure 7-13*. The ISO+ abbreviations *are* the codes for the default coding system. Consequently, when ISO+ units are being used, only ISO+ abbreviations need be sent, and the contents of the units field will be backward compatible to HL7 Version. 2.1.

7.3.2.6.1 Identifying reporting units

Background

When an observation's value is measured on a continuous scale, one must report the measurement units within the units field of the OBX segment. Since in HL7 Version 2.2 of the specification, all fields that report units are of data type CE. The default coding system for the units codes consists of the ISO abbreviation for a single case unit (ISO 2955-83) plus extensions that do not collide with ISO abbreviations. We designate this coding system as ISO+ (see *Figure 7-13*). Both the ISO unit's abbreviations and the extensions are defined in Section 7.3.2.6.2, "ISO and ANSI customary units abbreviations." The ISO+ abbreviations *are* the codes for the default coding system. Consequently, when ISO+ units are being used, only ISO+ abbreviations need be sent, and the contents of the units field will be backward compatible to HL7 Version 2.1 and ASTM 1238-88.

We strongly encourage observation producers to use ISO+ abbreviated units exclusively, but permit the use of other code systems, including US customary units (ANSI X3.50) and locally defined codes where necessary. Local units are designated **L** or 99zzz where z is an alphanumeric character (see *Figures 7-2* and *73*). ANSI X3.50 -1986 provides an excellent description of these standards, as well as a table of single case abbreviations for US customary units such as foot or gallon.

We had originally intended to include the ANSI X3.50 - 1986 US customary units in the default ISO+ coding system. However, there are overlaps between ISO's abbreviations and the abbreviations for US customary units. For example, **ft** is the abbreviation for foot in US customary units and for femtotesla in ISO; **pt** is the abbreviation for pint in US customary and for picotesla in ISO. (Be aware that the ANSI document also differs from the ISO document regarding the abbreviation of a few ISO units, as well.) In order to avoid potential ambiguity, we have defined another coding system, designated ANS+. It includes the US customary units (e.g., feet, pounds) and **ISO** abbreviations defined in ANSI X3.50-1986, as well as other non-metric units listed in *Figure 7-13* and the ISO combinations of these units. Be aware that a few of the ANSI **ISO** unit abbreviations differ from their abbreviations in ISO (see note at bottom of *Figure 7-13*).

Because the ANS+ specification includes both **ISO** and US customary units, as well as miscellaneous non-metric units, some of the abbreviations are ambiguous. Although there should be little confusion, in the

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context of a particular observation, this ambiguity is a good reason for avoiding ANS+ unit codes when possible.

When ANS+ units codes (abbreviations) are being transmitted, ANS+ must be included in the third (sixth) component of the field. If the units of distance were transmitted as meters (ISO+) it would be transmitted as **m** because ISO+ is the default coding system for units. However, if transmitted in the US customary units of feet, the units would be transmitted as **ft^ANS+**. When required, the full text of the units can be sent as the second component in keeping with the CE data type conventions.

Both ISO and ANSI also provide a set of mixed case abbreviations, but these abbreviations cannot be translated to single case without loss of meaning, and should not be used in this specification whose content is required to be case insensitive.

7.3.2.6.2 ISO and ANSI customary units abbreviations

ISO builds its units from seven base dimensions measured as meters, kilograms, seconds, amperes, kelvins, moles and candelas (see *Figure 7-10*). Other units can be derived from these by adding a prefix to change the scale and/or by creating an algebraic combination of two or more base or derived units. However, some derived units have acquired their own abbreviations (see *Figure 7-10*). Abbreviations for U.S. customary units are given in *Figure 7-11*.

The ISO rules, well explained in ANSI X3.50, provide a way to create units of different scales by adding **multiplier** prefixes. These prefixes can be expressed as **words** or abbreviations. In this Standard we are only concerned with the abbreviations.

Figure 7-10. ISO single case units abbreviations

Units	Abbreviation	Units	Abbreviation	Units	Abbreviation
Base units code/abbreviations					
ampere	a	kelvin	k	meter	m
candela	cd	kilogram	kg	mole	mol
				second	s
Derived units with specified name and abbreviation					
coulomb	c	hour	hr	pascal	pal
day	d	joule	j	volt	v
degree Celsius	cel	minute (ti)	min	watt	w
farad	f	newton	n	weber	wb
hertz	hz	ohm	ohm	year	ann
Other units					
atomic mass unit	u	grey	gy	minute of arc	mnt
bel	b	henry	h	radian	rad
decibel	db	liter	l	siemens	sie
degree	deg	lumen	Lm	steradian	sr
gram	g	lux	Lx	tesla	t
See ISO 2955-1983 for full set					

The ISO abbreviations for multiplier prefixes are given in *Figure 7-12*. Prefixes ranging from 10^{-24} (1/billion billionth) to 10^{24} (a billion billion) are available. The single case abbreviation for kilo (x1000) is **k**. A unit consisting of 1000 seconds would be abbreviated as **ks**, 1000 grams as **kg**, 1000 meters as **km**, and so on. Some prefixes share the abbreviation of a base unit. Farad and femto, for example, (10^{-18}) both have the abbreviation of **f**. To avoid confusion, ISO forbids the use of solitary prefixes. It also deprecates the use of two prefixes in one complex unit. Thus, **f** always means farad, **ff** would mean 1 million billionth of a farad. Compound prefixes are not allowed.

A unit can be raised to an exponential power. Positive exponents are represented by a number immediately following a unit's abbreviation, i.e., a square meter would be denoted by m². Negative exponents are signified by a negative number following the base unit, e.g., 1/m² would be represented as m⁻². Fractional exponents are expressed by a numeric fraction in parentheses: the square root of a meter would be expressed as m(1/2). The multiplication of units is signified by a period (.) between the units, e.g., meters X seconds would be denoted **m.s**. Notice that spaces are not permitted. Division is signified by a slash (/) between two units, e.g. meters per second would be denoted as **m/s**. Algebraic combinations of ISO unit abbreviations constructed by dividing, multiplying, or exponentiating base ISO units, are also valid ISO abbreviations units. Exponentiation has precedence over multiplication or division. For example, microvolts squared per hertz (a unit of spectral power) would be denoted **uv²/hz** and evaluated as uv²/hz while microvolts per square root of hertz (a unit of spectral amplitude) would be denoted uv/hz(1/2) and evaluated as uv/hz^{1/2}. If more than one division operator is included in the expression the associations should be parenthesized to avoid any ambiguity, but the best approach is to convert a/(b/c) to a.c/b or a.c.b-1 to simplify the expression.

The ISO code is a grammar for building units. The rules for building these units are found in Figures 7-10 and 7-12. Figure 7-11 should be used only with English units and should not be used in conjunction with Figure 7-12. The ISO+ table (Figure 7-13) includes the most common such units constructed from this grammar (as well as important non-ISO units). Other ISO units derived from the grammar are valid as well.

Figure 7-11. ANSI+ unit codes for some U.S. customary units

Units	Abbreviation	Units	Abbreviation	Units	Abbreviation
LENGTH		VOLUME		TIME	
inch	in	cubic foot	cft	year	yr
foot	ft	cubic inch	cin	month	mo
mile (statute)	mi	cubic yard	cyd	week	wk
nautical mile	nmi	tablespoon	tbs	day	d
rod	rod	teaspoon	tsp	hour	hr
yard	yd	pint	pt	minute	min
		quart	qt	second	sec
		gallon	gal		
		ounce (fluid)	foz		
AREA		MASS			
square foot	sqf	dram	dr		
square inch	sin	grain	gr (avoir)		
square yard	syd	ounce (weight)	oz		
		pound	lb		
Other ANSI units, derived units, and miscellaneous					
**British thermal unit	btu	**degrees fahrenheit	degf	**millirad	mrad
cubic feet/minute	cft/min	**feet/minute	ft/min	**RAD	rad
Note:	The abbreviations for conventional U.S. units of time are the same as ISO, except for year. ISO = ANN, AMSI = yr. The metric units in X3.50 are the same as ISO, except for: pascal ("pa" in ANSI, "pal" in ISO); ANSI uses "min" for both time and arc while ISO uses "mnt" for minutes of arc; and in ISA seconds are abbreviated "s", in ANSI, "sec".				
This list is not exhaustive. Refer to ANSI X3.50-1986, Table 1, for other metric and standard U.S. units.					

**Non-metric units not explicitly listed in ANSI

Figure 7-12. Single case ISO abbreviations for multiplier prefixes

Prefix		Code	Prefix		Code
yotta*	10^{24}	ya	yocto	10^{-24}	y
zetta*	10^{21}	za	zepto	10^{-21}	z
exa	10^{18}	ex	atto	10^{-18}	a
peta	10^{15}	pe	femto	10^{-15}	f
tera	10^{12}	t	pico	10^{-12}	p
giga	10^9	g	nano	10^{-9}	n
mega	10^6	ma	micro	10^{-6}	u
kilo	10^3	k	milli	10^{-3}	m
hecto	10^2	h	centi	10^{-2}	c
deca	10^1	da	deci	10^{-1}	d
*These abbreviations are not defined in the ISO specification for single case abbreviations.					

Figure 7-13 lists the abbreviations for common ISO derived units. It also includes standard unit abbreviations for common units, e.g., Milliequivalents, and international units, mm(Hg), and for counting per which we denote by a division sign, a denominator, but no numerator, e.g., /c, that are not part of the above referenced ISO standards. We have extended the units table to better accommodate drug routes and physiologic measures, and otherwise fill in gaps in Version 2.2.

We have generally followed the IUPAC 1995 Silver Book² in the definitions of units. However, IUPAC specifies standards for reporting or displaying units and employs 8-bit data sets to distinguish them. This Standard is concerned with the *transmission* of patient information. Therefore, we have restricted ourselves to case insensitive alphabetic characters and a few special characters (e.g., ".", "/", "(", ")", "*", and "_") to avoid any possible confusion in the transmission. Therefore, we use ISO 2955-1983 (Information processing -- representation of SI and other units in systems with limited character sets) and ANSI X3.50-1986 (Representations for U.S. customary, SI, and other units to be used in systems with limited character sets) case insensitive units abbreviations where they are defined. This means that in some cases, IUPAC abbreviations have different abbreviations in ISO+ even when the IUPAC abbreviations use only standard alphabetic characters. For example, **Pascal** is abbreviated **Pa** in IUPAC but **PAL** in ISO+ (following ISO 2955) because **Pa** in a case insensitive context also means **Picoampere**. However, the requirements for transmission do not preclude usage of IUPAC standards for presentation on paper or video display reports to end-users.

All unit abbreviations are case insensitive. One could write milliliters as ML, ml, or mL. In this table we have used lower case for all of the abbreviations except for the letter **L** which we represent in upper case so that readers will not confuse it with the numeral one (1). This is just a change in presentation, not a change in the Standard. Systems should continue to send the codes as upper or lower case as they always have.

Figure 7-13. Common ISO derived units and ISO+ extensions

Code/Abbr.	Name
/(arb_u)	*1 / arbitrary unit
/iu	*1 / international unit
/kg	*1 / kilogram

Code/Abbr.	Name
/L	1 / liter
1/mL	*1 / milliliter
10.L/min	*10 x liter / minute
10.L / (min.m2)	*10 x (liter / minute) / meter ² = liter / (minute × meter ²)
10*3/mm3	*10 ³ / cubic millimeter (e.g., white blood cell count)
10*3/L	*10 ³ / Liter
10*3/mL	*10 ³ / milliliter
10*6/mm3	*10 ⁶ / millimeter ³
10*6/L	*10 ⁶ / Liter
10*6/mL	*10 ⁶ / milliliter
10*9/mm3	*10 ⁹ / millimeter ³
10*9/L	*10 ⁹ / Liter
10*9/mL	*10 ⁹ / milliliter
10*12/L	*10 ¹² / Liter
10*3(rbc)	*1000 red blood cells [†]
a/m	Ampere per meter
(arb_u)	*Arbitrary unit
bar	Bar (pressure; 1 bar = 100 kilopascals)
/min	Beats or Other Events Per Minute
bq	Becquerel
(bdsk_u)	*Bodansky Units
(bsa)	*Body surface area
(cal)	*Calorie
1	*Catalytic Fraction
/L	Cells / Liter
cm	Centimeter
cm_h20	* Centimeters of water =H ₂ O (pressure)
cm_h20.s/L	Centimeters H ₂ O / (liter / second) = (centimeters H ₂ O × second) / liter (e.g., mean pulmonary resistance)
cm_h20/(s.m)	(Centimeters H ₂ O / second) / meter = centimeters H ₂ O / (second × meter) (e.g., pulmonary pressure time product)
(cfu)	*Colony Forming Units
m3/s	Cubic meter per second
d	Day
db	Decibels
dba	*Decibels a Scale
cel	Degrees Celsius

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Code/Abbr.	Name
deg	Degrees of Angle
(drop)	Drop
10.un.s/cm5	Dyne \times Second / centimeter ⁵ (1 dyne = 10 micronewton = 10 un) (e.g., systemic vascular resistance)
10.un.s/(cm5.m2)	$((\text{Dyne} \times \text{second}) / \text{centimeter}^5) / \text{meter}^2 = (\text{Dyne} \times \text{second}) / (\text{centimeter}^5 \times \text{meter}^2)$ (1 dyne = 10 micronewton = 10 un) (e.g., systemic vascular resistance/body surface area)
ev	Electron volts (1 electron volt = 160.217 zeptojoules)
eq	Equivalent
f	Farad (capacitance)
fg	Femtogram
fL	Femtoliter
fmol	Femtomole
/mL	*Fibers / milliliter
g	Gram
g/d	*Gram / Day
g/dL	Gram / Deciliter
g/hr	Gram / Hour
g/(8.hr)	*Gram / 8 Hour Shift
g/kg	Gram / Kilogram (e.g., mass dose of medication per body weight)
g/(kg.d)	(Gram / Kilogram) / Day = gram / (kilogram \times day) (e.g., mass dose of medication per body weight per day)
g/(kg.hr)	(Gram / Kilogram) / Hour = gram / (kilogram \times hour) (e.g., mass dose of medication per body weight per hour)
g/(8.kg.hr)	(Gram / Kilogram) / 8 Hour Shift = gram / (kilogram \times 8 hour shift) (e.g., mass dose of medication per body weight per 8 hour shift)
g/(kg.min)	(Gram / Kilogram) / Minute = gram / (kilogram \times minute) (e.g., mass dose of medication per body weight per minute)
g/L	Gram / Liter
g/m2	Gram / Meter ² (e.g., mass does of medication per body surface area)
g/min	Gram / Minute
g.m/(hb)	Gram \times meter / heart beat (e.g., ventricular stroke work)
g.m/((hb).m2)	$(\text{Gram} \times \text{meter} / \text{heartbeat}) / \text{meter}^2 = (\text{gram} \times \text{meter}) / (\text{heartbeat} \times \text{meter}^2)$ (e.g., ventricular stroke work/body surface area, ventricular stroke work index)
g(creat)	*Gram creatinine
g(hgb)	*Gram hemoglobin
g.m	Gram meter
g(tot_nit)	*Gram total nitrogen
g(tot_prot)	*Gram total protein

Code/Abbr.	Name
g(wet_tis)	*Gram wet weight tissue
gy	Grey (absorbed radiation dose)
hL	Hectaliter = 10^2 liter
h	Henry
in	Inches
in_hg	Inches of Mercury (=Hg)
iu	*International Unit
iu/d	*International Unit / Day
iu/hr	*International Unit / Hour
iu/kg	International Unit / Kilogram
iu/L	*International Unit / Liter
iu/mL	*International Unit / Milliliter
iu/min	*International Unit / Minute
j/L	Joule/liter (e.g., work of breathing)
kat	*Katal
kat/kg	*Katal / Kilogram
kat/L	*Katal / Liter
k/watt	Kelvin per watt
(kcal)	Kilocalorie (1 kcal = 6.693 kilojoule)
(kcal)/d	*Kilocalorie / Day
(kcal)/hr	*Kilocalorie / Hour
(kcal)/(8.hr)	*Kilocalorie / 8 Hours Shift
kg	Kilogram
kg(body_wt)	* kilogram body weight
kg/m ³	Kilogram per cubic meter
kg/h	Kilogram per hour
kg/L	Kilogram / liter
kg/min	Kilogram per minute
kg/mol	Kilogram / mole
kg/s	Kilogram / second
kg/(s.m ²)	(Kilogram / second)/ meter ² = kilogram / (second × meter ²)
kg/ms	Kilogram per square meter
kg.m/s	Kilogram meter per second
kpa	Kilopascal (1 mmHg = 0.1333 kilopascals)
ks	Kilosecond
(ka_u)	King-Armstrong Unit

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Code/Abbr.	Name
(knk_u)	*Kunkel Units
L	Liter
L/d	*Liter / Day
L/hr	Liter / hour
L/(8.hr)	*Liter / 8 hour shift
L/kg	Liter / kilogram
L/min	Liter / minute
L/(min.m2)	(Liter / minute) / meter ² = liter / (minute × meter ²) (e.g., cardiac output/body surface area = cardiac index)
L/s	Liter / second (e.g., peak expiratory flow)
L.s	Liter / second / second ² = liter × second
lm	Lumen
lm/m2	Lumen / Meter ²
(mclg_u)	*MacLagan Units
mas	Megasecond
m	Meter
m2	Meter ² (e.g., body surface area)
m/s	Meter / Second
m/s2	Meter / Second ²
ueq	*Microequivalents
ug	Microgram
ug/d	Microgram / Day
ug/dL	Microgram / Deciliter
ug/g	Microgram / Gram
ug/hr	*Microgram / Hour
ug(8hr)	Microgram / 8 Hour Shift
ug/kg	Microgram / Kilogram
ug/(kg.d)	(Microgram / Kilogram) / Day = microgram / (kilogram × day) (e.g., mass dose of medication per patient body weight per day)
ug/(kg.hr)	(Microgram / Kilogram) / Hour = microgram / (kilogram × hours) (e.g., mass dose of medication per patient body weight per hour)
ug/(8.hr.kg)	(Microgram / Kilogram) / 8 hour shift = microgram / (kilogram × 8 hour shift) (e.g., mass dose of medication per patient body weight per 8 hour shift)
ug/(kg.min)	(Microgram / Kilogram) / Minute = microgram / (kilogram × minute) (e.g., mass dose of medication per patient body weight per minute)
ug/L	Microgram / Liter
ug/m2	Microgram / Meter ² (e.g., mass dose of medication per patient body surface area)

Code/Abbr.	Name
ug/min	Microgram / Minute
uiu	*Micro international unit
ukat	*Microkatel
um	Micrometer (Micron)
umol	Micromole
umol/d	Micromole / Day
umol/L	Micromole / Liter
umol/min	Micromole / Minute
us	Microsecond
uv	Microvolt
mbar	Millibar (1 millibar = 100 pascals)
mbar.s/L	Millibar / (liter / second) =(millibar × second) / liter (e.g., expiratory resistance)
meq	*Milliequivalent
meq/d	*Milliequivalent / Day
meq/hr	*Milliequivalent / Hour
meq/(8.hr)	Milliequivalent / 8 Hour Shift
meq/kg	Milliequivalent / Kilogram (e.g., dose of medication in milliequivalents per patient body weight)
meq/(kg.d)	(Milliequivalents / Kilogram) / Day = milliequivalents / (kilogram × day) (e.g., dose of medication in milliequivalents per patient body weight per day)
meq/(kg.hr)	(Milliequivalents / Kilogram) / Hour = milliequivalents / (kilogram × hour) (e.g., dose of medication in milliequivalents per patient body weight per hour)
meq/(8.hr.kg)	(Milliequivalents / Kilogram) / 8 Hour Shift = milliequivalents / (kilogram × 8 hour shift) (e.g., dose of medication in milliequivalents per patient body weight per 8 hour shift)
meq/(kg.min)	(Milliequivalents / Kilogram) / Minute = milliequivalents / (kilogram × minute) (e.g., dose of medication in milliequivalents per patient body weight per minute)
meq/L	Milliequivalent / Liter
	Milliequivalent / Meter ² (e.g., dose of medication in milliequivalents per patient body surface area)
meq/min	Milliequivalent / Minute
mg	Milligram
mg/m ³	Milligram / Meter ³
mg/d	Milligram / Day
mg/dL	Milligram / Deciliter
mg/hr	Milligram / Hour
mg/(8.hr)	Milligram / 8 Hour shift
mg/kg	Milligram / Kilogram
mg/(kg.d)	(Milligram / Kilogram) / Day = milligram / (kilogram × day) (e.g., mass dose of medication per patient body weight per day)

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Code/Abbr.	Name
mg/(kg.hr)	(Milligram / Kilogram) / Hour = milligram/ (kilogram × hour) (e.g., mass dose of medication per patient body weight per hour)
mg/(8.hr.kg)	(Milligram / Kilogram) / 8 Hour Shift = milligram / (kilogram × 8 hour shift) (e.g., mass dose of medication per patient body weight per 8 hour shift)
mg/(kg.min)	(Milligram / Kilogram) / Minute = milligram / (kilogram × minute) (e.g., mass dose of medication per patient body weight per hour)
mg/L	Milligram / Liter
mg/m ²	Milligram / Meter ² (e.g., mass dose of medication per patient body surface area)
mg/min	Milligram / Minute
mL	Milliliter
mL/cm_h20	Milliliter / Centimeters of Water (H ₂ O) (e.g., dynamic lung compliance)
mL/d	*Milliliter / Day
mL/(hb)	Milliliter / Heart Beat (e.g., stroke volume)
mL/((hb).m ²)	(Milliliter / Heart Beat) / Meter ² = Milliliter / (Heart Beat × Meter ²) (e.g., ventricular stroke volume index)
mL/hr	*Milliliter / Hour
mL/(8.hr)	*Milliliter / 8 Hour Shift
mL/kg	Milliliter / Kilogram (e.g., volume dose of medication or treatment per patient body weight)
mL/(kg.d)	(Milliliter / Kilogram) / Day = milliliter / (kilogram × day) (e.g., volume dose of medication or treatment per patient body weight per day)
mL/(kg.hr)	(Milliliter / Kilogram) / Hour = milliliter / (kilogram × hour) (e.g., volume dose of medication or treatment per patient body weight per hour)
mL/(8.hr.kg)	(Milliliter / Kilogram) / 8 Hour Shift = milliliter / (kilogram × 8 hour shift) (e.g., volume dose of medication or treatment per body weight per 8 hour shift)
mL/(kg.min)	(Milliliter / Kilogram) / Minute = milliliter / (kilogram × minute) (e.g., volume dose of medication or treatment per patient body weight per minute)
mL/m ²	Milliliter / Meter ² (e.g., volume of medication or other treatment per patient body surface area)
mL/mbar	Milliliter / Millibar (e.g., dynamic lung compliance)
mL/min	Milliliter / Minute
mL/(min.m ²)	(Milliliter / Minute) / Meter ² = milliliter / (minute × meter ²) (e.g., milliliters of prescribed infusion per body surface area; oxygen consumption index)
mL/s	Milliliter / Second
mm	Millimeter
mm(hg)	*Millimeter (HG) (1 mm Hg = 133.322 kilopascals)
mm/hr	Millimeter/ Hour
mmol/kg	Millimole / Kilogram (e.g., molar dose of medication per patient body weight)
mmol/(kg.d)	(Millimole / Kilogram) / Day = millimole / (kilogram × day) (e.g., molar dose of medication per patient body weight per day)

Code/Abbr.	Name
mmol/(kg.hr)	(Millimole / Kilogram) / Hour = millimole / (kilogram × hour) (e.g., molar dose of medication per patient body weight per hour)
mmol/(8.hr.kg)	(Millimole / Kilogram) / 8 Hour Shift = millimole / (kilogram × 8 hour shift) (e.g., molar dose of medication per patient body weight per 8 hour shift)
mmol/(kg.min)	(Millimole / Kilogram) / Minute = millimole / (kilogram × minute) (e.g., molar dose of medication per patient body weight per minute)
mmol/L	Millimole / Liter
mmol/hr	Millimole / Hour
mmol/(8hr)	Millimole / 8 Hour Shift
mmol/min	Millimole / Minute
mmol/m ²	Millimole / Meter ² (e.g., molar dose of medication per patient body surface area)
mosm/L	*Milliosmole / Liter
ms	Milliseconds
mv	Millivolts
miu/mL	*Milliunit / Milliliter
mol/m ³	Mole per cubic meter
mol/kg	Mole / Kilogram
mol/(kg.s)	(Mole / Kilogram) / Second = mole / (kilogram × second)
mol/L	Mole / Liter
mol/s	Mole / Second
ng	Nanogram
ng/d	Nanogram / Day
ng/hr	*Nanogram / Hour
ng/(8.hr)	Nanogram / 8 Hour shift
ng/L	Nanogram / Liter
ng/kg	Nanogram / Kilogram (e.g., mass dose of medication per patient body weight)
ng/(kg.d)	(Nanogram / Kilogram) / Day = nanogram / (kilogram × day) (e.g., mass dose of medication per patient body weight per day)
ng/(kg.hr)	(Nanogram / Kilogram) / Hour = nanogram / (kilogram × hour) (e.g., mass dose of medication per patient body weight per hour)
ng/(8.hr.kg)	(Nanogram / Kilogram) / 8 Hour Shift = nanogram / (kilogram × 8 hour shift) (e.g., mass dose of medication per patient body weight per 8 hour shift)
ng/(kg.min)	(Nanogram / Kilogram) / Minute = nanogram / (kilogram × minute) (e.g., mass dose of medication per patient body weight per minute)
ng/m ²	Nanogram / Meter ² (e.g., mass dose of medication per patient body surface area)
ng/mL	Nanogram / Milliliter
ng/min	*Nanogram / Minute
ng/s	*Nanogram / Second
nkat	*Nanokatel

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Code/Abbr.	Name
nm	Nanometer
nmol/s	Nanomole / Second
ns	Nanosecond
n	Newton (force)
n.s	Newton second
(od)	*O.D. (optical density)
ohm	Ohm (electrical resistance)
ohm.m	Ohm meter
osmol	Osmole
osmol/kg	Osmole per kilogram
osmol/L	Osmole per liter
/m ³	*Particles / Meter ³
/L	*Particles / Liter
/(tot)	*Particles / Total Count
(ppb)	*Parts Per Billion
(ppm)	*Parts Per Million
(ppth)	Parts per thousand
(ppt)	Parts per trillion (10 ¹²)
pal	Pascal (pressure)
/(hpf)	*Per High Power Field
(ph)	*pH
pa	Picoampere
pg	Picogram
pg/L	Picogram / Liter
pg/mL	Picogram / Milliliter
pkat	*Picokatel
pm	Picometer
pmol	*Picomole
ps	Picosecond
pt	Picotesla
(pu)	*P.U.
%	Percent
dm ² /s ²	Rem (roentgen equivalent man) = 10 ⁻² meter ² / second ² = decimeter ² / second ² Dose of ionizing radiation equivalent to 1 rad of x-ray or gamma ray) [From Dorland's Medical Dictionary]
sec	Seconds of arc
sie	Siemens (electrical conductance)

Code/Abbr.	Name
sv	Sievert
m2/s	Square meter / second
cm2/s	Square centimeter / second
t	Tesla (magnetic flux density)
(td_u)	Todd Unit
v	Volt (electric potential difference)
l	Volume Fraction
wb	Weber (magnetic flux)
*Starred items are not genuine ISO, but do not conflict.	
†This approach to units is discouraged by IUPAC. We leave them solely for backward compatibility	

7.3.2.6.3 Local unit codes

Local codes can be used for the units by indicating the code source of **99zzz** in the third component (where 99zzz is an alpha-numeric string). In the case of local codes, the text name of the codes or the description of the units should also be transmitted (in the second component), so that the receiving system can compare the results with results for the same measurement sent by another service (refer to Chapter 2, Section 2.8, "Data Types"). An "L" should be stored in the third component to indicate that the code is locally defined. More specialized local code designations, as specified in the CE data type definition, can also be employed.

7.3.2.7 References range (ST) 00575

Components: for numeric values in the format:

- a) lower limit-upper limit (when both lower and upper limits are defined, e.g., for potassium 3.5 - 4.5)
- b) > lower limit (if no upper limit, e.g., >10)
- c) < upper limit (if no lower limit, e.g., <15)

alphabetical values: the normal value may be reported in this location

Definition: When the observation quantifies the amount of a toxic substance, then the upper limit of the range identifies the toxic limit. If the observation quantifies a drug, the lower limits identify the lower therapeutic bounds and the upper limits represent the upper therapeutic bounds above which toxic side effects are common.

7.3.2.8 Abnormal flags (ID) 00576

Definition: This field contains a table lookup indicating the normalcy status of the result. We strongly recommend sending this value when applicable. If the observation is an antimicrobial susceptibility, the interpretation codes are: S=susceptible; R=resistant; I=intermediate; MS=moderately susceptible; VS=very susceptible. (See ASTM 1238 - review for more details). Refer to *HL7 table 0078 - Abnormal flags* for valid entries.

When the laboratory can discern the normal status of a textual report, such as chest X-ray reports or microbiologic culture, these should be reported as N when normal and A when abnormal. Multiple codes, e.g., abnormal and worse, would be separated by a repeat delimiter, e.g., A~W.

Table 0078 Abnormal flags

Value	Description
L	Below low normal
H	Above high normal
LL	Below lower panic limits
HH	Above upper panic limits
<	Below absolute low-off instrument scale
>	Above absolute high-off instrument scale
N	Normal (applies to non-numeric results)
A	Abnormal (applies to non-numeric results)
AA	Very abnormal (applies to non-numeric units, analogous to panic limits for numeric units)
null	No range defined, or normal ranges don't apply
U	Significant change up
D	Significant change down
B	Better--use when direction not relevant
W	Worse--use when direction not relevant
For microbiology susceptibilities only:	
S	Susceptible*
R	Resistant*
I	Intermediate*
MS	Moderately susceptible*
VS	Very susceptible*

Results may also be reported in **shorthand** by reporting the normalcy status without specifying the exact numeric value of the result. Such shorthand is quite common in clinical notes, where physicians will simply say that **the glucose result was normal**. Such shorthand reporting is also seen in drug experience reporting. In such cases, the result can be reported in the OBX by reporting the normalcy code in *OBX-8-abnormal flags* without specifying any value in *OBX-5-observation value*.

7.3.2.9 Probability (NM) 00577

Definition: This field contains the probability of a result being true for results with categorical values. It mainly applies to discrete coded results. It is a decimal number represented as an ASCII string that must be between 0 and 1, inclusive.

7.3.2.10 Nature of abnormal test (ID) 00578

Definition: This field contains the nature of the abnormal test. Refer to *HL7 table 0080 - Nature of abnormal testing* for valid values. As many of the codes as apply may be included, separated by repeat delimiters. For example, normal values based on age, sex, and race would be codes as A~S~R.

Table 0080 Nature of abnormal testing

Value	Description
A	An age-based population
N	None - generic normal range
R	A race-based population
S	A sex-based population

7.3.2.11 Observ result status (ID) 00579

Definition: This field contains the observation result status. Refer to *HL7 table 0085 - Observation result status codes interpretation* for valid values. This field reflects the current completion status of the results for one Observation Identifier.

It is a required field. Previous versions of HL7 stated this implicitly by defining a default value of “F.” Code **F** indicates that the result has been verified to be correct and final. Code **W** indicates that the result has been verified to be wrong (incorrect); a replacement (corrected) result may be transmitted later. Code **C** indicates that data contained in the *OBX-5-observation value* field are to replace previously transmitted (verified and) final result data with the same observation ID (including suffix, if applicable) and observation sub-ID usually because the previous results were wrong. Code **D** indicates that data previously transmitted in a result segment with the same observation ID (including suffix) and observation sub-ID should be deleted. When changing or deleting a result, multiple OBX segments with the same observation ID and observation sub-ID are replaced or deleted as a unit. Normal progression of results through intermediate (e.g., ‘gram positive cocci’) to final (e.g., ‘staphylococcus aureus’) should not be transmitted as **C** (correction); they should be transmitted as **P** or **S** (depending upon the specific case) until they are final.

There are situations where the observation required for the order needs to be dynamically specified at the time of ordering. For example, timed measurements of serum glucose challenge tests may vary among laboratories. One institution may report them at -30, -15, 0, 30, 60, and 120 minutes, while another may report them at -30, 0, 30, 60, 90, and 120 minutes. Master file entries may not exist for each desirable permutation. Another example may be Renin Studies where the specification may be done upon ordering without having a master file definition for each permutation. The OBX segments in the ORM message can be used to create dynamic specifications to accommodate these permutations without pre-existing master file definitions. The result status field in the OBX can be used to determine whether the OBX in the ORM message is used to provide a dynamic specification or is used to communicate a result as context to the order. The status of O shall be used to indicate that the OBX segment is used for a dynamic specification of the required result. An OBX used for a dynamic specification must contain the detailed examination code, units, etc., with *OBX-11* valued with O, and *OBX-2* and *OBX-5* valued with null.

Table 0085 - Observation result status codes interpretation

Value	Description
C	Record coming over is a correction and thus replaces a final result
D	Deletes the OBX record
F	Final results; Can only be changed with a corrected result.
I	Specimen in lab; results pending
N	Not asked; used to affirmatively document that the observation identified in the OBX was not sought when the universal service ID in OBR-4 implies that it would be sought.
O	Order detail description only (no result)
P	Preliminary results

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Value	Description
R	Results entered -- not verified
S	Partial results
X	Results cannot be obtained for this observation
U	Results status change to final without retransmitting results already sent as 'preliminary.' E.g., radiology changes status from preliminary to final
W	Post original as wrong, e.g., transmitted for wrong patient

7.3.2.12 Date last obs normal value (TS) 00580

Definition: This field contains the changes in the observation methods that would make values obtained from the old method not comparable with those obtained from the new method.

Null if there are no normals or units. If present, a change in this date compared to date-time recorded, the receiving system's test dictionary should trigger a manual review of the results to determine whether the new observation ID should be assigned a new ID in the local system to distinguish the new results from the old.

7.3.2.13 User defined access checks (ST) 00581

Definition: This field permits the producer to record results-dependent codes for classifying the observation at the receiving system. This field should be needed only rarely, because most classifications are fixed attributes of the observation ID and can be defined in the associated observation master file (see description in Chapter 8).

However, there are a few cases when such controls vary with the value of the observation in a complex way that the receiving system would not want to re-calculate. An example is an antimicrobial susceptibility result. Some systems prefer to display only the susceptibility results of inexpensive antimicrobials depending upon the organism, the source of the specimen and the patient's allergy status. The sending service wants to send all of the susceptibilities so that certain privileged users (e.g., Infectious Disease specialists) can review all of the results but nonprivileged users would see only the "preferred" antimicrobials to which the organism was susceptible. We expect that other cases also occur.

7.3.2.14 Date/time of the observation (TS) 00582

Definition: This field is required in two circumstances. The first is when the observations reported beneath one report header (OBR) have different dates. This could occur in the case of queries, timed test sequences, or clearance studies where one measurement within a battery may have a different time than another measurement.

It is also needed in the case of OBX segments that are being sent by the placer to the filler, in which case the date of the observation being transmitted is likely to have no relation to the date of the requested observation. In France, requesting services routinely send a set of the last observations along with the request for a new set of observations. The date of these observations is important to the filler laboratories.

In all cases, the observation date-time is the physiologically relevant date-time or the closest approximation to that date-time. In the case of tests performed on specimens, the relevant date-time is the specimen's collection date-time. In the case of observations taken directly on the patient (e.g., X-ray images, history and physical), the observation date-time is the date-time that the observation was performed.

7.3.2.15 Producer's ID (CE) 00583

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains a unique identifier of the responsible producing service. It should be reported explicitly when the test results are produced at outside laboratories, for example. When this field is null, the receiving system assumes that the observations were produced by the sending organization. This information supports CLIA regulations in the US. The code for producer ID is recorded as a CE data type. In the US, the Medicare number of the producing service is suggested as the identifier.

7.3.2.16 Responsible observer (XCN) 00584

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code(ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility ID: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: When required, this field contains the identifier of the individual directly responsible for the observation (i.e., the person who either performed or verified it). In a nursing service, the observer is usually the professional who performed the observation (e.g., took the blood pressure). In a laboratory, the observer is the technician who performed or verified the analysis. The code for the observer is recorded as a CE data type. If the code is sent as a local code, it should be unique and unambiguous when combined with *OBX-15-producer ID*.

7.3.2.17 Observation method (CE) 00936

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

This optional field can be used to transmit the method or procedure by which an observation was obtained when the sending system wishes to distinguish among one measurement obtained by different methods and the distinction is not implicit in the test ID. Chemistry laboratories do not usually distinguish between two different methods used to measure a given serum constituent (e.g., serum potassium) as part of the test name. See the LOINC Users Manual⁵ for a more complete discussion of these distinctions. If an observation producing service wanted to report the method used to obtain a particular observation, and the method was NOT embedded in the test name, they can use this field.

The Centers for Disease Control and Prevention (CDC) Method Code (CDCM) (see *Figure 7-3*) is one candidate code system for reporting methods/instruments. EUCLIDES method codes are another. User-defined tables are an alternative.

⁵ LOINC Committee. Logical Observation Identifier Names and Codes. Indianapolis: Regenstrief Institute and LOINC Committee, 1995. c/o Kathy Hutchins, 1001 West 10th Street RG-5, Indianapolis, IN 46202. 317/630-7433. Available via FTP/Gopher (dumccss.mc.duke.edu/standards/HL7/termcode/loincclab) and World Wide Web (http://dumccss.mc.duke.edu/standards/HL7/termcode/loincclab/). The LOINC Code System is described in Forrey AW, McDonald CJ, DeMoor G, Huff SM, Leavelle D, Leland D, et.al. Logical Observation Identifier Names and Codes (LOINC) database: a public use set of codes and names for electronic reporting of clinical laboratory test results. *Clinical Chemistry* 1996;42:81-90

7.4 EXAMPLE TRANSACTIONS

7.4.1 Query/response

The following is a query of the EKG system for the data for a particular patient number 0123456-1 for reports that have been modified or created since 1/1/88. The response ends with a continuation pointer. A continuation query follows, in reply to which a continuation response is sent.

Query (QRY)

```
MSH|^~\&|CDB|||QRY^R02|CDB22222|P<cr>
QRD|198904180943|R|I|Q4412|||10|RD|0123456-1|RES<cr>
QRF|EKG||198801010000<cr>
```

Response

```
MSH|^~\&|EKG|||ORF^R04|X981672|P<cr>
MSA|AA|CDB22222|P<cr>
QRD|198904180943|R|I|Q4412|||10|RD|0123456-1|RES<cr>
QRF|EKG||198804010000<cr>
PID|1|0123456-1||ROBERTSON^JOHN^H|||||9821111<cr>
OBR|1|43215^OE|98765^EKG|93000^EKG REPORT|R|198801111000|198801111330|||RMT|||
1988011 11330|?|P030|||||198801120930|||||88-126666|A111|
VIRANYI ^ANDREW<cr>

OBX|1|ST|8897-1^QRS COMPLEX: ^LN|||/MIN|60-100|||F<cr>
OBX|2|ST|8894-8^P WAVE: ^LN|||/MIN|60-100|||F<cr>
OBX|3|ST|8625-6^P-R INTERVAL: ^LN|||/MSEC|1.06-.10|||F<cr>
OBX|4|ST|8633-0^QRS DURATION: ^LN|||/MSEC|.18-.22|||F<cr>
...
...
...
OBX|8|CE|8601-7^EKG IMPRESSION: ^LN|1|^ATRIAL FIBRILATION|||||F<cr>
OBX|9|CE|8601-7^EKG IMPRESSION: ^LN|2|^ST DEPRESSION|||||F<cr> OBX|109|FT|93000&ADT^EKG
COMMENT||\in+4\ \ti-4\ 1. When compared with EKG of
31-oct-88 ventricular rate has increased by 30 bpm \.sp\ \ti-4\
2. Criteria for Lateral infarct are no longer present. ||||F<cr>
OBR|2|43217^OE|98767^EKG|93000^EKG
REPORT||198810311004|198810311004||||?||198810311004|?|P030|||||198810311744|||||
88-126689|A122|BREAL|WILLIAM<cr>
...
...
...
DSC|1896X22; 0123456-1<cr>
```

Continuation query

```
MSH|^~\&|CDB|||QRY^R02|CDB22289|P<cr>
QRD|198904180943|R|I|Q4412|||10|RD|0123456-1|RES<cr>
QRF|EKG||198804010000<cr>
DSC|1896X22; 0123456-1<cr>
```

Continuation response

```
MSH|^~\&|EKG||CDB|||ORF^R04|X981672|P<cr>
MSA|AA|CDB22289|P<cr>
QRD|198904180943|R|I|Q4412||10|RD|0123456-1RES<cr>
QRF|EKG||198804010000<cr>
PID|0123456-1|ROBERTSON^JOHN^H|||||9821111<cr>
OBR|...
...
...
```

7.4.2 Unsolicited

The following is an unsolicited transmission of radiology data.

```
MSH|^~\&|XRAY||CDB|||ORU^R01|K172|P<cr>
PID|1|0123456-1|ROBERTSON^JOHN^H|||||9821111<cr>
OBR|1|X89-1501^OE|78912^RD|71020^CHEST XRAY AP & LATERAL|R|198703291530|19873290800||JBM|N<cr>
OBX|1|CE|71020&IMP^RADIOLOGIST'S IMPRESSION|4|^MASS LEFT LOWER LOBE|1||A||F<cr>
OBX|2|CE|71020&IMP|2|^INFILTRATE RIGHT LOWER LOBE|||A||F<cr>
OBX|3|CE|71020&IMP|3|^HEART SIZE NORMAL|||N||F<cr>
OBX|4|FT|71020&GDT|1|circular density (2 x 2 cm) is seen in the posterior segment of
the LLL. A second, less well-defined infiltrated circulation density is
seen in the R mid lung field and appears to cross the minor fissure#|||||F<cr>
OBX|5|CE|71020&REC||71020^Follow up CXR 1 month||30-45||||F<cr>
```

7.4.3 Example message

Laboratory message: electrolytes, CBC, sed rate, blood cultures and susceptibilities

```
MSH|...
PID|...
```

Electrolytes:

```
OBR|1|870930010^OE|CM3562^LAB|80004^ELECTROLYTES|R|198703281530|198703290800|||
401-0^INTERN^JOE^^^^MD^L|N|||SER|^SMITH^RICHARD^W.^^^DR. |(319)377-4400|
This is requestor field #1. Requestor field #2|Diag.serv.field #1. |
Diag.serv.field #2. |198703311400|||F<cr>
OBX|1|ST|84295^NA||150|mmol/l|136-148|H||A|F|19850301<cr>
OBX|2|ST|84132^K+||4.5|mmol/l|3.5-5|N||N|F|19850301<cr>
OBX|3|ST|82435^CL||102|mmol/l|94-105|N||N|F|19850301<cr>
OBX|4|ST|82374^C02||27|mmol/l|24-31|N||N|F|19850301<cr>
```

CBC:

```
OBR|2|870930011^OE|HEM3268^LAB|85022^CBC|R|198703281530|198703290800|||401-0 ^
INTERN^JOE^^^^MD^L|N|||BLD|^SMITH^RICHARD^W.^^^DR. |(319)377-4400|This is
requestor field #1. |This is Requestor field #2. |This is lab field #1. |Lab
field #2. |198703311400|||F<cr>
```

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OBX|1|ST|718-7^HEMOGLOBIN: ^LN||13.4|GM/DL|14-18|N||S|F|19860522<cr>
OBX|2|ST|4544-3^HEMATOCRIT: ^LN||40.3|%|42-52|L||S|F|19860522<cr>
OBX|3|ST|789-8^ERYTHROCYTES: ^LN||4.56|10*6/ml|4.7-6.1|L||S|F|19860522<cr>
OBX|4|ST|787-2^ERYTHROCYTE MEAN CORPUSCULAR VOLUME: ^LN
||88|fl|80-94|N||S|F|19860522<cr>
OBX|5|ST|785-6^ERYTHROCYTE MEAN CORPUSCULAR HEMOGLOBIN: ^LN
||29.5|pg|27-31|N||N|F|19860522<cr>
OBX|6|ST|786-4^ERYTHROCYTE MEAN CORPUSCULAR HEMOGLOBIN CONCENTRATION: ^LN
||33|%|33-37|N||N|F|19860522<cr>
OBX|7|ST|6690-2^LEUKOCYTES: ^LN||10.7|10*3/ml|4.8-10.8|N||N|F|19860522<cr>
OBX|8|ST|764-1^NEUTROPHILS BAND FORM/100 LEUKOCYTES: ^LN||2|%|||F<cr>
OBX|9|ST|769-0^NEUTROPHILS SEGMENTED/100 LEUKOCYTES: ^LN||67|%|||F<cr>
OBX|10|ST|736-9^LYMPHOCYTES/100 LEUKOCYTES: ^LN||29|%|||F<cr>
OBX|11|ST|5905-5^MONOCYTES/100 LEUKOCYTES: ^LN||1|%|||F<cr>
OBX|12|ST|713-8^EOSINOPHILS/100 LEUKOCYTES: ^LN||2|%|||F<cr>

Sed rate:

OBR|3|870930011^OE|HEMB269^LAB|4537-7^ERYTHROCYTE SEDIMENTATION RATE: ^LN
|R|198703281530|198703290800|||
401-0^INTERN^JOE^^^^MD^L|N|||BLD|^SMITH^RICHARD^W.^^^DR. |(319)377-4400|
This is requestor field #1. |This is Requestor field #2. |This is lab field
#1. |Lab field #2. |198703311400|||F<cr>
OBX|1|ST|4537-7^ERYTHROCYTE SEDIMENTATION RATE: ^LN|
|7|MM/HR|0-10|N||S|F|19860522|E|1|1792|27<cr>
Parent micro result, identifies organism
OBR|4|2740X^OE|BC376^MIC|87040^Blood culture|R|198703280600|198703290800|||
99-2^JONES&COLLECTOR|N|Hepatitis risk||198703290830|Bl d|
4010^INTERN^JOE^^^^MD^L|X3472|Requestor field 1|Requestor field 2|
Producer's field 1|Producer's field 2|198703301000|35.00|MB|F|<cr>
OBX|1|CE|600-7^MICROORGANISM IDENTIFIED: ^LN|1|^E Coli|||A||F<cr>
OBX|2|CE|600-7^MICROORGANISM IDENTIFIED: ^LN|2|^S Aureus|||A||F<cr>

Child micro result, gives antimicrobials susceptibilities for organism identified in first OBX of parent

OBR|5|2740X^OE|BC402^MIC|87186^Antibiotic MIC|R|198703281230
|198703290800|||G|Hepatitis Risk|198703290830|Bl d|
|401.0^INTERN^JOE^^^^MD^L|X3472|||198703310900|40.00
|MB|F|600-7&MICROORGANISM IDENTIFIED&LN^1||2740X&OE^BC376&MIC<cr>
OBX|1|ST|28-1^AMPICILLIN: SUSC: PT: ISLT: QN: MIC^LN||<2|ug/ml||S||F<cr>
OBX|2|ST|60-4^CARBENICILLIN: SUSC: PT: ISLT: QN: MIC^LN||<16|ug/ml||S||F<cr>
OBX|3|ST|267-5^GENTAMICIN: SUSC: PT: ISLT: QN: MIC^LN||<2|ug/ml||S||F<cr>
OBX|4|ST|496-0^TETRACYCLINE: SUSC: PT: ISLT: QN: MIC^LN||<1|ug/ml||S||F<cr>
OBX|5|ST|408-5^PIPERACILLIN: SUSC: PT: ISLT: QN: MIC^LN||<8|ug/ml||S||F<cr>
OBX|6|ST|145-3^CEFUROXIME: SUSC: PT: ISLT: QN: MIC^LN||<2|ug/ml||S||F<cr>
OBX|7|ST|161-0^CEPHALOTHIN: SUSC: PT: ISLT: QN: MIC^LN||<8|ug/ml||S||F<cr>
OBX|8|ST|20-8^AMOXICILLIN+CLAVULANATE: SUSC: PT: ISLT: QN: MIC^LN
||<4|ug/ml||S||F<cr>
OBX|9|ST|173-5^CHLORAMPHENICOL: SUSC: PT: ISLT: QN: MIC^LN||<4|ug/ml||S||F<cr>

```

OBX|10|ST|508-2^TOBRAMYCIN: SUSC: PT: ISLT: QN: MIC^LN|<2|ug/ml||S||F<cr>
OBX|11|ST|12-5^AMAKACIN: SUSC: PT: ISLT: QN: MIC^LN|<4|ug/ml||S||F<cr>
OBX|12|ST|516-5^TRIMETHOPRIM-SULFAMETHOXAZOLE: SUSC: PT: ISLT: QN: MIC^LN|
|<2/38|ug/ml||S||F<cr>
OBX|13|ST|76-0^CEFAZOLIN: SUSC: PT: ISLT: QN: MIC^LN|<2|ug/ml||S||F<cr>
OBX|14|ST|116-4^CEFOXITIN: SUSC: PT: ISLT: QN: MIC^LN|<2|ug/ml||S||F<cr>
OBX|15|ST|140-4^CEFTRIAXONE: SUSC: PT: ISLT: QN: MIC^LN|<4|ug/ml||S||F<cr>
OBX|16|ST|133-9^CEFTAZIDIME: SUSC: PT: ISLT: QN: MIC^LN|<2|ug/ml||S||F<cr>
OBX|17|ST|185-9^CIPROFLOXACIN: SUSC: PT: ISLT: QN: MIC^LN|<1|ug/ml||S||F<cr>

```

Second micro child result, gives susceptibilities or organism identified by Second OBX of parent

```

OBR|6|2740X^OE|BC403^MIC|87186^Antibiotic MIC|R|198703281230|198703290800|||G|
Hepatitis risk|198703290830|Bld|401.0^INTERN^JOE^^^^MD^L|X3472|||
198703310900|40.00|MB|F|600-7&MICROORGANISM IDENTIFIED &LN^2|
||2740X&OE^BC376&MIC<cr>
OBX|1|ST|28-1^AMPICILLIN: SUSC: PT: ISLT: QN: MIC^LN|<8|ug/ml||R||F<cr>
OBX|2|ST|193-3^CLINDAMYCIN: SUSC: PT: ISLT: QN: MIC^LN|<.25|ug/ml||S||F<cr>
OBX|3|ST|267-5^GENTAMYCIN: SUSC: PT: ISLT: QN: MIC^LN|<1|ug/ml||S||F<cr>
OBX|4|ST|233-7^ERYTHROMYCIN: SUSC: PT: ISLT: QN: MIC^LN|<.5|ug/ml||S||F<cr>
OBX|5|ST|383-0^OXACILLIN: SUSC: PT: ISLT: QN: MIC^LN|<.5|ug/ml||S||F<cr>
OBX|6|ST|524-9^VANCOMYCIN: SUSC: PT: ISLT: QN: MIC^LN|<2|ug/ml||S||F<cr>
OBX|7|ST|6932-8^PENICILLIN: SUSC: PT: ISLT: QN: MIC^LN|<8|ug/ml||R||F<cr>
OBX|8|ST|161-0^CEPHALOTHIN: SUSC: PT: ISLT: QN: MIC^LN|<2|ug/ml||S||F<cr>
OBX|9|ST|173-5^CHLORAMPHENICOL: SUSC: PT: ISLT: QN: MIC^LN|<4|ug/ml||S||F<cr>
OBX|10|ST|12-5^AMIKACIN: SUSC: PT: ISLT: QN: MIC^LN|<16|ug/ml||S||F<cr>
OBX|11|ST|185-9^CIPROFLOXACIN: SUSC: PT: ISLT: QN: MIC^LN|<1|ug/ml||S||F<cr>
OBX|12|ST|428-3^RIFAMPIN: SUSC: PT: ISLT: QN: MIC^LN|<1|ug/ml||S||F<cr>

```

7.4.4 Example of narrative report messages

This example of the body of reports shows the following observation from what are usually free text reports. The text within these examples that begins with ****--** and ends with **--**** are explanatory comments, not a formal part of the message. The following outline shows the segments that are included in this example message.

- a) patient identifying record (PID)
- b) EKG order record (OBR)
- c) EKG coded result record (OBX)
- d) EKG result records (OBX):
 - 1) ventricular rate
 - 2) atrial rate
 - 3) QRS width
 - 4) PR interval
- e) order record for chest x-ray (OBR)
- f) two diagnostic impressions for CXR (OBX)
- g) description record for CXR (OBX)

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- h) a recommendation record for CXR (OBX)
- i) an order record for surgical pathology (OBR)
- j) a gross description record for pathology showing use of anatomy fields (OBX)
- k) a microscopic description record for pathology (OBX)
- l) vital signs request (OBR)
- m) six vital signs (OBX)
- n) part of the physical history (OBR & OBX)
- o) end record

MSH|...

PID|...

Order record for EKG

OBR|1|P8753^OE|EK5230^EKG|93000^EKG|R|198703281530|198703290800|||401
0^INTERN^JOE^^^MD^L|N <cr>

Two interpretation records for EKG

[In this case, the result observation ID assumes the observation code in the order record.]

OBX|1|CE|&IMP|1|^Sinus bradycardia|||A|||F <cr>

OBX|2|CE|&IMP|2|^Occasional PVCs|||A|||F <cr>

Four numeric results for EKG

[The AS4 code is an extension of the CPT4 code (93000) for EKG plus extension .1,.2, etc., as detailed in the Implementation Guide.]

OBX|3|ST|8897-1^QRS COMPLEX: NRAT: PT: CARDIAC VENTRICLES: QN: EKG^LN|
|80|/min|60-100|||F <cr>

OBX|4|ST|8894-8^P WAVE: NRAT: PT: CARDIAC ATRIA: QN: ^LN|80|/min
|60-100|||F <cr>

OBX|5|ST|8633-0^QRS DURATION: TIM PT: HEART: QN: EKG^LN|.08|msec
|.06-.10|||F <cr>

OBX|6|ST|8625-6^P-R INTERVAL: TIM OT: HEART: QN: EKG^LN|.22|msec
|.18-.22|||F <cr>

Order record for CXR

OBR|2|P8754^OE|XR1501^XR|71020^Chest X-ray AP & Lateral|R|198703281530|198703290800|||
401-0^INTERN^JOE^^^MD^L|N <cr>

Two CXR diagnostic impressions

OBX|1|CE|71020&IMP^Radiologist's

Impression|1|.61^RUL^ACR~.212^Bronchopneumonia^ACR|||A|||F<cr>

OBX|2|CE|71020&IMP|2|51.71^Congestive heart failure^ACR|||A|||F<cr>

CXR Description with continuation records

OBX|3|TX|71020&GDT||Infiltrate probably representing bronchopneumonia in the right
lower lobe. Also pulmonary venous congestion cardiomegaly and cephalization, indicating
early congestive heart failure.<cr>

Recommendations about CXR report to follow up one month with a repeat CXR

OBX|4|CE|71020&REC||71020^Followup CXR 1 month^AS4|||||F<cr>

Order record for pathology report

OBR|3|P8755^OE|SP89- 739^SP|88304^Surgical Path

Report|R|198703281530|198703290800||401- 0^INTERN^JOE^^^MD^L|N<cr>

OBX|1|CE|&ANT|1|Y0480- 912001^orbital region^SNM|||||F<cr>

Gross description record (with overflow) for pathology

OBX|2|TX|&GDT^GrossSpecimenDescription|1|The specimen is received in four containers. The first is labeled with the patient's name and consists of three fragments of reddish-brown tissue each of which measures 2 mm in greatest dimension. They are wrapped in tissue paper and submitted in toto in a single cassette|<cr>

Microscopic description record for pathology

OBX|3|TX|&MDT^MicroscopicDescription|1|A|Sections of the first specimen received for frozen section diagnosis reveal thick walled, ramifying vessels lined by a single layer of flattened endothelial cells. The thick smooth muscle walls exhibit no malignant cytologic features nor do the endothelial lining cells. Within the same specimen are also found fragments of fibrous connective tissue, bone, and nerve which are histologically unremarkable|||||F<cr>

Vital signs

OBR|4|P8756^OE|N2345^NR|3000. 02^VITAL SIGNS|R|198703281530|198703290800||401- 0^INTERN^JOE^^^MD^L|N<cr>

OBX|1|ST|8462- 4^INTRAVASCULAR DIASTOLIC: PRES: ^LN||90|mm(hg)|60- 90|||||F<cr>

OBX|2|ST|8479- 8^INTRAVASCULAR SYSTOLIC: PRES: ^LN||120|mm(hg)|100- 160|||||F<cr>

OBX|3|ST|8478- 0^INTRAVASCULAR MEAN: PRES: ^LN||100|mm(hg)|80- 120|N|||||F<cr>

OBX|4|ST|8867- 4^HEART BEAT: NRAT: ^LN||74|/min|60- 100|N|||||F<cr>

OBX|5|ST|8357- 6^BLOOD PRESSURE METHOD: ^LN||MANUAL BY CUFF|||||F<cr>

OBX|6|ST|8886- 4^HEART RATE METHOD: ^LN||MANUAL BY PALP|||||F<cr>

Part of the patient's history

OBR|5|P8568^OE|HX2230^CLN||2000^HISTORY|R|198703281530|198703290800|401- 0^INTERN^JOE^^^MD^L|N<cr>

OBX|1|CE|8661- 1^CHIEF COMPLAINT: ^LN||... <cr>

OBX|2|ST|8674- 4^HISTORY SOURCE: ^LN||PATIENT|||||F<cr>

OBX|3|TX|8684- 3^PRESENT ILLNESS: ^LN||SUDDEN ONSET OF CHEST PAIN. 2 DAYS, PTA ASSOCIATED WITH NAUSEA, VOMITING & SOB. NO RELIEF WITH ANTACIDS OR NTG. NO OTHER SX. NOT PREVIOUSLY ILL.|||||F<cr>

.

and so on.

7.4.5 Reporting cultures and susceptibilities

7.4.5.1 Culture battery/report representation

Organisms and other observations/tests are reported using multiple OBX segments. The granularity expected for HL7 culture reports is one observation per organism.

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All OBX segments which have the same observation ID and sub-ID are part of a single observation.

Each organism in a culture battery is assigned a unique *OBX-4-observation sub-ID* (and is therefore a separate observation). The organism name is given in *OBX-5-observation value* (results). It is recommended, but not required, that the organism name may change over time, but the corresponding observation sub-ID never changes. (The observation ID will be identical for all organisms reported.)

Recommended:

```
OBX|CE|organism^413^L|1|^E. Coli|||||F <cr>
OBX|CE|organism^413^L|2|^S. Aureus|||||F <cr>
```

Not recommended:

```
OBX|CE|organism1^413^L|1|^E. Coli|||||F <cr>
OBX|CE|organism2^413^L|1|^S. Aureus|||||F <cr>
```

7.4.5.2 Susceptibility battery/report representation

Each antimicrobial should be reported as a separate (OBX) observation where the Observation ID is a code for the antimicrobial. (OBXs for non-antimicrobials observations and related information may be present in the same battery.)

MIC and disk diffusion (Kirby Bauer) susceptibility results can be combined in the same OBX segment. An OBX can contain a MIC value (in *OBX-5-observation value* (results)) and *OBX-8-abnormal flag* that indicates whether the organism is sensitive, resistant, or intermediate (see *HL7 table 0078- Abnormal flags* under abnormal flag fields).

Or, an OBX can contain a disk diffusion result string (e.g., **sensitive**) in the Observation Results field and the disk diffusion interpretation in *OBX-8-abnormal flags* (e.g., **S**).

A susceptibility battery may only contain results corresponding to a single organism that has been previously reported in a culture battery.

7.4.5.3 Identification of the organism for a susceptibility battery

The following is the preferred, but not required method of organizing data about antimicrobial susceptibility.

A susceptibility battery may only contain results corresponding to a single organism that has been previously reported in a culture battery.

A susceptibility battery is always a child order to a culture battery. *OBR-29-parent* (parent's filler order number) in the susceptibility OBR is equal to *OBR-3-filler order number* in the parent culture OBR and is used to link the two batteries logically.

The susceptibility battery also contains a linkage back to a particular organism in the culture battery. *OBR-26-parent result* of the susceptibility OBR contains two components--*OBX-3-observation identifier* (code only) and *OBX-4-observation sub-ID* of the OBX in the culture battery which contains the organism name.

The identity of an organism/isolate is expected to be refined over time. When an organism identification changes, the parent culture battery can be resent without resending the child susceptibility battery.

The case may occur where a susceptibility battery is reported on an organism which has not yet been identified. In this case, it is required that a placeholder OBX for the organism name be reported in the corresponding culture battery so that *OBR-26-parent result* in the susceptibility OBR will point to a valid organism OBX in the culture battery. Transmission of an organism OBX (in the culture battery) with the Sub-ID

field valued must precede the susceptibility battery which uses the identical Sub-ID in *OBR-26-parent result*.

Discussion and examples:

Order micro results (blood culture)

```
MSH|^~\&|LAB1||DESTINATION||19910127105114||ORU^R03|LAB1003929
PID||900329493||PETERSON^DAVID||19270222|M|
PV1||I|
ORC|NW|
OBR||A485388^OE|H29847^LAB1|BLOOD CULTURE|||
```

Result for culture

```
ORC|RE. . .
OBR||A485388^OE|H29847^LAB1|BLOOD CULTURE||. . .
OBX||FT|SDES^SOURCE||BLOOD- RAPID|||||F <cr>
OBX||FT|EXAM^MICROSCOPIC||GRAM POSITIVE COCCI IN GROUPS|||||F <cr>
OBX||FT|ORGANISM^IDENTIFIER|1|ISOLATE 1|||||F <cr>
```

Result for susceptibility

```
ORC|RE. . .
OBR||A485388^OE|H29848^LAB1|BT1^SUSCEPTIBILITY BATTERY||||MC|to field
... 26|ORGANISM^1|||A485388&OE^H29847&LAB1|
OBX||CE|ACAPEN^PENICILLIN||0.5|R|||||F <cr>
OBX||CE|ACHNAF^NAICILLIN||1|R|||||F <cr>
OBX||CE|ACHCLI^CLINDAMYCIN||<=0.1|S|||||F <cr>
```

Result for Culture ID

```
ORC|RE. . .
OBR||A485388^OE|H29847^LAB1|BLOOD CULTURE||. . .
OBX||FT|ORGANISM^IDENTIFIER|1|STAPH EPI|||||F <cr>
```

New result for culture ID

```
ORC|RE. . .
OBR||A485388^OE|H29847^LAB1|BLOOD CULTURE||. . .
OBX||FT|ORGANISM^IDENTIFIER|1|STAPH EPI SERO TYPE 3|||||F <cr>
```

Assumptions

1. All OBXs in the parent order must employ the same coding scheme.
2. The Sub-ID of the parent OBXs (result) cannot change.

7.4.6 Results reporting

Suppose an order has been placed to the EKG system for three EKGs to be performed on successive days. These results can be reported in various ways.

1. The EKG application needs to communicate to anyone the results of the 1st EKG:

ORU message:

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```
MSH|...
PID|...
OBR|||89-551^EKG|93000^EKG REPORT|... // 1ST child OBR.
OBX|ST|93000.1^VENTRICULAR RATE (EKG)|...
OBX|ST|93000.2^...
...
...
OBX|FT|93000.14^EKG COMMENT|...
OBR|... // other observation segments to follow
```

- Notice that this report is without reference to the original order.
 - No ORC is required because the identifying Fillers Order Number (and other ORC fields) are carried in the OBR segment.
2. The EKG application needs to communicate to anyone the original order information, the details of the child orders, the fact of the child spin off, and the results of all three EKGs:

ORU message:

```
MSH|...
PID|...
ORC|PA|A226677^OE|89-450^EKG|... // original order's ORC.
OBR|||93000^EKG REPORT|... // original order segment
ORC|CH|A226677^OE|89-451^EKG<cr> // 1st child ORC.
OBR|||93000^EKG REPORT|... // 1st EKG child OBR.
OBX|ST... // 1st EKG report
OBX|ST...
...
OBX|FT...
ORC|CH|A226677^OE|89-452^EKG<cr> // 2nd child ORC.
OBR|||93000^EKG REPORT|... // 2nd EKG child OBR.
OBX|ST... // 2nd EKG report
OBX|ST...
...
OBX|FT...
ORC|CH|A226677^OE|89-453^EKG<cr> // 3rd child ORC.
OBR|||93000^EKG REPORT|... // 3rd EKG child OBR.
OBX|ST... // 3rd EKG report
OBX|ST...
...
OBX|FT...
... // Other parts of message might follow.
```

In this case, we are transmitting the information about the fact of child spin off, the original order and the results all at the same time. Thus, this form of the ORU message reports not only the results of an order, but all of its associated ordering information including the original OBR for three EKGs that was replaced by three separate OBR EKG segments.

7.4.7 Patient-specific clinical data with an order

Reporting body weight and height with a creatinine clearance.

```
MSH|...
PID|...
ORC|NW|...           // New order.
OBR|P42^PC|2164-2^CREATININE RENAL CLEARANCE: VRAT: 24H: UR: QN^LN|...
OBX|ST|3141-9^BODY WEIGHT: MASS: ^LN|62|kg<cr>
OBX|ST|3137-7^BODY HEIGHT: LEN: ^LN|190|cm<cr>
ORC|NW|...           // Next order.
```

7.5 CLINICAL TRIALS

Academic medical institutions, academic research coordinating centers, and industry-based research organizations often have computer systems that support registration, compliance and safety monitoring, and outcomes analysis for clinical trials. Patients on these trials may receive their treatment and evaluation at one research facility or at many different medical facilities. Clinical trials systems could message other applications that a patient is registered on a clinical trial. Several functional examples follow: (1) Some of the data required to monitor or analyze outcomes on the trial are generated in other medical computer systems, such as pharmacy, laboratory, or clinical applications. These applications may tag patients on clinical trials so that data may be sent back to the clinical trials system. (2) Order entry systems could also use patient registration information: they could display standard order sets for the protocol or particular treatment/evaluation phases of a complex protocol. They could pass the clinical trials status on to service provider applications to initiate a results report to the clinical trials system. It could also be passed to billing applications that may use specialized procedures for research-related costs. (3) Nursing and pharmacy systems can use information on patients' clinical trials status for care plans or dispensing authorization (auxiliary to the physician's prescription), respectively. There could be many other uses of this message since a patient's involvement on a clinical trial affects all concurrent medical care.

To meet monitoring and analysis requirements, patient registration, treatment, diagnostic, and study summary data are reported to study sponsors like pharmaceutical or medical device companies, regulatory agencies, and data management centers for collaborative studies. Automated procedures must be used to transfer these voluminous data among the participant computer systems in a cost-efficient and timely manner. The following additions to HL7 aim to specify standard messaging transactions to automate such reporting as well as to enable communication of clinical trials registration data to relevant medical applications as described above.

The objectives of the clinical trials messages and segments are to identify that patients are registered on clinical trials, have entered a study-specific phase of treatment or evaluation, or to indicate the study protocol's data schedule. Messages include OBR (Section 4.5.1, "OBR - observation request segment"), OBX (Section 7.3.2, "OBX - observation/result segment"), RXA (Section 4.8.14, "RXA - pharmacy /treatment administration segment"), and RXR (Section 4.8.3, "RXR - pharmacy/treatment order segment") segments to report observations or drug administration that are relevant to the study. In addition to study-related clinical data, OBX segments may contain the results of study variables according to master code tables such as the Health Outcomes Variables (HL7 Implementation Guide). There are also master segments to describe the clinical trial, its treatment phases, and its scheduled date-time points for message recipients. These are analogous to the Test/Observation Master Segments (Chapter 8), with the trials, phases, or scheduled time points treated as the OMx treats observation identifiers.

7.5.1 Terminology and concepts

7.5.1.1 Clinical trial:

A scientifically rigorous study of individual outcomes to some process of healthcare intervention. Clinical trials usually involve medical treatments so this document will use the term *treatment*, rather than the broader term *intervention*. A clinical trial design may randomly assign and compare one treatment ap-

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proach with another, or generate safety and efficacy data on a single treatment approach. The clinical trial has a protocol for the patient's course of treatment and/or evaluation. There is usually a schedule for collection of data to measure compliance, safety, and outcomes.

7.5.1.2 Phase of a clinical trial:

A treatment and/or observation interval of a clinical trial. A phase may represent an interval with a specific treatment regimen assigned randomly or otherwise, with each regimen of a progression of treatments, or with an evaluation component only. Generally, for each phase, there is an explicit patient management, evaluation, and data collection schedule. Each of these phases may have associated safety, outcome, and quality-control variables. A simpler study design need not use the phase structures.

The phase structure serves several purposes in the clinical trials messages. Other computer systems may need to know that the patient has begun a phase with a particular treatment regimen or diagnostic schedule, such as the pharmacy or order entry systems. When reporting study data, observations and variables often describe particular phase instances. For example, each course of treatment may have its own values for the same set of observations or variables. Phase instances may also have distinct data schedules that need to be linked to submitted data.

Several examples follow with each line depicting a phase.

7.5.1.2.1 Example 1

Alternating treatment plus observation intervals:

```
_____> _____> _____> _____> ...  
          Rx A      Rx B      Rx A      Rx B
```

7.5.1.2.2 Example 2

Random assignment to two courses each of treatment A or B, all responding patients to treatment C, continue with observation and a diagnostic regimen after all treatment phases are completed. Treatment phases include the evaluation component for that course of treatment:

```
_____> _____  
Rx A Crs 1  Rx A Crs 2  
                                     \> _____> _____> _____  
                                     /  Rx C Crs 1  Rx C Crs 2  
  
Observe  
_____> _____/  
Rx B Crs 1  Rx B Crs 2
```

7.5.1.2.3 Example 3

Random assignment to placebo or treatment A, both taken daily and evaluated monthly.

```
_____> _____> _____> _____> ...  
Month 1      Month 2      Month 3      Month 4
```

7.5.1.3 data schedule:

The treatment, diagnostic, and procedural requirements, as well as data collection due dates, scheduled on a timeline for most clinical trials. As data are reported, they may need to reflect the scheduled time point that they satisfy. Clinical trials quality control requires attention to compliance between the protocol's schedule and patient data records.

The data schedule will be keyed by time points relative to the study. Some data may be due prior to and at the conclusion of the study and/or one or more of its phases. Some are interim within the study or its phases depending on protocol events such as administration of treatment, arbitrary time intervals instated to make and record assessments, or some clinical milestone such as relapse of disease. Often, multiple data parameters are scheduled at the same time point. Several examples follow:

7.5.1.3.1 Schedule for a randomized cancer prevention trial

		Treatment 1st - 3rd Years																		
	Reg	Rand	Months																	
			3	6	9	12	18	24	30	36	42	48	54	60	66	72	78	84		
Disease Staging	X																			
H & P	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Assess Adverse Events and Outcome Variables	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Chest PAL X-ray	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
CBC, Diff, Plt	X			X	X	X	X	X	X	X		X		X		X		X		
SMA 12	X		X	X	X	X	X	X	X	X		X		X		X		X		
Cholesterol and Triglyceride	X		X	X	X	X	X	X	X	X										
Electrolytes	X																			
Plasma Retinoic Acid	X	X																		
Cotinine Level (nonsmokers)		X																		

7.5.1.3.2 Schedule for a cancer chemotherapy trial

	Prestudy	Prior to Each Cycle	During Cycle	Every 3 Cycles	End Study
Informed Consent	X	X			
H & P Neurologic	X1				X
Vital Signs	X1		X2		X
Disease Staging	X	X3			X
ECG	X1		X4		
Radiology*		X		X5	X
Chest X-ray	X	X			X
Bone Marrow Bx.	X6				
HCG	X1				
Assess Adverse Events		X			X
CBC, Diff, Plt	X1			X7	X
UA, PT, PTT	X1				X
SMA12, Mg, CEA	X1	X			X

1. Within 3 days prior to start of infusion.
2. At 0,10,30, and 60 minutes after start of drug administration and one-half hour after test drug infusion ends for cycles 1 and 2. For subsequent cycles at 0 and 10 minutes after start of drug administration, and at the end of infusion.

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3. Record tumor measurements at the end of every cycle if assessable clinically by physical examination or with simple X-ray.
 4. Continuous ECG monitoring during infusion if necessary, due to bradycardia (<50 beats/min) or other significant cardiac findings.
 5. When measurable disease requires complex radiologic studies such as CT or radionuclide scans.
 6. To be done at baseline (if clinically indicated) at the option of the investigator and also during study if patient has prolonged myelosuppression (WBC<2000 cells/mm³>14 days).
 7. Blood counts will be done twice weekly during cycles 1 and 2, then weekly.
- * Radionuclide scan and X-ray of the bones, CT scans of the chest, pelvis, and brain only when clinically indicated.

7.5.1.3.3 Schedule for a randomized pain medication trial

	Day 1 Before RX	Day 1 After RX	Daily	Day 30
H & P	X			X
Creat, Bili, SGOT	X			
Urinalysis	X			
Pain Diagnosis	X			
Opioid Dose Strand	X	X	X	X
Non-opioid Analgesic		X	X	X
Medications for Side Effects		X	X	X
Phone Report: Pain and Side Effects			X	
Visual Analog Scales	X	X	X	X
Pain Evaluation Form	X			X

7.6 CLINICAL TRIALS - TRIGGER EVENTS AND MESSAGE DEFINITIONS

The event type will be carried in the message header segment.

7.6.1 CRM - clinical study registration message (events C01-C08)

The data are entered in a clinical trials or other patient data system and broadcast to other facility systems such as order entry, pharmacy, accounting, and nursing systems. They can be transmitted in batch mode or broadcast to outside-facility computer systems, including diagnostic and patient management systems. It is assumed that proper routing and security mechanisms are in place.

Event	Description
C01	Register a patient on a clinical trial
C02	Cancel a patient registration on clinical trial (for clerical mistakes since an intended registration should not be canceled)
C03	Correct/update registration information
C04	Patient has gone off a clinical trial
C05	Patient enters phase of clinical trial

Event	Description
C06	Cancel patient entering a phase (clerical mistake)
C07	Correct/update phase information
C08	Patient has gone off phase of clinical trial

<u>CRM^C01-C08</u>	<u>Clinical Study Registration Message</u>	<u>Chapter</u>
MSH	Message Header	2
{PID	Patient Identification	3
[PV1]	Patient Visit	3
CSR	Clinical Study Registration	7
{[CSP]}	Clinical Study Phase	7
}		

7.6.2 CSU - unsolicited study data message (events C09-C12)

Data are entered in the clinical trials system or may reside in laboratory, pathology, radiology, pharmacy and/or other clinical applications. Most clinical trials data - clinical observations and study variables - will be communicated in OBR and OBX segments. The CSR, CSP, and CSS segments will identify the specific association these OBR and OBX have to the clinical trial. Data can be broadcast or transmitted in batch mode to study sponsors or the data management center for collaborative studies.

Event	Description
C09	Automated time intervals for reporting, like monthly
C10	Patient completes the clinical trial
C11	Patient completes a phase of the clinical trial
C12	Update/correction of patient order/result information

<u>CSU^C09-C12</u>	<u>Unsolicited Study Data Message</u>	<u>Chapter</u>
MSH	Message Header	2
{		
PID	Patient Identification	3
[PD1]	Additional Demographics	3
[{NTE}]	Notes and comments	2
[PV1]	Patient Visit	3
[PV2]	Patient Visit - Additional Info	3
}		
CSR	Clinical Study Registration	7
{[CSP]}	Clinical Study Phase	7
{[CSS]}	Clinical Study Data Schedule	7
{[ORC]}	Common Order	4
OBR	Observation Battery	7
{OBX}	Observation Results	7
}		
{[ORC]}	Common Order	4
{RXA}	Pharmacy Administration	4
RXR	Pharmacy Route	4
}		
}		
}		
}		

7.6.3 MFN/MFK- clinical trials master file messages

7.6.3.1 CMO, CM1, CM2 – clinical trials master file segments

The MFN/MFK message structures are defined in Chapter 8, section 8.3.1. The master file definition segments are defined in Chapter 8, section 8.10.2, 8.10.3 and 8.10.4, respectively,.

7.7 CLINICAL TRIALS - SEGMENT DEFINITIONS

7.7.1 CSR - clinical study registration segment

The CSR segment will contain fundamental administrative and regulatory information required to document a patient's enrollment on a clinical trial. This segment is all that is required if one needs to message another system that an enrollment has taken place, i.e., from clinical trials to pharmacy, accounting, or order entry systems. The CSR segment may also be used to identify that OBR, OBX, RXA, and RXR segments that follow represent data applicable to the identified study.

Figure 7-14. CSR attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	60	EI	R			01011	Sponsor Study ID
2	60	EI	O			01036	Alternate Study ID
3	60	CE	O			01037	Institution Registering the Patient
4	30	CX	R			01038	Sponsor Patient ID
5	30	CX	O			01039	Alternate Patient ID - CSR
6	26	TS	R			01040	Date/Time Of Patient Study Registration
7	60	XCN	O	Y		01041	Person Performing Study Registration
8	60	XCN	R	Y		01042	Study Authorizing Provider
9	26	TS	C			01043	Date/time Patient Study Consent Signed
10	60	CE	C			01044	Patient Study Eligibility Status
11	26	TS	O	Y/3		01045	Study Randomization Date/time
12	200	CE	O	Y/3		01046	Randomized Study Arm
13	200	CE	O	Y/3		01047	Stratum for Study Randomization
14	60	CE	C			01048	Patient Evaluability Status
15	26	TS	C			01049	Date/time Ended Study
16	60	CE	C			01050	Reason Ended Study

7.7.1.0 CSR field definitions

7.7.1.1 Sponsor study ID (EI) 01011

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>.

Definition: The field contains the universal identifier for the clinical trial. Since many clinical trials are collaborative and multi-centered, and since one goal of these standards is to promote automated data exchange among sites, the primary identifier should come from the sponsor. The coding system component may reference the sponsor. Example:

T93-0807^NCI (where NCI refers to the National Cancer Institute).

7.7.1.2 Alternate study ID (EI) 01036

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field contains an alternate identifier that may be used as agreed upon by messaging parties. For example, the sending application may code its internal study number here.

7.7.1.3 Institution registering the patient (CE) 01037

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field distinguishes the institution where registration occurred. The legal approval to give patients access to a trial lies with the Internal Review Board for the institution. Universal healthcare provider facility codes should be used when they exist. Currently coding systems must be devised by users.

7.7.1.4 Sponsor patient ID (CX) 01038

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ < assigning authority (HD)> ^ <identifier type code (IS)> ^ < assigning facility (HD)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> * <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> * <universal ID type (ID)>

Definition: This field contains the main patient identification for the study. The sponsor patient ID allows automation of records on patients treated at various institutions. The sponsor patient ID should be unique for each patient participating on the study identified in *CSR-1-sponsor study ID*.

7.7.1.5 Alternate patient ID - CSR (CX) 01039

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ < assigning authority (HD) > ^ <identifier type code (IS)> ^ < assigning facility (HD)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> * <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> * <universal ID type (ID)>

Definition: This field may be the sending application's patient identification. Coding conventions may be used as agreed upon by users.

7.7.1.6 Date/time patient of patient study registration (TS) 01040

Definition: This field contains the date of the patient registration is mandatory. The time component is optional. The time stamp for a registration may be useful. For example, patients may be randomized at the pharmacy according to the order in which they were registered.

7.7.1.7 Person performing study registration (XCN) 01041

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID) > ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility ID: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

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Definition: This field contains the healthcare facility employee who actually phoned, submitted a form, or interactively registered the patient on the clinical trial. This is generally done under authorization from the attending physician or a principal or collaborating investigator.

7.7.1.8 Study authorizing provider (XCN) 01042

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code(ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility ID: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the healthcare provider, generally the attending physician, who is accountable that the patient is eligible for the trial and has signed an informed consent. National standard healthcare provider codes should be used when they exist. This field is required for the patient registration trigger event (C01).

7.7.1.9 Date/time patient study consent signed (TS) 01043

Definition: This field contains the consent form signing date is collected to provide a checkpoint that the consent form was obtained. Since many trials involve unapproved drugs and other treatment modalities, the consent form is highly important to document and store. This field is required for the patient registration trigger event (C01). The time component is optional.

7.7.1.10 Patient study eligibility status (CE) 01044

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field indicates whether the patient was an appropriate candidate for the trial. It is important for quality control and data analysis. The code set will vary among clinical trials. An example answer set is: **Yes, No, By Approval, Not Assessed, Unknown**. This field is required for the patient registration trigger event (C01).

7.7.1.11 Study randomization date/time (TS) 01045

Definition: This field contains the date the patient was randomized. The time component is optional. Up to three randomizations are supported. Sequential randomizations are listed in chronologic order.

7.7.1.12 Randomized study arm (CE) 01046

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains codes that must be developed by users. The blind treatment assignment may be communicated as a dummy text: **^blind** or if a coded treatment assignment must also be communicated: **1^blind^local_code**. If more than one randomization occurs, the second and third repetitions will correspond to the second and third repetitions of *CSR-II-study randomization date/time*, if they exist.

7.7.1.13 Stratum for study randomization (CE) 01047

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: Many studies have stratified randomization schemas. The strata codes must be developed for each clinical trial. This field is important for statistical analysis of the study results. The second and third repetitions will correspond to the second and third repetitions of *CSR-I1-study randomization date/time* and *CSR-I2-randomized study arm*, if they exist.

7.7.1.14 Patient evaluability status (CE) 01048

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field categorizes the inclusion of this patient's data for various analyses. The patient's data may be evaluable for analysis of adverse events but not for outcomes. Or it may be evaluable for some outcomes and not others. The coding systems will vary among trials. This field is required for the off-study trigger event (C04).

7.7.1.15 Date/time ended study (TS) 01049

Definition: This field contains the date the patient completes or is otherwise removed from the study. This field is required for the off-study event (C04). The time component is optional.

7.7.1.16 Reason ended study (CE) 01050

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This information is important for quality control and data analysis. The coding systems will vary among trials. An example answer set is: **Adverse Events, Completed Trial, Death, Drug Resistance, Intercurrent Illness, Lost to Follow up, No Response to Therapy, Noncompliance, Progression of Disease, Protocol Violation, Refused Further Therapy**. This field is required for the off-study trigger event (C04).

7.7.2 CSP - clinical study phase segment

The CSP segment contains information on a patient's status for a particular phase of the study. This segment is optional and is useful when a study has different evaluation intervals within it. (See Section 7.5.1.2, "Phase of a clinical trial.") The CSP segment is implemented on a study-specific basis for messaging purposes. The fact that the patient has entered a phase of the study that represents a certain treatment approach may need to be messaged to other systems, like pharmacy, nursing, or order entry. It is also important to sponsors and data management centers for tracking patient progress through the study and monitoring the data schedule defined for each phase. It may subsume OBR and OBX segments that follow it to indicate that these data describe the phase.

Figure 7-15. CSP attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	60	CE	R			01022	Study Phase Identifier
2	26	TS	R			01052	Date/time Study Phase Began
3	26	TS	O			01053	Date/time Study Phase Ended
4	60	CE	C			01054	Study Phase Evaluability

7.7.2.0 CSP field definitions

7.7.2.1 Study phase Identifier (CE) 01022

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field identifies the phase of the study that a patient has entered. The set of codes will generally be developed for each clinical trial, although there are patterns that trials in particular disease or prevention categories may follow. The phase structure will be based on data collation and reporting needs for the study. It is an operational structure and need not be discussed in the clinical trial protocol documentation or even made known to patient care or data collection personnel. The coding system will usually be developed by the sponsor for multicentered clinical trials to standardize the receipt of automated data. Local codes could be added if an additional local message is desired. Otherwise, local coding conventions will be used. Example: 2^Init Rx, Crs 1^NCI T93-0807 Phases

7.7.2.2 Date/time study phase began (TS) 01052

Definition: This field contains the date the patient began this phase interval. The time is optional.

7.7.2.3 Date/time study phase ended (TS) 01053

Definition: This field contains the date the patient ended this phase interval.

7.7.2.4 Study phase evaluability (CE) 01054

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the disposition of the patient's data for this phase interval for quality control and data analysis purposes. The set of codes will vary across clinical trials. An example answer set: **Complete, Adverse Events Only, Outcome Only, None, Unknown.**

7.7.3 CSS - clinical study data schedule segment

The Clinical Study Data Schedule (CSS) segment is optional depending on whether messaging of study data needs to be linked to the scheduled data time points for the study. (See Section 7.5.1.3, "data schedule.") The CSS segment enables communication of data schedules and adherence that ranges from the basic to the elaborate. Use of the segment must be planned for each implementation. Each CSS segment will subsume observation and drug administration segments that follow, indicating that they satisfy this scheduled time point.

Figure 7-16. CSS attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	60	CE	R			01055	Study Scheduled Time Point
2	26	TS	O			01056	Study Scheduled Patient Time Point
3	60	CE	O	Y/3		01057	Study Quality Control Codes

7.7.3.0 CSS field definitions

7.7.3.1 Study scheduled time point (CE) 01055

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the time point for which some instance of data for the clinical trial was scheduled. The time point may be expressed in any coded format. Some examples of time point values are: **Prestudy, Pretreatment, 4 times/day, Weekly, Every 3 days, Every course, At Relapse, At Off Study.** Alternatively, frequency values from Section 4.4.2, "Interval component (CM)," (the Interval component of the TQ Timing/Quantity data type could be used.) Time point naming conventions and usage must be specified by implementors.

7.7.3.2 Study scheduled patient time point (TS) 01056

Definition: This field contains the date/time that the scheduled time point should occur for this patient. The date/time may be used for a reference in reviewing the actual dates on which scheduled items that follow in OBR segments occur for the patient. The time component is optional.

7.7.3.3 Study quality control codes (CE) 01057

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: In clinical settings, the **actual** date of a treatment or procedure may vary considerably from the **due** date. Various coding systems may be used to evaluate the adherence to the schedule or acceptability of the data. Coding systems will vary among trials.

7.7.4 CTI - clinical trial identification segment

The CTI segment is an optional segment that contains information to identify the clinical trial, phase and time point with which an order or result is associated.

Figure 7-17. CTI attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	60	EI	R			01011	Sponsor Study ID
2	60	CE	C			01022	Study Phase Identifier
3	60	CE	O			01055	Study Scheduled Time Point

7.7.4.0 CTI field definitions

7.7.4.1 Sponsor study ID (EI) 01011

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field contains the universal identifier for the clinical trial. The coding system is as described in *CSR-1-sponsor study ID*.

7.7.4.2 Study phase identifier (CE) 01022

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field identifies the phase of the study that a patient has entered. See *CSP-1-study phase identifier* for details of coding systems.

7.7.4.3 Study scheduled time point (CE) 01055

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field identifies a time point in the clinical trial phase. *CTI-2-study phase identifier* must be valued if *CTI-3-study scheduled time point* is valued. Should correspond to *CSS-1-study scheduled time point*.

7.7.5 CM0 clinical study master segment

The clinical study master segment (CMO) is described in Chapter 8.

7.7.6 CM1 clinical study phase master segment

The clinical study phase master segment (CMI) is described in Chapter 8.

7.7.7 CM2 clinical study schedule master segment

The clinical study schedule master segment is described in Chapter 8.

7.8 CLINICAL TRIALS - EXAMPLES

7.8.1 CRM - message when patient registered on a clinical trial

```
MSH|^~\&|PDMS|MDACC|ORDER ENTRY|MDACC|||CRM^C01 <cr>
PID|1||223892||King^Sally^Brown||19530117 <cr>
CSR|1|DM94-004^MDACC||MDACC|3||19941013||342^^^^^^PDMS|
.....1005^^^^^^MDACC|19941013|Y^Meets All Requirements^PDMS <cr>
```

7.8.2 CRM - message when patient begins a phase of a clinical trial

```
MSH|^~\&|PDMS|MDACC|PHARM|MDACC|||CRM^C05 <cr>
PID|1||352352||West^Mary^L.||19230213 <cr>
CSR|1|ID91-025^MDACC||MDACC|301||19941005||||19941201|2^blind^PDMS|
12^Smoker, Stage II, <60^PDMS <cr>
CSP||2^Treatment^PDMS|19941201 <cr>
```

7.8.3 CSU - message reporting monthly patient data updates to the sponsor

```
MSH|^~\&|PDMS|MDACC|CTMS|NCI|||CSU^C09 <cr>
PID|1|235925||J^F^M||19350616 <cr> [note: anonymous]
CSR|1|T93-080^NCI|ID93-030^MDACC|MDACC|14||19941205 <cr>
CSS||^Prestudy|19941204|C^compliant^NCI <cr>
OBR|1||3^Eligibil Checklist^StudyFormsList||19941205 <cr>
OBX|1|CE|ELIG1^Elig Crit 1^NCI|Text Elig Crit 1|Y <cr>
OBX|2|CE|ELIG2^Elig Crit 2^NCI||Y <cr>
OBR|2||4^Prestudy Form^StudyFormsList||19941205 <cr>
OBX|1|CE|QOL^Quality of Life^NCI||2&3&2&4&2^SPITZER <cr>
OBX|2|CE|PRICHEM^Prior Chemo^NCI||Yes <cr>
OBX|3|CE|PRIBIOL^Prior Biologics^NCI||No <cr>
OBX|4|NM|NUMREM^Number Prior Remissions^NCI||2 <cr>
OBR|3||88304^SURG PATH REPORT||19940101 <cr>
OBX|1|CE|88304&ANT|1|9999^PANCREAS^SNM <cr>
OBX|2|CE|88304&IMP|2|9999^ADENOCARCINOMA^SNM <cr>
OBR|4||85022^CBC||199412050800 <cr>
OBX|1|ST|718-7^HEMDGLOBIN: ^LN||13.4|GM/DL|14-18|N||S|F|19860522<cr>

[cbc values]

OBX|2|ST|4544-3^HEMATOCRIT: ^LN||40.3|42-52|L||S|F|19860522<cr>
OBX|3|ST|789-8^ERYTHROCYTES: ^LN||4.56|10*6/ml|4.7-6.1|L||S|F|19860522<cr>
OBX|4|ST|787-22^ERYTHROCYTE MEAN CORPUSCULAR VOLUME: ^LN||88|fI
|80-94|N||S|F|19860522<cr>
```

```

OBX|5|ST|785-6^ERYTHROCYTE MEAN CORPUSCULAR HEMOGLOBIN: ^LN||29.5|pg
|27-31|N||N|F|19860522 <cr>
OBX|6|ST|786-4^ERYTHROCYTE MEAN CORPUSCULAR HEMOGLOBIN CONCENTRATION: ^LN|
|33|%|33-37|N||N|F|19860522<cr>
OBX|7|ST|6690-2^LEUKOCYTES: ^LN||10.7|10*3/ml|4.8-10.8|N||N|F|19860522 <cr>
OBX|8|ST|764-1^NEUTROPHILS BAND FORM/100 LEUKOCYTES: ^LN||2|%|||F <cr>
OBX|9|ST|769-0^NEUTROPHILS SEGMENTED/100 LEUKOCYTES: ^LN||67|%|||F <cr>
OBX|10|ST|736-9^LYMPHOCYTES/100 LEUKOCYTES: ^LN||29|%|||F <cr>
OBX|11|ST|5905-5^MONOCYTES/100 LEUKOCYTES: ^LN||1|%|||F <cr>
OBX|12|ST|713-8^EOSINOPHILS/100 LEUKOCYTES: ^LN||2|%|||F <cr>
OBR|5|||80004^ELECTROLYTES|||199412050800 <cr>
OBX|1|ST|2947-0^SODIUM ^LN||150|mmol/l|136-148|H||A|F|19850301 <cr>
OBX|2|ST|2823-3^POTASSIUM ^LN||4.5|mmol/l|3.5-5|N||N|F|19850301<cr>
[electrolytes values]
OBX|3|ST|2069-3^CHLORIDE: ^LN||102|mmol/l|94-105|N||N|F|19850301<cr>
OBX|4|ST|2028-9^CARBON DIOXIDE. TOTAL: ^LN||27|mmol/l|24-31|N||N|F
|19850301<cr>
CSP|1|^Course 1|19941205|19950120|Y^Toxicity and Response^NCI <cr>
CSS|1|^Course Completion|19950120| <cr>
OBR|1|||2039-6^CARCINOEMBRYONIC AG: ^LN|||19941008 <cr>
OBX|1|NM|2039-6^CARCINOEMBRYONIC AG: ^LN||15.2|IU <cr>
OBR|2|||10^Course Completion Form^StudyPhaseFormsList|||19950120 <cr>
OBX|1|CE|CRSRESP^Course Response^NCI||4^Partial Response <cr>
OBX|2|NM|DRUGDISP^Capsules Dispensed^NCI||60 <cr>
OBX|3|NM|DRUGRETN^Capsules Returned^NCI||5 <cr>
OBX|4|ID|DXCOMP^Diagnostic Tests Compliance^NCI||Y <cr>
OBX|5|CE|PERSTAT^Performance Status^NCI||3^ZUBRODS <cr>
OBR|3|||9999^Adverse Events <cr>
OBX|1|CE|9999&EVENT|1|45^Vomiting^NCI <cr>
OBX|2|DT|9999&ONSET|1|19941215 <cr>
OBX|3|DT|9999&RESOLUTION|1|19941217 <cr>
OBX|4|ID|9999&GRADE|1|M^MODERATE <cr>
OBX|5|ID|9999&RELATION_TO_RX|1|L^LIKELY <cr>
OBX|6|CE|9999&EVENT|2|303^Dyspnea^NCI <cr>
OBX|7|DT|9999&ONSET|2|19941231 <cr>
OBX|8|DT|9999&RESOLUTION|2 <cr>
OBX|9|ID|9999&GRADE|2|M^MILD <cr>
OBX|10|ID|9999&RELATION_TO_RX|2|U^UNLIKELY <cr>

```

[Note: Needs to maintain compatibility with ongoing product experience message efforts.]

[Note2: There are other possible OBX suffixes defined by FDA: APEX/ NADIR, ACTION, THERAPY, OUTCOME, RECHALLENGE.]

7.9 PRODUCT EXPERIENCE

Patients experience symptoms, manifest signs or develop diseases or syndromes while exposed to medical devices and/or drugs. Evidence suggests that some of these symptoms, signs, diseases or syndromes may develop as a consequence of the products used. Examples include the development of clear cell adenocarcinoma of the vagina in the daughters of mothers treated with diethylstilbestrol during pregnancy and gastrointestinal bleeding in patients treated with non-steroidal anti-inflammatory drugs. While it is difficult to prove causality, strong evidence exists in many cases.

Chapter 7: Observation Reporting

It is important to document such experiences during the development and testing of products to identify potential adverse effects but also during routine use of the product to identify serious adverse effects which occur infrequently. The latter is the realm of pharmacoepidemiology and post-marketing surveillance.

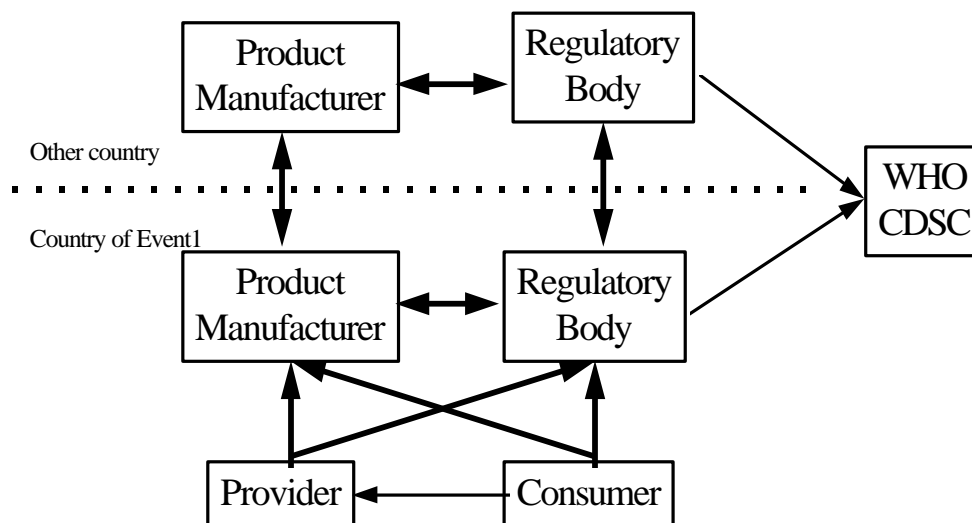
Adverse events are important for product manufacturers as signal generating hypotheses concerning drug kinetics or dynamics, often in special populations of patients. Adverse events are important for regulators in ensuring that manufacturers protect the public health in assessments of risk and benefits, including special populations, and that they promptly and thoroughly investigate individual events and clusters of events. Adverse events are especially important for practitioners and patients who always deal with a special population of one individual who may be having an event and a practitioner seeking information about related events seen with the same or similar products.

Reporting has usually focused on *serious* and *unexpected* events. Serious, if defined unambiguously, focuses attention on those events of most importance to the patient and practitioner. Expected events are those which prior experience has demonstrated to be probabilistically linked to the product and are generally included in product labeling.

Because of the risks associated with the uses of drugs and medical devices, a system of surveillance has been established in most developed countries. With globalization of the marketplace, the need to share this information across national boundaries has increased. Currently most reporting is performed using a series of forms, including CIOMS, yellow cards, the FDA's 1639 and MedWatch forms and the Japanese form, which are sent:

- from identified reporting sources to regulatory bodies
- from identified reporting sources to product manufacturers
- between regulatory bodies
- within product manufacturers
- within regulatory bodies
- from product manufacturers to regulatory bodies
- from regulatory bodies to the WHO Collaborative Drug Surveillance Center

Figure 7-18. - Flow of product experience information



Regardless of who originates a drug experience report, documentation of the experience eventually reaches the regulatory agencies. The manufacturer is mandated to alert the regulatory agency.

Electronic interchange of these data would reduce errors, decrease costs and speed communications.

7.9.1 Terminology and concepts

7.9.1.1 Drug:

Any chemical compound that may be used on or administered to humans or animals as an aid in the diagnosis, treatment or prevention of disease or other abnormal condition, for the relief of pain or suffering, or to control or improve any physiological condition (Dorland's Illustrated Medical Dictionary 27th edition).

7.9.1.2 Medical device:

Something contrived for or used in the diagnosis (vascular catheters), treatment (thermotherapy units) or prevention of disease or other abnormal condition, for the relief of pain or suffering or to control or improve any physiologic condition, including instrumentation and implanted devices (prosthetic cardiac valves, pacemakers, hip prostheses).

7.9.1.3 Product:

A drug or medical device.

7.9.1.4 Non-proprietary (generic) name:

Drug name that is not protected by a trademark, usually descriptive of its chemical structure; sometimes called a public name. In the US, most generic drug names are assigned by the US Adopted Name Council (USAN). Other generic names in common use are the National Formulary (NF) and the US Pharmacopoeia (USP) names. *Figure 7-3* lists other available drug coding systems.

7.9.1.5 Trade (brand) name:

Proprietary names that are registered to protect the name for the sole use of the manufacturer holding the trademark.

7.9.1.6 Adverse event/adverse experience:

- Pre-marketing: Any untoward medical occurrence in a patient or clinical investigation subject administered a pharmaceutical product and which does not necessarily have a causal relationship with this treatment.
- Post-marketing/European Union: Any undesirable experience occurring to a patient treated with a pharmaceutical product whether or not considered related to the medicinal product.
- Post-marketing/US: Any adverse event associated with the use of a drug in humans, whether or not considered drug related, including the following: An adverse event occurring in the course of the use of a drug product in professional practice; an adverse event occurring from drug overdose; an adverse event occurring from drug withdrawal; and any failure of expected pharmacologic action.
- WHO: Any untoward medical occurrence that may present during treatment with a pharmaceutical product but which does not necessarily have a causal relationship with this product.

7.9.1.7 Adverse drug reaction:

- Pre-marketing: All noxious and unintended responses to a medicinal product related to any dose.
- Post-marketing/WHO: A response to a drug which is noxious and unintended, and which occurs at doses normally used in man for prophylaxis, diagnosis, or therapy of disease or for the modification of physiologic function
- Post-marketing/European Union: A reaction which is harmful and unintended and which occurs at doses normally used in man for the prophylaxis, diagnosis, or treatment of disease or the modification of physiological function.
- Post-marketing/US: Any undesirable effect reasonably associated with the use of the drug, that may occur as part of the pharmacological action of the drug or may be unpredictable.

7.9.1.8 Causation:

An exposure which truly does increase or decrease the probability of a certain outcome.

7.9.1.9 Causal relationship:

When an event occurs a product may be suspected as causing the event but rarely can it be proven particularly at an early stage of the product's life. Certain information about the relationship between the product and the event can reinforce the belief in a causal relationship between the product and the event while others can decrease the probability that there is a causal relationship.

7.9.1.10 Regulatory agency:

Many geopolitical entities have established agencies/authority responsible for regulating products used in health care. The agencies are collectively referred to as regulatory agencies.

7.9.1.11 Product manufacturer:

The organization which is responsible for the manufacture of a product. This will usually be the entity, which holds the marketing authorization for the product.

7.9.1.12 Holder of marketing authorization:

The organization which holds the authority to market a product. This will often be the organization, which manufactures the product.

7.9.1.13 Serious adverse product reaction:

An adverse product reaction which:

- is fatal (results in death)
- is life threatening
- requires hospitalization or prolongation of a hospitalization
- results in persistent or significant disability/incapacity
- results in a congenital anomaly/birth defect.

Medical and scientific judgment should be exercised in deciding whether expedited reporting is appropriate in other situations, such as important medical events that may not be immediately life threatening or result in hospitalization but may jeopardize the patient or may require intervention to prevent one of the other outcomes listed in the definition above. These should also be considered serious.

7.9.1.14 Expected adverse product reaction:

Expected events are those which prior experience has demonstrated to be probabilistically linked to the product and are generally included in product labeling.

Pre-marketing: An adverse reaction, the nature or severity of which is not consistent with the applicable product information (e.g., Investigator's Brochure for an unapproved investigational product).

Post-marketing/European Union: This relates to an adverse reaction which is not mentioned in any EC summary of product characteristics (SPC). In the absence of any European SPC, an international document prepared by the marketing authorization holder containing all relevant safety information which the marketing authorization holder considers should be listed for the medicinal product in all countries where the medicinal product is marketed (Care Data Sheet).

Post-marketing/US current: Unexpected means an adverse drug experience that is not listed in the current labeling for the drug product and includes an event that may be symptomatically and pathophysiologically related to an event listed in the labeling but differs from the event because of greater severity or specificity.

Post-marketing/US (proposed): The applicant's core safety data sheet shall be a document prepared by the applicant that contains all relevant safety information, including adverse drug experiences, which the applicant believes should be listed for the drug in all countries where the drug is marketed. It may be used by the applicant as the reference document by which an adverse drug experience is judged to be expected or unexpected for purposes of this post-marketing periodic report.

Post-marketing/WHO: An adverse reaction, the nature or severity of which is not consistent with domestic labeling or market authorization, or expected from characteristics of the drug.

7.10 PRODUCT EXPERIENCE - TRIGGER EVENTS AND MESSAGE DEFINITIONS

The message header segment will carry one of three event types at *MSH-9-message type*.

Event	Description
P07	PEX - Unsolicited initial individual product experience report

Event	Description
P08	PEX - Unsolicited update individual product experience report
P09	SUR - Summary product experience report

7.10.1 PEX - product experience message (events P07, P08)

The primary application of this message is to transfer information related to an adverse event occurring while a patient was exposed to a product.

<u>PEX^P07, P08</u>	<u>Product Experience Message</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
[PD1]	Additional Demographics	3
[[NTE]]	Notes and comments	2
[PV1]	Patient Visit	3
[PV2]]	Patient Visit - Additional Info	3
{ PES	Product Experience Sender	7
{ PEO	Product Experience Observation	7
{ PCR	Potential Causal Relationship	7
[RXE	Pharmacy/Treatment Encoded Order	4
[[RXR]]	Pharmacy/Treatment Route	4
]		
[[RXA	Pharmacy/Treatment Administration	4
[RXR]	Pharmacy/Treatment Route	4
}}		
[[PRB]]	Detail problem segment	12
[[OBX]]	Observation/Result Segment	7
[[NTE]]	Notes and comments	2
[NK1	Associated parties segment	2
[RXE	Pharmacy/Treatment Encoded Order	4
[[RXR]]	Pharmacy/Treatment Route	4
]		
[[RXA	Pharmacy/Treatment Administration	4
[RXR]	Pharmacy/Treatment Route	4
}}		
[[PRB]]	Detail Problem Segment	12
[[OBX]]	Observation/Results Segment	7
]		
[[CSR	Clinical study registration	7
[[CSP]]	Clinical study phase segment	7
}}		
}}}		

The PID segment provides the patient identification information including institutional identification numbers, date of birth and in the case of patients who die, information about their death. Patients are frequently identified only by their initials which can be represented in the PID segment, e.g. the initials JMO would appear as J^M^O in the name field of the PID segment. The EVN segment identifies the type of transaction that is being sent -- primarily it specifies who the sender is and implies which information is expected to be included in the message. A message sent from a healthcare provider, for example, might contain minimal information, while a message from a pharmaceutical manufacturer might contain nearly complete information.

The PES or Product Experience Sender segment provides information about the message sender and its knowledge of the event. The heart of the product experience message is the product experience observation (PEO) segment and the PCR segments clustered under it. The PEO segment identifies a clinical event and the PCR segments identify products which are potentially causally related to the event. There may be more than one product which is potentially related to the event so multiple PCR segments can be included. RXE and RXR segments can be repeated and provide information about the products the patient was exposed to at the time of the event (typically excluding those used to treat the event). Details about the administration of the products identified in the PCR segments should be described with RXE and RXR segments. Repeated PRB segments provide information about diagnoses which represent comorbid conditions. The re-

peated OBX segments are used to send patient observations such as height, weight, last menstrual period, and laboratory results. Analytical commentary can be included in the NTE segment. This commentary will typically be the sender's analysis of the event and the potentially causally related products. Finally, the CSR and CSP segments can optionally be included if the event occurred during a formal clinical trial in order to describe the trial.

When a product experience relates to an exposure which occurred indirectly (transmammary or transplacentally for example), the individual experiencing the adverse effect — the fetus or child — would be described in the PID segment and the individual via which they are exposed in the NK1 segment. The first set of RXE segments would typically indicate the drugs which to which the fetus or child was exposed. Additional codes for the route are defined in this Appendix to allow the suspected routes of exposure to be represented. The second set of RXE/RXR segment - those clustered under the NK1 segment - would represent the route by which the mother or father was exposed to the drug. Early spontaneous abortion would normally be treated as an adverse effect on the mother rather than on the fetus, and the PID would refer to the mother. The second set of PRB/OBX segments reflects the problems/observations associated with the individual via which they were exposed.

Each message contains information about a single case including one patient (PID), at least one sender (PES), one or more events (PEO) and one or more suspected products (PCR and RXE/RXA) for a minimal message. The structure of the message allows actual administration information to be sent in the RXA if known; if administration information is unavailable, or the adverse reaction cannot be related to a single administration event, the RXE segment can be used to send prescription level information. Additional information may be included based on availability and regulatory requirements.

The MSH segment specifies the character set (*MSH-18*) and the language (*MSH-19*) used in the PEX message.

The PEX message is designed to accommodate required reporting of adverse product events to the responsible regulatory agencies. In the United States, the paper version of this report is Medwatch.

7.10.2 SUR - summary product experience report (event P09)

Sending summary reports related to products constitutes a P09 event.

<u>SUR^P09</u>	<u>Summary Product Experience Report</u>	<u>Chapter</u>
MSH	Message Header	2
{		
FAC	Facility	7
{PSH	Product Summary Header	7
PDC	Product Detail Country	7
}		
PSH	Product Summary Header	7
{FAC	Facility	7
PDC	Product Detail Country	7
NTE	Notes (for PCR)	2
}		
ED	Encapsulated Data	2
}		

The Summary Product Experience Report message can be divided into two separate parts. Part 1 consists of a Facility segment which identifies the reporting organization, a Product Summary Header segment which provides summary information about the products and manufacturers, and a Product Detail Country segment which provides country specific product identification and marketing information. Part 2 consists of a repeating series of segments. These segments could be used to represent data about each model of a medical device (Part 2 of FDA Form 3417, for example). The Product Summary Header segment provides manufacturer's data, under which repeating sets of Facility segments (representing multiple manufacturing sites), a Product Detail Country segment (representing marketing and product identification data) and the Note segment (for other commentary) may follow. Finally, the

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Encapsulated Data (ED) segment can be used to transmit images of documents, including any of the MIME (Multimedia Internet Mail Extension) support formats such as JPEG, GIF, and FAX.

Regulatory agencies require a variety of reports that are centered on the product, not on a single patient. Some of these reports request information just about the product, and some request information about the product combined with a summary of the product experience reports on that product. These are used by regulatory agencies to provide totals against which they can verify that they have received and processed all of the relevant reports, and to calculate denominators for computing event rates. If manufacturers begin to transmit these reports electronically and regulatory agencies in turn electronically confirm the receipt of such reports, the need for some of these summary reports will decline.

The SUR message provides a mechanism for sending a variety of different summary reports. In the United States, the Medical Device Reporting Annual Certification and the Medical Device Reporting Baseline Report are examples of such reports. Below, we use these two medical device reports to illustrate how one would map the contents of this kind of report to the SUR message.

Manufacturers are required to submit a Baseline Report (FDA Form 3417 of October, 1995 (when a device is first released. The focus of this report is a single product. The first part requests information about the manufacturer of the product (Questions 2a through 2g), e.g., the firm's name, street address, city, country, type of firm (e.g., manufacturer, distributor, both); the manufacturer's contact (Questions 3a through 3g). e.g., title, street address, city, state, phone number, and whether the firm is an organization of a foreign manufacturer. Most of this information can be transmitted as fields within the FAC (Facility segment - the first segment in the SUR message following the MSH). Question 1 (which asks the type of baseline report - initial or annual update) and Question 7 (the date of the report) are reported in the PSH (Product Summary Header) segment that follows the FAC segment in the SUR message. The second part of the Baseline Report form also includes information about the device name (Question 2), generic name (Question 3), device model number (Question 4), device catalogue number (Question 5), other device identifier (Question 6), product code (Question 7), and device family (Question 8), related device information (Question 9), the basis for marketing the device (Question 10), device life (Question 11), the date the device was first marketed (Question 12), the date the device ceased being marketed (Question 13), whether the device was the subject of a 522 study (Question 14), and the number of devices manufactured, distributed, and in current use (Question 15). All of these questions with the exception of #9 are represented in the PDC segment. Questions 16a and 16b are represented by nested PSH segments.

The Medical Device Reporting Annual Certification form consists of two parts. Part 1 transmits information describing the firm submitting the report (Questions 2a through 2h) and the individual who completed the report (Questions 3a through 3g). These questions are represented in the FAC segment. Question 1 (period covered by the certification) corresponds to the PSH segment. Part 2, Question 3, which details one or more individual devices, can be transmitted in the repeating FAC and PSH segments. *Figure 7-19* summarizes the mapping between questions on these two FDA forms and the SUR message.

Figure 7-19. Mapping of FDA medical device reports to SUR message

Baseline Report	Annual Certification	SUR
Part 1 Questions 2a-2g, 3a-3g	Part 1 Questions 2,3	MSH { FAC
Part 1 Questions 1, 7	Part 1 Question 1	{ PSH
		PDC
		}
Part 2 Questions 16a, 16b	Part 2 Question 3	PSH
Part 2	Part 2	{ FAC

Baseline Report	Annual Certification	SUR
Questions 1a, 1b	Question 3	
Part 2 Questions 2-15		PDC
		NTE
		}
Part 2 Alternative transmission method - image file rather than text		ED
		}

7.11 PRODUCT EXPERIENCE - SEGMENTS DEFINITIONS

7.11.1 PES - product experience sender segment

Figure 7-20. PES attributes

SEQ	LEN	DT	OPT	RP/ #	TBL #	ITEM #	ELEMENT NAME
1	80	XON	O	Y		01059	Sender Organization Name
2	60	XCN	O	Y		01060	Sender Individual Name
3	200	XAD	O	Y		01062	Sender Address
4	44	XTN	O	Y		01063	Sender Telephone
5	75	EI	O			01064	Sender Event Identifier
6	2	NM	O			01065	Sender Sequence Number
7	600	FT	O	Y		01066	Sender Event Description
8	600	FT	O			01067	Sender Comment
9	26	TS	O			01068	Sender Aware Date/Time
10	26	TS	R			01069	Event Report Date
11	3	ID	O	Y/2	0234	01070	Event Report Timing/Type
12	1	ID	O		0235	01071	Event Report Source
13	1	ID	O	Y	0236	01072	Event Reported To

7.11.1.0 PES - field definitions

7.11.1.1 Sender organization name (XON) 01059

Components: <organization name (ST)> ^ <organization name type code (IS)> ^ <ID Number (NM)> ^ <check digit (NM)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility ID (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> * <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> * <universal ID type (ID)>

Definition: This field contains the name of the organization sending the message. Coded lists of manufacturers such as that from the World Health Organization database might be used in the component of the coded name to identify the source code type. If sent from an individual, this field may not be sent.

7.11.1.2 Sender individual name (XCN) 01060

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR)

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```
(ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^  
<name type code(ID)> ^ <identifier check digit (ST)> ^ <code identifying the check  
digit scheme employed (ID )> ^ <identifier type code (IS)> ^ <assigning facility  
(HD)> ^ <name representation code (ID)>
```

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility ID: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the name of the contact individual. If sent by an organization, the individuals in the organization who serve as primary contact points correspondence regarding this event.

7.11.1.3 Sender address (XAD) 01062

Components: <street address (ST)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code(ST)> ^ <country (ID)> ^ < address type (ID)> ^ <other geographic designation (ST)> ^ <county/parish code (IS)> ^ <census tract (IS)> ^ <address representation code (ID)>

Definition: This field contains the postal address of the message sender to which correspondence regarding the experience being reported should be directed.

7.11.1.4 Sender telephone (XTN) 01063

Components: [NNN] [(999)]999-9999 [X99999] [B99999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Definition: This field contains the telephone number of the message sender to which telephone communications regarding the experience being reported should be directed. An electronic mail address can be specified in this field.

7.11.1.5 Sender event identifier (EI) 01064

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: The first component of this field contains the product manufacturer's unique alphanumeric identifier for this specific event. This identifier will be used on all subsequent communications regarding this event. For events reported to the FDA, the identifier is: the FDA assigned manufacturer or distributor number; a hyphen; the 4-digit year; a hyphen; and a consecutive 5-digit sequence number for each report filled by the sender that year. For example, the event identifier for the third event reported in 1996 by a manufacturer whose FDA-assigned registration number is 1234567 would be 1234567-1993-3. Organizations without a FDA-assigned registration number should use 0000000 until assigned a number. Reports from other facilities should use the 10-digit HCFA number left padded with zeros in place of the FDA-assigned registration number. The second through fourth components are defined in exactly the same way as the three components of the hierarchic designator (HD) data type (Section 2.8.18, "HD - hierarchic designator").

7.11.1.6 Sender sequence number (NM) 01065

Definition: This field contains sequentially assigned integer values which distinguish messages which share the same sender event identification element. 0 for initial report, 1 for second, and so on.

7.11.1.7 Sender event description (FT) 01066

Definition: This field contains the summary narrative text description of the event that occurred written by the sender, which may include a description of the nature of the event, how the product was involved, any environmental conditions that may have influenced the event, and patient follow-up or required treatment. Note that laboratory results can be encoded as OBX segments rather than including them in the narrative.

By representing clinical information in OBX segments rather than in the narrative, these data become much more useful and flexible.

7.11.1.8 Sender comment (FT) 01067

Definition: This field contains the text commentary regarding the report being made, such as disclaimers, which is not necessarily part of the report.

7.11.1.9 Sender aware date/time (TS) 01068

Definition: This field identifies the date the sender became aware of the event.

7.11.1.10 Event report date (TS) 01069

Definition: This field contains the date the message was originally sent to the regulatory agency.

7.11.1.11 Event report timing /type (ID) 01070

Definition: This field contains the timing type of report as required by regulatory agency. Refer to *HL7 table 0234 - Report timing* for valid values.

Table 0234 - Report timing

Value	Description
CO	Correction
AD	Additional information
RQ	Requested information
DE	Device evaluation
PD	Periodic
3D	3 day report
7D	7 day report
10D	10 day report
15D	15 day report
30D	30 day report

7.11.1.12 Event report source (ID) 01071

Definition: This field identifies the source from which the sender learned about the event. Multiple sources may be reported by repeating the element.

If the source of the report is a clinical trial, the CSR and CSP segments can be included to define the study. Refer to *HL7 table 0235 - Report source* for valid values.

Table 0235 - Report source

Value	Description
C	Clinical trial
L	Literature
H	Health professional
R	Regulatory agency

Value	Description
D	Database/registry/poison control center
N	Non-healthcare professional
P	Patient
M	Manufacturer/marketing authority holder
E	Distributor
O	Other

7.11.1.13 Event reported to (ID) 01072

Definition: This field indicates all the entities to whom the entity submitting the report has reported the event. Repeat the element if the report was submitted to more than one entity. Refer to *HL7 table 0236 - Event reported to* for valid values.

Table 0236 - Event reported to

Value	Description
M	Manufacturer
L	Local facility/user facility
R	Regulatory agency
D	Distributor

7.11.2 PEO - product experience observation segment

Details related to a particular clinical experience or event are embodied in the PEO segment. This segment can be used to characterize an event which might be attributed to a product to which the patient was exposed. Products with a possible causal relationship to the observed experience are described in the following PCR (possible causal relationship) segments. The message format was designed to be robust and includes many optional elements which may not be required for a particular regulatory purpose but allow a complete representation of the drug experience if needed.

A PEX message can contain multiple PEO segments if the patient experienced more than one event but must contain at least one PEO segment.

Figure 7-21. PEO attributes

SEQ	LEN	DT	OPT	RP/ #	TBL #	ITEM #	ELEMENT NAME
1	60	CE	O	Y		01073	Event Identifiers Used
2	60	CE	O	Y		01074	Event Symptom/Diagnosis Code
3	26	TS	R			01075	Event Onset Date/Time
4	26	TS	O			01076	Event Exacerbation Date/Time
5	26	TS	O			01077	Event Improved Date/Time
6	26	TS	O			01078	Event Ended Data/Time
7	106	XAD	O	Y		01079	Event Location Occurred Address
8	1	ID	O	Y	0237	01080	Event Qualification
9	1	ID	O		0238	01081	Event Serious
10	1	ID	O		0239	01082	Event Expected
11	1	ID	O	Y	0240	01083	Event Outcome
12	1	ID	O		0241	01084	Patient Outcome
13	600	FT	O	Y		01085	Event Description From Others

SEQ	LEN	DT	OPT	RP/ #	TBL #	ITEM #	ELEMENT NAME
14	600	FT	O	Y		01086	Event From Original Reporter
15	600	FT	O	Y		01087	Event Description From Patient
16	600	FT	O	Y		01088	Event Description From Practitioner
17	600	FT	O	Y		01089	Event Description From Autopsy
18	60	CE	O	Y		01090	Cause Of Death
19	46	XPN	O	Y		01091	Primary Observer Name
20	106	XAD	O	Y		01092	Primary Observer Address
21	40	XTN	O	Y		01093	Primary Observer Telephone
22	1	ID	O		0242	01094	Primary Observer's Qualification
23	1	ID	O		0242	01095	Confirmation Provided By
24	26	TS	O			01096	Primary Observer Aware Date/Time
25	1	ID	O		0243	01097	Primary Observer's identity May Be Divulged

7.11.2.0 PEO field definitions

7.11.2.1 Event identifiers used (CE) 01073

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field may be used to transmit the event identifier used by other entities for this event. The entry would typically contain a unique alphanumeric identifier assigned by an entity with the text component null or repeating the unique alphanumeric identifier followed by the organization's identifier. An event identifier might be GB1234^GB1234^PharmaGiant for example.

7.11.2.2 Event symptom/diagnosis code (CE) 01074

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field is the coded diagnosis or problem description which best describes the event. A text representation of the coded item should routinely be included. MEDDRA and WHO-ART are examples of appropriate coding schemes, as are the patient and device codes included in the FDA Center for Devices and Radiologic Health's coding manual for Form 3500A.

7.11.2.3 Event onset date/time (TS) 01075

Definition: This field contains a report or best estimate of the date/time of onset of the event. The date/time can be recorded to any level of precision it is known (hour, day, month, year).

7.11.2.4 Event exacerbation date/time (TS) 01076

Definition: This field identifies the best estimate of the date/time the event was exacerbated.

7.11.2.5 Event improved date/time (TS) 01077

Definition: This field identifies the best estimate of the date/time the event improved.

7.11.2.6 Event ended data/time (TS) 01078

Definition: This field identifies the best estimate of the date/time the event resolved.

7.11.2.7 Event location occurred address (XAD) 01079

Components: <street address (ST)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code (ST)> ^ <country (ID)> ^ <address type (ID)> ^ <other geographic designation (ST)> ^ <county/parish code (IS)> ^ <census tract (IS)> ^ <address representation code (ID)>

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Definition: This field identifies the location at which the event started. Often this will specify only the country in which the event started.

7.11.2.8 Event qualification (ID) 01080

Definition: This field contains a classification of the type of product experience this event is considered to represent. Refer to *HL7 table 0237 - Event qualification* for valid values.

Table 0237 - Event qualification

Value	Description
I	Interaction
O	Overdose
A	Abuse
M	Misuse
D	Dependency
L	Lack of expected therapeutic effect
W	Drug withdrawal
B	Unexpected beneficial effect

Unexpected beneficial effects would not often be reported but are required by certain countries.

7.11.2.9 Event serious (ID) 01081

Definition: This field indicates whether the event was judged as serious. If the event did not meet the criteria for seriousness but the sender judges the event significant on other grounds, the event can be identified as significant [*but not serious*]. Refer to *HL7 table 0238 - Event seriousness* for valid values.

Table 0238 - Event seriousness

Value	Description
Y	Yes
S	Significant
N	No

7.11.2.10 Event expected (ID) 01082

Definition: This field indicates whether the observed event was expected or unexpected as judged. Refer to *HL7 table 0239 - Event expected* for valid values.

Table 0239 - Event expected

Value	Description
Y	Yes
N	No
U	Unknown

7.11.2.11 Event outcome (ID) 01083

Definition: This field identifies the consequence of the event on the patient. If the consequence of the event is not understood or not available, the patient outcome element may be used although neither is required.

May be repeated if more than one is appropriate. Refer to *HL7 table 0240 - Event consequence* for valid values.

Table 0240 - Event consequence

Value	Description
D	Death
L	Life threatening
H	Caused hospitalized
P	Prolonged hospitalization
C	Congenital anomaly/birth defect
I	Incapacity which is significant, persistent or permanent
J	Disability which is significant, persistent or permanent
R	Required intervention to prevent permanent impairment/damage
O	Other

7.11.2.12 Patient outcome (ID) 01084

When an event specific outcome is not available, the patient outcome element may be used to represent the patient's overall outcome if that information is known. Refer to *HL7 table 0241 - Patient outcome* for valid values.

Table 0241 - Patient outcome

Value	Description
D	Died
R	Recovering
N	Not recovering/unchanged
W	Worsening
S	Sequelae
F	Fully recovered
U	Unknown

7.11.2.13 Event description from others (FT) 01085

Definition: This field contains a summary narrative text description of the event that occurred written by the sender. Note that laboratory results can be encoded as OBX segments rather than including them in the narrative. By representing clinical information in OBX segments rather than in the narrative, these data become much more useful and flexible.

7.11.2.14 Event description from original reporter (FT) 01086

Definition: This field contains a summary narrative text description of the event provided by the original reporter. Note that laboratory results can be encoded as OBX segments rather than including them in the narrative.

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7.11.2.15 Event description from patient (FT) 01087

Definition: This field contains a summary narrative text description of the event obtained directly from the patient. Note that laboratory results can be encoded as OBX segments rather than including them in the narrative, which will allow the data to be more readily represented and manipulated.

7.11.2.16 Event description from practitioner (FT) 01088

Definition: This field contains a summary narrative text description of the event provided by the practitioner most familiar with the event. Note that laboratory results can be encoded as OBX segments rather than including them in the narrative.

7.11.2.17 Event description from autopsy (FT) 01089

Definition: This field contains a summary narrative text description of the autopsy results. Note that laboratory results can be encoded as OBX segments rather than including them in the narrative.

7.11.2.18 Cause of death (CE) 01090

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field identifies the coded cause of death. May be repeated as necessary to list multiple contributing causes. A text description can be included by including text but no code or coding system. For example, if the cause of death is to be determined at autopsy but results are not yet available, the cause of death element could be ^Pending autopsy^. The date/time of death can be sent in the PID and the autopsy results sent in the event description from autopsy element of the PEO segment.

7.11.2.19 Primary observer name (XPN) 01091

Components: <family name (IS)> & <last name prefix (IS)> ^ <given name (IS)> ^ <middle initial or name (IS)> ^ <suffix (e.g., JR or III) (IS)> ^ <prefix (e.g., DR) (IS)> ^ <degree (e.g., MD) (IS)> ^ <name type code (ID)> ^ <name representation code (ID)>

Definition: This field identifies the name of the person who initially described the event.

7.11.2.20 Primary observer address (XAD) 01092

Components: <street address (ST)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code (ST)> ^ <country (ID)> ^ <address type (ID)> ^ <other geographic designation (ST)> ^ <county/parish code (IS)> ^ <census tract (IS)> ^ <address representation code (ID)>

Definition: This field identifies the address of the person who initially described the event.

7.11.2.21 Primary observer telephone (XTN) 01093

Components: [NNN] [(999)999-9999 [X999999] [B999999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Definition: This field identifies the telephone number of the person who initially described the event.

7.11.2.22 Primary observer's qualification (ID) 01094

Definition: This field contains the qualification of the primary observer which may assist in assessing the validity of the observations. Refer to *HL7 table 0242 - Primary observer's qualification* for valid values.

Table 0242 - Primary observer's qualification

Value	Description
P	Physician (osteopath, homeopath)
R	Pharmacist
M	Mid-level professional (nurse, nurse practitioner, physician's assistant)
H	Other health professional
C	Health care consumer/patient
L	Lawyer/attorney
O	Other non-health professional

7.11.2.23 Confirmation provided by (ID) 01095

Definition: This field contains the qualification of the health professional who confirmed the observation if the primary observer was not a health professional. Refer to *HL7 table 0242 - Primary observer's qualification* for valid values.

7.11.2.24 Primary observer aware date/time (TS) 01096

Definition: This field identifies the date/time the primary observer became aware of event.

7.11.2.25 Primary observer's identity may be divulged (ID) 01097

Definition: Indicates whether or not the primary observer, if known to the sender, grants permission to disclose his or her identity to the product manufacturer for the purpose of further investigating the event. If the element is absent, the assumption should be made that permission is not granted. Refer to *HL7 table 0243 - Identity may be divulged* for valid values.

Table 0243 - Identity may be divulged

Value	Description
Y	Yes
N	No
NA	Not applicable

7.11.3 PCR - possible causal relationship segment

The PCR segment is used to communicate a potential or suspected relationship between a product (drug or device) or test and an event with detrimental effect on a patient. This segment identifies a potential causal relationship between the product identified in this segment and the event identified in the PEO segment.

More than one PCR segment can be included in the message if more than one product is possibly causally related to the event.

Figure 7-22. PCR attributes

SEQ	LEN	DT	OPT	RP/ #	TBL #	ITEM #	ELEMENT NAME
1	60	CE	R			01098	Implicated Product
2	1	IS	O		0249	01099	Generic Product
3	60	CE	O			01100	Product Class
4	8	CQ	O			01101	Total Duration Of Therapy

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5	26	TS	O			01102	Product Manufacture Date
6	26	TS	O			01103	Product Expiration Date
7	26	TS	O			01104	Product Implantation Date
8	26	TS	O			01105	Product Explantation Date
9	8	IS	O		0244	01106	Single Use Device
10	60	CE	O			01107	Indication For Product Use
11	8	IS	O		0245	01108	Product Problem
12	30	ST	O	Y/3		01109	Product Serial/Lot Number
13	1	IS	O		0246	01110	Product Available For Inspection
14	60	CE	O			01111	Product Evaluation Performed
15	60	CE	O		0247	01112	Product Evaluation Status
16	60	CE	O			01113	Product Evaluation Results
17	8	ID	O		0248	01114	Evaluated Product Source
18	26	TS	O			01115	Date Product Returned To Manufacturer
19	1	ID	O		0242	01116	Device Operator Qualifications
20	1	ID	O		0250	01117	Relatedness Assessment
21	2	ID	O	Y/6	0251	01118	Action Taken In Response To The Event
22	2	ID	O	Y/6	0252	01119	Event Causality Observations
23	1	ID	O	Y/3	0253	01120	Indirect Exposure Mechanism

7.11.3.0 PCR field definitions

7.11.3.1 Implicated product (CE) 01098

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the coded identity of the product (drug, device, etc.) which is possibly causally related to the event. Includes the product identity number such as NDC, model or catalogue numbers. If a coded value is not available for the product a text description can be included as the second component of the CE data. See Chapter 2 for a listing of some recognized coding systems for drugs and devices.

7.11.3.2 Generic product (IS) 01099

Definition: This field indicates whether the product used was a generic or a branded product. Refer to *user-defined table 0249 – Generic product* for suggested values.

7.11.3.3 Product class (CE) 01100

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the coded classification of the implicated product. For drugs, this would usually be the drug class - calcium channel blocking agents for nifedipine for example. For other products it would be the generic type of device, e.g., urinary catheter, cardiac pacemaker. If a coded value is not available for the class, a text description can be included.

7.11.3.4 Total duration of therapy (CQ) 01101

Components: <quantity (NM)> ^ <units (CE)>

Subcomponents of units: <identifier (ST)> & <text (ST)> & <name of coding system (ST)> & <alternate identifier (ST)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Definition: This field represents the total duration of therapy with product listed. The treatment at the current dose and schedule are indicated in the quantity timing attribute of the RXE segment but the patient may have been treated for some time previously at a different dose or on a different schedule. The quantity in the second component of the CQ should be a time quantity.

7.11.3.5 Product manufacture date (TS) 01102

Definition: This field indicates the date the product was manufactured.

7.11.3.6 Product expiration date (TS) 01103

Definition: This field contains the expiration date indicated on the product packaging.

7.11.3.7 Product implantation date (TS) 01104

Definition: If an implantable medical device, this field identifies the date device was implanted.

7.11.3.8 Product explantation date (TS) 01105

Definition: If an implantable medical device and it was removed, the field identifies the date it was removed.

7.11.3.9 Single use device (IS) 01106

Definition: This field indicates whether the product was designed for a single use. Refer to *user-defined table 0244 – Single use device* for suggested values.

7.11.3.10 Indication for product use (CE) 01107

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains coded representation of the problem or diagnosis for which the product was used. See Chapter 2 for some coding systems which might be chosen to transmit diagnoses or problems.

7.11.3.11 Product problem (IS) 01108

Definition: A product problem would exist if a product malfunction could lead to death or serious injury. Refer to *user-defined table 0245 - Product problem* for suggested values.

7.11.3.12 Product serial/lot number (ST) 01109

Definition: This field is an alphanumeric descriptor which identifies the specific item or lot of drug. This descriptor would normally be obtained from the package labeling or item itself.

7.11.3.13 Product available for inspection (IS) 01110

Definition: This field indicates that the product is available for analysis. *User-defined table 0246 - Product available is used as the HL7 identifier for the user-defined table of values for this field.* If the product was returned to the manufacturer, this would be indicated by including the date it was returned in the date product returned to manufacturer element.

7.11.3.14 Product evaluation performed (CE) 01111

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field indicates the type of product evaluation performed. The evaluation codes listed in SubPart B of the Coding Manual for FDA Form 3500A, "Type of Evaluation Performed" may be used. If no codes are available, text may be sent in the second component of the field.

7.11.3.15 Product evaluation status (CE) 01112

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

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Definition: This field identifies the status of product evaluation. Subpart A Item H.3 of the Coding Manual for FDA Form 3500A may also be used. If no codes are available, text may be sent in the second component of the field. Refer to *HL7 table 0247 - Status of evaluation* for valid values.

Table 0247 - Status of evaluation

Value	Description
Y	Evaluation completed
P	Evaluation in progress
K	Problem already known, no evaluation necessary
X	Product not made by company
A	Evaluation anticipated, but not yet begun
D	Product discarded -- unable to follow up
C	Product received in condition which made analysis impossible
I	Product remains implanted -- unable to follow up
U	Product unavailable for follow up investigation
Q	Product under quarantine -- unable to follow up
R	Product under recall/corrective action
O	Other

7.11.3.16 Product evaluation results (CE) 01113

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the results of the product evaluation.

7.11.3.17 Evaluated product source (ID) 01114

Definition: This field contains the source of the product evaluated. Refer to *HL7 table 0248 - Product source* for valid values.

Table 0248 - Product source

Value	Description
A	Actual product involved in incident was evaluated
L	A product from the same lot as the actual product involved was evaluated
R	A product from a reserve sample was evaluated
N	A product from a controlled/non-related inventory was evaluated

7.11.3.18 Date product returned to manufacturer (TS) 01115

Definition: If the product was returned to the manufacturer, this field contains the date it was returned may be reported.

7.11.3.19 Device operator qualifications (ID) 01116

Definition: This field identifies the qualification of the person operating the device when the event occurred. Refer to *HL7 table 0242 - Primary observer's qualification* for valid values.

7.11.3.20 Relatedness assessment (ID) 01117

Definition: This field represents the assessment of relatedness of the product to the event. Refer to *HL7 table 0250 - Relatedness assessment* for valid values.

Table 0250 - Relatedness assessment

Value	Description
H	Highly probable
M	Moderately probable
S	Somewhat probable
I	Improbable
N	Not related

7.11.3.21 Action taken in response to the event (ID) 01118

Definition: This field indicates the action taken as a result of the event. Segment may repeat if multiple categories of evidence are relevant. Refer to *HL7 table 0251 - Action taken in response to the event* for valid values.

Table 0251 - Action taken in response to the event

Value	Description
WP	Product withdrawn permanently
WT	Product withdrawn temporarily
DR	Product dose or frequency of use reduced
DI	Product dose or frequency of use increased
OT	Other
N	None

7.11.3.22 Event causality observations (ID) 01119

Definition: This field contains observations made about the event which may bear on causality. Refer to *HL7 table 0252 - Causality observations* for valid values. Segment may repeat if multiple categories of evidence are relevant.

Table 0252 - Causality observations

Value	Description
AW	Abatement of event after product withdrawn
BE	Event recurred after product reintroduced
LI	Literature reports association of product with event
IN	Event occurred after product introduced
EX	Alternative explanations for the event available
PL	Effect observed when patient receives placebo
TC	Toxic levels of product documented in blood or body fluids
DR	Dose response observed

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SE	Similar events in past for this patient
OE	Occurrence of event was confirmed by objective evidence
OT	Other

7.11.3.23 Indirect exposure mechanism (ID) 01120

Definition: The patient identified in the PID segment, who experienced the event, might have been exposed to the potential causal product via an intermediary, e.g., a child might be exposed to a product through the placenta or in breast milk, or a transfusion recipient might be exposed via a blood product. If this is the case, the mechanism of product transmission is identified in this field, using the valid values in *HL7 table 0253 - Indirect exposure mechanism*. If this field is populated, the identity of the person through whom the product was transmitted is contained in NK1 and RXE segments which follow.

Table 0253 - Indirect exposure mechanism

Value	Description
B	Breast milk
P	Transplacental
F	Father
X	Blood product
O	Other

7.11.4 PSH - product summary header segment

Figure 7-23. PSH attributes

SEQ	LEN	DT	OPT	RP/ #	TBL #	ITEM #	ELEMENT NAME
1	60	ST	R			01233	Report Type
2	60	ST	O			01297	Report Form Identifier
3	26	TS	R			01235	Report Date
4	26	TS	O			01236	Report Interval Start Date
5	26	TS	O			01237	Report Interval End Date
6	12	CQ	O			01238	Quantity Manufactured
7	12	CQ	O			01239	Quantity Distributed
8	1	ID	O		0329	01240	Quantity Distributed Method
9	600	FT	O			01241	Quantity Distributed Comment
10	12	CQ	O			01242	Quantity in Use
11	1	ID	O		0329	01243	Quantity in Use Method
12	600	FT	O			01244	Quantity in Use Comment
13	2	NM	O	Y/8		01245	Number of Product Experience Reports Filed by Facility
14	2	NM	O	Y/8		01246	Number of Product Experience Reports Filed by Distributor

7.11.4.0 PSH field definitions

7.11.4.1 Report type (ST) 01233

Definition: This field contains the name, title, or other description of the report. Typically, the field will include the agency name (e.g., FDA), agency component if applicable (e.g., CDRH) and the report type (e.g., Medical Device Reporting Baseline Report).

7.11.4.2 Report form identifier (ST) 01297

Definition: This field contains the form descriptor which describes the report. Typically, the field will include the agency name (e.g., FDA), agency component if applicable (e.g., CDRH) and the form number (e.g., 3417).

7.11.4.3 Report date (TS) 01235

Definition: This field contains the date as assigned by the sender.

7.11.4.4 Report interval start date (TS) 01236

Definition: This field contains the date which marks the beginning of the time interval covered by the current report.

7.11.4.5 Report interval end date (TS) 01237

Definition: This field contains the date which marks the inclusive end of the time interval covered by the current report.

7.11.4.6 Quantity Manufactured (CQ) 01238

Components: <quantity (NM)> ^ <units (CE)>

Subcomponents of units: <identifier (ST)> & <test (ST)> & <name of coding system (ST)> & <alternate identifier (ST)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Definition: This field is used to send the number of units of the product manufactured during the reporting interval. The second component can be used to specify the units for the quantity.

7.11.4.7 Quantity Distributed (CQ) 01239

Components: <quantity (NM)> ^ <units (CE)>

Subcomponents of units: <identifier (ST)> & <test (ST)> & <name of coding system (ST)> & <alternate identifier (ST)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Definition: This field is used to send the number of units of the product which were distributed during the reporting interval. The second component can be used to specify the units for the quantity.

7.11.4.8 Quantity distributed method (ID) 01240

Definition: This field is used for measuring the quantity distributed. An explanation of the method used for estimation can be included in *PSH-9-quantity distributed comment*. Refer to *HL7 table 0329 - Quantity method* for valid values.

Table 0329 - Quantity method

Value	Description
A	Actual count
E	Estimated (see comment)

7.11.4.9 Quantity Distributed Comment (FT) 01241

Definition: This field is used for any explanatory text needed but in particular should provide a description of the estimation method used. If referring to the description used in a previous report, the comment should include the product identifier and data of that report.

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7.11.4.10 Quantity in use (CQ) 01242

Components: <quantity (NM)> ^ <units (CE)>

Subcomponents of units: <identifier (ST)> & <test (ST)> & <name of coding system (ST)> & <alternate identifier (ST)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Definition: This field is used to send the number of units of the product which were in use during the reporting interval. The second component can be used to specify the units for the quantity.

7.11.4.11 Quantity in use method (ID) 01243

Definition: This field contains the method used for measuring the quantity in use. An explanation of the method used for estimation can be included in *PSH-12-quantity in use comment*. Refer to *HL7 table 0329 - Quantity method* for valid values.

7.11.4.12 Quantity in use comment (FT) 01244

Definition: This field can be used for any explanatory text needed but in particular should provide a description of the estimation method used. If referring to the description used in a previous report, the comment should include the product identifier and data of the report.

7.11.4.13 Number of product experience reports filed by facility (NM) 01245

Definition: The field contains the number of product experience reports filed by facility.

7.11.4.14 Number of product experience reports filed by distributor (NM) 01246

Definition: This field contains the number of product experience reports filed by distributor.

7.11.5 PDC - product detail country segment

Figure 7-24. PDC attributes

SEQ	LEN	DT	OPT	RP/ #	TBL #	ITEM #	ELEMENT NAME
1	80	XON	R	Y		01247	Manufacturer/Distributor
2	60	CE	R			01248	Country
3	60	ST	R			01249	Brand Name
4	60	ST	O			01250	Device Family Name
5	60	CE	O			01251	Generic Name
6	60	ST	O	Y		01252	Model Identifier
7	60	ST	O			01253	Catalogue Identifier
8	60	ST	O	Y		01254	Other Identifier
9	60	CE	O			01255	Product Code
10	4	ID	O		0330	01256	Marketing Basis
11	60	ST	O			01257	Marketing Approval ID
12	12	CQ	O			01258	Labeled Shelf Life
13	12	CQ	O			01259	Expected Shelf Life
14	26	TS	O			01260	Date First Marketed
15	26	TS	O			01261	Date Last Marketed

7.11.5.0 PDC field definitions

7.11.5.1 Manufacturer/distributor (XON) 01247

Components: <organization name (ST)> ^ <organization name type code (IS)> ^ <ID Number (NM)> ^ <check digit (NM)> ^ <code identifying the check digit scheme employed (ID)> ^ <as-

```
signing authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility ID (HD)>
^ <name representation code (ID)>
```

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> * <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> * <universal ID type (ID)>

Definition: This field contains the identity of the manufacturer/distributor.

7.11.5.2 Country (CE) 01248

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the country to which this product detail is relevant. ISO 3166 provides a list of country codes that may be used.

7.11.5.3 Brand name (ST) 01249

Definition: This field contains the name under which the product is marketed by this manufacturer.

7.11.5.4 Device family name (ST) 01250

Definition: This field contains the name used by the manufacturer to describe the family of products to which this product belongs.

7.11.5.5 Generic name (CE) 01251

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the name generically used to identify the product.

7.11.5.6 Model identifier (ST) 01252

Definition: This field contains the manufacturer's model identifier for the product.

7.11.5.7 Catalogue identifier (ST) 01253

Definition: This field contains the manufacturer's catalogue identifier for the product.

7.11.5.8 Other identifier (ST) 01254

Definition: This field contains any other identifier used to for the product.

7.11.5.9 Product code (CE) 01255

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the product code from an external coding system such as that used by the CDRH at the FDA.

7.11.5.10 Marketing basis (ID) 01256

Definition: This field contains the basis for marketing approval. Refer to *HL7 table 0330 - Marketing basis* for valid values.

Table 0330 - Marketing basis

Value	Description
510K	510 (K)
510E	510 (K) exempt
PMA	Premarketing authorization
PRE	Preamendment
TXN	Transitional
522S	Post marketing study (522)

7.11.5.11 Marketing approval ID (ST) 01257

Definition: This field contains the designation or description of the marketing basis.

7.11.5.12 Labeled shelf life (CQ) 01258

Components: <quantity (NM)> ^ <units (CE)>

Subcomponents of units: <identifier (ST)> & <text (ST)> & <name of coding system (ST)> & <alternate identifier (ST)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Definition: This field contains the shelf life of the product as labeled. This will usually be in months or years. If there is no shelf life indicated in the product labeling, this field will be empty.

7.11.5.13 Expected shelf life (CQ) 01259

Components: <quantity (NM)> ^ <units (CE)>

Subcomponents of units: <identifier (ST)> & <text (ST)> & <name of coding system (ST)> & <alternate identifier (ST)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Definition: This field contains the shelf life of the product expected by the manufacturer. This will usually be in months or years.

7.11.5.14 Date First Marketed (TS) 01260

Definition: This field contains the date the product was first marketed in the country.

7.11.5.15 Date Last Marketed (TS) 01261

Definition: This field contains the date the product was last marketed in the country. This field will be omitted if the product is still being marketed.

7.11.6 FAC - facility segment

Figure 7-25. FAC attributes

SEQ	LEN	DT	OPT	RP/ #	TBL #	ITEM #	ELEMENT NAME
1	20	EI	R			01262	Facility ID-FAC
2	1	ID	O		0331	01263	Facility Type
3	200	XAD	R	Y		01264	Facility Address
4	44	XTN	R			01265	Facility Telecommunication
5	60	XCN	O	Y		01266	Contact Person
6	60	ST	O	Y		01267	Contact Title

SEQ	LEN	DT	OPT	RP/ #	TBL #	ITEM #	ELEMENT NAME
7	200	XAD	O	Y		01166	Contact Address
8	44	XTN	O	Y		01269	Contact Telecommunication
9	60	XCN	R	Y		01270	Signature Authority
10	60	ST	O			01271	Signature Authority Title
11	200	XAD	O	Y		01272	Signature Authority Address
12	44	XTN	O			01273	Signature Authority Telecommunication

7.11.6.0 FAC field definitions

7.11.6.1 Facility ID-FAC (EI) 01262

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field contains the facility identifier.

7.11.6.2 Facility type (ID) 01263

Definition: This field contains the type of facility. Refer to HL7 table 0331 - Facility type for valid values.

Table 0331 - Facility type

Value	Description
U	User
M	Manufacturer
D	Distributor
A	Agent for a foreign manufacturer

7.11.6.3 Facility address (XAD) 01264

Components: <street address (ST)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code (ST)> ^ <country (ID)> ^ < address type (ID)> ^ <other geographic designation (ST)> ^ <county/parish code (IS)> ^ <census tract (IS)> ^ <address representation code (ID)>

Definition: This field contains the facility's address.

7.11.6.4 Facility telecommunication (XTN) 01265

Components: [NNN] [(999)]999-9999 [X99999] [B99999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Definition: This field contains the facility's telecommunication information.

7.11.6.5 Contact person (XCN) 01266

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility ID: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

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Definition: This field contains the primary contact person's name.

7.11.6.6 Contact title (ST) 01267

Definition: This field contains the primary contact person's title.

7.11.6.7 Contact address (XAD) 01166

Components: <street address (ST)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code(ST)> ^ <country (ID)> ^ < address type (ID)> ^ <other geographic designation (ST)> ^ <county/parish code (IS)> ^ <census tract (IS)> ^ <address representation code (ID)>

Definition: This field contains the primary contact person's address.

7.11.6.8 Contact telecommunication (XTN) 01269

Components: [NNN] [(999)]999-9999 [X999999] [B999999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Definition: This field contains the primary contact person's telecommunication information.

7.11.6.9 Signature authority (XCN) 01270

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility ID: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the name of the individual with signature authority or who is responsible for the report.

7.11.6.10 Signature authority title (ST) 01271

Definition: This field contains the title of the individual with signature authority or who is responsible for this report.

7.11.6.11 Signature authority address (XAD) 01272

Components: <street address (ST)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code(ST)> ^ <country (ID)> ^ < address type (ID)> ^ <other geographic designation (ST)> ^ <county/parish code (IS)> ^ <census tract (IS)> ^ <address representation code (ID)>

Definition: This field contains the address of the individual with signature authority or who is responsible for this report.

7.11.6.12 Signature authority telecommunication (XTN) 01273

Components: [NNN] [(999)]999-9999 [X999999] [B999999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Definition: This field contains the telecommunication information of the individual with signature authority of who is responsible for this report.

7.12 PRODUCT EXPERIENCE - EXAMPLE MESSAGES

The RXE segments in this message include a proposed change in RXE to include an element to transmit the indication as a coded entity (CE).

```

MSH|^- & |...
EVN|...
PID|1|||A^A^A|19230616|F|||||||19950710|Y<cr>
PES|^Eli Lilly and Company^|Lilly Corporate Center^Indianapolis^IN^46285||
GB95070448A|0|||19950704|19950710|10D<cr>
PEO|^Awaiting results of autopsy^|19950704|||^^^^GB||S|N|D^H^0||Patient admitted
via casualty with increased shortness of breath and left sided chest pain on 04
JUL 95 for assessment. ^11-JUL-95 Patient admitted 09-JUL-95 at 11:30 PM with an
18 hour history of diarrhoea followed by collapse. On admission, patient was
exhausted and dehydrated. She had a rash on both breasts and abdomen. Patient
found to have deteriorating renal function. Patient commenced IV fluid, however
patient was found dead on 10-JUL-95 morning. Query vomited and aspirated. Post
mortem requested. Events possibly related to study drug. <cr>
PCR|xxxxx^Wonder Drug 1^ATC|N|antineoplastic|||||^NON SMALL CELL LUNG CANCER<cr>
RXE|1^^^06/29/95^07/10/95|>xxxxx^Wonder Drug 1^ATC|||||||MI|3|NON SMALL
CELL LUNG CANCER<cr>
RXR|P0<cr>
RXE|1|N02AA^DI HYDROCODEINE^ATC|||||||D1|120|MG^MG^L|PAIN<cr>
RXR|P0<cr>
RXE|1^^^06/27/95^|G03AC^MEGESTROL^ATC|||||||D1|320|MG^MG^L|DECREASED
APPETITE<cr>
RXR|P0<cr>
RXE|1|A02BC^OMEPRazole^ATC|||||||D1|20|MG^MG^L|PAST HX<cr>
RXR|P0<cr>
RXE|1|A07EC^SULPHASALAZINE^ATC|||||||D1|1000|MG^MG^L|RHEUMAT<cr>
RXR|P0<cr>
RXE|1^^^06/27/95^|A11GA^ASCORBIC ACID^ATC|||||||D1|1|TAB^TAB^L|DECREASED
APPETITE<cr>
RXR|P0<cr>
RXE|1^^^06/27/95^|A11DA^THIAMINE^ATC|||||||D1|1|TAB^TAB^L|DECREASED
APPETITE<cr>
RXR|P0<cr>
RXE|1^^^06/29/95^|A03FA^METOCLOPRAMIDE^ATC|||||||D1|60|MG^MG^L|NAUSEA<cr>
>
RXR|P0<cr>
RXE|1|B03A^IRON^ATC|||||||D1|600|MG^MG^L|ANEMIA<cr>
RXR|P0<cr>
PRB|AD|19950704|705^DYSPNEA^MEDR<cr>
PRB|AD|19950710|20143^DEATH^MEDR<cr>
PRB|AD|19950704|18330^CHEST PAIN^MEDR<cr>
PRB|AD|19950709|21197^DIARRHEA^MEDR<cr>
PRB|AD|19950709|6432^SYNCOPE^MEDR<cr>
PRB|AD|19950709|4966^DEHYDRATION^MEDR<cr>
PRB|AD|19950709|20544^KIDNEY FUNCTION ABNORMAL^MEDR<cr>
OBX|1|CE|804- 5^1 EUKOCYTES^LN||2300|10*3/ml|||||19940704<cr>
OBX|2|CE|770- 8^NEUTROPHILS/100 LEUKOCYTES^LN||1.9%|||||19950704<cr>
OBX|2|CE|6299- 2^UREA NITROGEN^LN||22.3|mg%|||||19950709<cr>
OBX|2|CE|2160- 0^CREATININE^LN||247|mmol e|||||19950709<cr>

```

NTE|Additional details must be obtained from the affiliate in order to assess causality. A three day alert phone call was made to the FDA on 12-JUL-95<cr>

7.13 PRODUCT EXPERIENCE - REFERENCES

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7.14 WAVEFORM SUMMARY

HL7 support for waveform data is intended to provide access to waveform data in a variety of situations. Needs include remote access to waveform data, research, and input to clinical decision making, as well as obtaining snippets of waveform data to complete waveform data sets. In some cases, predominantly in research oriented environments, a physician may want to manually interpret, scale the raw data, and/or apply alternative algorithms to the raw data values. In these environments, the review of waveform data includes the processing of the raw data. The HL7 waveform data capabilities allow for these applications, including data collection information such as skew between channels, in-band with the waveform.

Waveform observations, like other results, can be transmitted in solicited mode (in response to a query) or in unsolicited mode - see Section 7.2, "MESSAGE DEFINITIONS," for discussion. In either mode of transmission the timing information, channel definition, annotations, and digital time series data in the waveform recording are treated as individual "observations" within a result "battery." For a given "battery," each of the result fragments is transmitted in a separate OBX segment, where the Observation ID suffix for the OBX is used to identify the result fragment. To reduce ambiguity, an explicit framework for defining the structure of waveform result messages is provided. The elements of that framework include the following:

- Waveform specific data types which enable transmission of channel definition and waveform data
- Waveform specific Observation ID suffixes (OBX-3-observation identifier) which uniquely identify the category of waveform result in a given OBX segment
- Fixed rules for combining OBX segments of each category in the waveform response messages
- Explicit definition of which OBX fields may be populated for each category of waveform result
- Unique trigger events which identify result messages which contain batteries of waveform result OBX segments

7.15 WAVEFORM RESULT DATA TYPES

Three waveform specific data types have been defined to enable transmission of waveform results.

7.15.1 NA - numeric array

```
<value1> ^ <value2> ^ <value3> ^ <value4> ^ ...
```

This data type is used to represent a series (array) of numeric values, each one having a data type of NM. A field of this type may contain a one-dimensional array (vector or row) of numbers. Also, by allowing the field to repeat, a two-dimensional array (table) of numbers may be transmitted using this format, with each row of the table represented as one repetition of the field. Arrays which have one or more values not present may be transmitted using this data type. "Not present" values are represented as two adjacent component delimiters. If the absent values occur at the end of a row, the trailing component delimiters may be omitted. If an entire row of a table has no values, no component delimiters are necessary (in this case, there will be two adjacent repetition delimiters). The maximum number of values in one repetition of an NA format field is determined by the maximum field length.

Examples:

125^34^-22^-234^569^442^-212^6	vector of 8 numbers
1.2^-3.5^5.2~2.0^3.1^-6.2~3.5^7.8^-1.3	3 x 3 array of numbers
^2^3^4~5^^^8~9^10~~17^18^19^20	5 x 4 array of numbers with
	the values in positions
	(1, 1), (2, 2), (2, 3), (3, 3),
	(3, 4), (4, 1), (4, 2), (4, 3),
	and (4, 4) not present

7.15.2 MA - multiplexed array

```
<sample 1 from channel 1>^<sample 1 from channel 2>^<sample 1 from channel 3> ...~
<sample 2 from channel 1>^<sample 2 from channel 2>^<sample 2 from channel 3> ...~
...
```

This data type is used to represent channel-multiplexed waveform data, (e.g., the digitized values from an analog-to-digital converter or other digital data source). Each value is of type NM, and represents a time sample from a channel. This segment may contain data from one or more channels. The waveform data is in channel-multiplexed format (that is, the values for all channels for the first time sample are transmitted, then the values for the next time sample, and so on until the requisite number of time samples have been transmitted). Time samples are separated by repeat delimiters (~), and channels within a sample are separated by component delimiters (^). The time between samples (the sampling interval) is the reciprocal of the digitization frequency as specified using the CD data type.

Examples:

0^0^0~1^1^1~2^2^2~3^3^3~4^4^4~5^5^5	3 channels (identical), 5 time-samples
0~1~2~3~4~5~6~7~8~9~10	1 channel, 11 time-samples

7.15.3 CD - channel definition

```
Components: <channel identifier> ^ <waveform source> ^ <channel sensitivity/units> ^ <calibration
parameters> ^ <sampling frequency> ^ <minimum/maximum data values>
```

This data type is used for labeling of digital waveform data. It defines a recording channel which is associated with one of the values in each time sample of waveform data. Each channel has a number (which generally defines its position in a multichannel display) and an optional name or label (also used in displays). One or two named waveform sources may also be associated with a channel (providing for the use of differential amplifiers with two inputs). The other components of the channel definition data type are optional. The individual components are defined as follows:

7.15.3.1 Channel identifier

Two subcomponents separated by subcomponent delimiters (&) which identify the channel, consisting of a channel number (required, maximum 4 characters, data type NM) and a channel name (optional, maximum 17 characters, data type ST). The channel name is a text string used as a label in waveform data displays. If this name is not present, the channel label displayed is <source1>-<source2>, where <source1> and <source2> are the names of the two waveform sources connected to this channel, or, if only one waveform source <source1> is specified, the channel label displayed when the channel name is not given is <source1>.

7.15.3.2 Waveform source

Identifies the source of the waveform connected to the channel. Two names (each maximum of 8 characters, data type ST) separated by a subcomponent delimiter (&) may be specified if it is necessary to individually identify the two inputs for a waveform. Only one name need be specified if the channel is connected to a single input. For example, in EKG recordings typically only one name is used (such as I or II); in electroencephalography, two names are typically used, one for each input of the differential amplifier (such as F3 and C3)..(NOTE: Although the committee voted in Denver to make waveform source a coded entry, this is not syntactically possible. We do not have a sub-sub-component delimiter available to separate the sub-fields of the proposed coded entry. Therefore, waveform source remains a string data type.).

7.15.3.3 Channel sensitivity and units (CM)

This CM data type defines the channel sensitivity (gain) and the units in which it is measured. This component consists of up to seven subcomponents, separated from each other by subcomponent delimiters (&). The first subcomponent specifies the sensitivity, while the remaining six subcomponents are used to specify the units of the sensitivity, using a format similar to the components of the coded entry (CE) data type. The subcomponents of the channel sensitivity and units are as follows:

7.15.3.3.1 Sensitivity (NM)

Defines the nominal value (maximum 20 characters, data type NM) that corresponds to one unit in the waveform data, that is, the effective resolution of the least significant bit of the ADC, and the polarity of the channel. The sensitivity incorporates both the amplifier gain and the actual ADC resolution. It does not, however, relate to the vertical scaling of a waveform display (it is, for example, a measure of voltage, not voltage per unit distance). For channels recording potential differences between two electrodes using a differential amplifier, a positive sensitivity indicates that a number in the waveform data which is greater than the channel baseline represents a potential at the first electrode which is more positive than that at the second electrode. A negative sensitivity indicates that a number in the waveform data which is greater than the channel baseline corresponds to a potential at the first electrode which is more negative than that at the second electrode.

7.15.3.3.2 Units

A units designation (for example, uv = microvolt, mv = millivolt, v = volt, pal = pascal, or mm(hg) = millimeters of mercury) from a designated system of units, such as the ISO+ extension of the standard SI single case unit abbreviations presented as *Figure 7-13* in Section 7.3.2.6.1, "Identifying reporting units," or the ANSI+ U.S. customary unit abbreviations, a superset of the ANSI standard which appears in *Figure 7-10*. Other unit systems can be used as well.

7.15.3.4 Channel calibration parameters (NM)

This component consists of three optional subcomponents (each a maximum of 20 characters, data type NM), separated from each other by subcomponent delimiters (&), which define corrections to channel sensitivity, baseline, and channel time skew which may be derived from a calibration procedure. The three subcomponents are as follows:

7.15.3.4.1 Sensitivity correction factor

Defines a correction factor for channel sensitivity which may be derived from the last calibration procedure performed. The actual channel sensitivity is the nominal channel sensitivity given in the previous component multiplied by the unitless correction factor.

7.15.3.4.2 Baseline

Defines the actual channel baseline (the data value which corresponds to a nominal input signal of zero). The actual baseline may differ from the ideal because of a dc offset in the amplifier connected to the ADC. The actual baseline values for all channels (which need not be integers) may be determined at the time of calibration as the average digitized values obtained when a zero input signal is connected to each channel.

7.15.3.4.3 Time skew

Defines the time difference between the nominal sampling (digitization) time (which would be the same for all channels) and the actual sampling time of the channel, in seconds (or fractions thereof). This value will differ from zero when all channels in the montage are not sampled simultaneously, as occurs in systems which sample successive channels at regular time intervals. This value may be determined from a calibration procedure in which an identical time-varying signal is applied to all channels and interchannel time differences are estimated, or more commonly it may be taken from the manufacturer's specifications for the digitizing system used. For example, for a system which samples successive channels at regular time intervals t , the time skew of channel number n would be $(n-1)t$. The actual time of sampling (digitization) of sample number m of channel number n in such a system would be $R + (m-1)/f + (n-1)t$, where R is the reference time at the start of the epoch and f is the channel sampling frequency ($t < 1/f$).

7.15.3.5 Channel sampling frequency

Defines the sampling frequency in hertz of the channel, that is, the reciprocal of the time in seconds between successive samples (maximum 20 characters, data type NM). Note that this is the frequency of transmitted data, which may or may not be the actual frequency at which the data was acquired by an analog-to-digital converter or other digital data source (i.e. the data transmitted may be subsampled, or interpolated, from the originally acquired data.)

7.15.3.6 Minimum and maximum data values (NM)

Defines the minimum and maximum data values which can occur in this channel in the digital waveform data, that is, the range of the ADC (each maximum of 20 characters, data type NM), and also specifies whether or not nonintegral data values may occur in this channel in the waveform data. If the minimum and maximum values are both integers (or not present), only integral data values may be used in this channel. If either the minimum or the maximum value contains a decimal point, then nonintegral as well as integral data values may be used in this channel. The minimum and maximum data values are separated by a component delimiter (&). For an n -bit signed ADC, the nominal baseline $B = 0$, and the minimum (L) and maximum (H) values may be calculated as follows:

$$L = -2^{n-1}$$

$$H = 2^{n-1} - 1$$

For an unsigned n -bit ADC, the minimum value $L = 0$, and the nominal baseline value (B) and maximum value (H) may be calculated from the formulas,

$$B = 2^{n-1}$$

$$H = 2^n - 1$$

The actual signal amplitude A (for differentially amplified potential measurements, the potential at electrode number one minus that at electrode number two) may be calculated from the value D (range L to H) in the waveform data using the actual baseline value B and the nominal sensitivity S and actual sensitivity correction factor C by the formula,

$$A = SC(D-B)$$

7.16 WAVEFORM SPECIFIC OBSERVATION ID SUFFIXES

Each waveform channel in a recording contains timing, channel definition and digital time series data. The category of waveform result transmitted in a given OBX segment is determined by the Observation ID Suffix contained in *OBX-3-observation identifier*. Four suffixes are provided for the different categories of waveform result:

Observation	Suffix	Data Type
Timing Information	TIM	TS
Channel Definition	CHN	CD
Waveform Data	WAV	NA or MA
Waveform Annotation	ANO	CE

The Observation Sub-ID is used to associate the TIM, CHN, and subsequent WAV, and ANO category result segments for a given channel or channels in a waveform response message.

7.16.1 Timing information (TIM)

The TIM category OBX result segment establishes the date and time of the first data point in a given Observation Sub-ID grouping of waveform channels. If there is a gap in the time sequence of waveform data, this should be indicated by the transmission of a new TIM category result segment prior to subsequent WAV category result segments with the same Observation Sub-ID. The data type is TS.

7.16.2 Channel definition data (CHN)

The CHN category OBX result segment defines recording channels for digitally sampled time-series waveforms. Subsequent WAV category result segments carry the actual waveform samples. Each CHN category result segment defines one or more channels; the *OBX-5-Observation Value* field may repeat to define additional channels. Each instance or repetition is formatted as a CD data type.

Each channel has a number (which generally defines its position in a multichannel display) and an optional name or label (also used in displays). One or two named waveform sources may also be associated with a channel (providing for the use of differential amplifiers with two inputs). A channel also has an associated sensitivity, calibration parameters (sensitivity correction factor, baseline, and time skew), sampling frequency, and minimum and maximum values. The sampling frequency refers to the number of samples per unit time for the data reported in the subsequent WAV category result segments.

When multiple channels are defined within a single CHN category result segment, if the channel sensitivity/units (third component), sensitivity correction factor (first subcomponent of component 4), baseline

(second subcomponent), time skew (third subcomponent), sampling frequency (fifth component), minimum data value (first subcomponent of component 6), or maximum data value (second subcomponent) is not present in any repetition of the *OBX-5-observation value* field, the value given in the last repetition in which the item *was* present may be used by the receiver system. This is referred to as a “sticky default.” For example, if all channels have the same sensitivity, sensitivity correction factor/baseline/time skew, sampling frequency, and minimum/maximum data values, these may be specified for the first channel but omitted in all subsequent channel definitions in the same CHN category result segment, thus reducing the length of the segment. If the sensitivity correction factor, baseline, or time skew is not present in the first channel being defined, values of 1, 0, and 0 (respectively) may be used. No other default values are assumed for components which are not present.

7.16.3 Waveform digital data (WAV)

The WAV category OBX result segment is used to transmit the actual waveform data (the time-series digitized values from an analog-to-digital converter (ADC) or other source of sampled digital data). WAV category result segments are associated with their corresponding channel definitions (CHN category OBX result segment) via the Observation Sub-ID. The number of channels defined in the CHN category result segment specifies the number of channels of multiplexed data contained in the WAV category result segments associated with it. For example, if a CHN category result segment contains only a single channel definition, then each WAV category result segment with the same Observation Sub-ID contains only one channel of data. However, if a CHN category result segment contains three channel definitions then each WAV category result segment with the same Observation Sub-ID must contain three channels of data. A given set of waveform data for all channels and at multiple successive times may be transmitted in a single WAV category result segment (provided that the length of the observation value field does not exceed the maximum defined field length for OBX segments, 65536), or in multiple successive WAV category result segments, possibly with interspersed result segments of other types (for example, containing annotations, or comments).

The data type of the WAV category result segment can be NA (Numeric Array) or MA (Multiplexed Array). Using the NA data type, the data values are formatted in “channel-block”, or “unmultiplexed” format. The digital samples for each channel are separated using component delimiters, and successive channels are separated using the repeat delimiter. Using the MA data type, the data values are formatted in “channel multiplexed” format, i.e., the values for the first time sample (all channels) are transmitted first, then the values for the second time sample (all channels) are transmitted, and so on until all samples have been transmitted. The digital samples for each channel are separated by the component delimiter, and successive samples are separated by the repeat delimiter. Channel multiplexed format can only be used if all of the multiplexed channels have the same effective sampling frequency.

7.16.4 Waveform annotation (ANO)

The ANO category OBX segment is used to transmit waveform annotations (coded entry associated with a given point in time during the waveform recording). The ANO category result segments are referenced to their corresponding channel definitions (CHN category OBX result segment) via the Observation Sub-ID. The number of channels defined in the CHN category result segment specifies the number of channels of annotation contained in any ANO category result segments associated with it. For example, if a CHN category result segment contains only a single channel definition, then any ANO category result segments with the same Observation Sub-ID will contain only one annotation coded entry. However, if a CHN category result segment contains three channel definitions then any ANO category result segments with the same Observation Sub-ID must contain three separate annotation coded entries.

The data type of the ANO category result segment is CE. The annotation coded entries for successive channels are separated using the repeat delimiter. Adjacent repeat delimiters are used when there is no annotation coded entry for a channel in a multichannel result segment. Refer to *user defined table 0317 - Annotations* for suggested values.

User-defined table 0317 - Annotations

<u>Value</u>	<u>Description</u>
9900	Pace spike
9901	SAS marker
9902	Sense marker
9903	Beat marker
9904	etc.

7.17 COMBINING RULES FOR WAVEFORM OBX SEGMENTS

A waveform result “battery” may contain one or more channels of digital waveform data. The Observation Sub-ID is used to logically associate the TIM, CHN and WAV category OBX segments which pertain to a given set of channels in the result “battery.” Each Sub-ID group must contain at least one TIM, one CHN and one WAV category segment and at least one of the TIM category result segments must precede the first WAV category result segment in that group.

7.18 RESTRICTIONS ON VALUATION OF OBX SEGMENT FIELDS

The result category for a given OBX segment determines how specific fields in that segment are valued. The following tables indicate the use of the OBX segment for waveform components. The data types, lengths, optionality, and repeat values listed do not replace the basic definition of the OBX segment in section 7.3.2.

The OPT/X column can take the values of R = Required, O = Optional, or X = Ignored and not valued. **OBX Fields marked with an X should not be valued in Waveform response messages of specified Suffix type.** Valuation of the fields must match the value provided in the associated wave category OBX segments, i.e., OBX with the same sub-ID must share the same result status.

7.18.1 OBX segment - TIM category

When using the OBX for the TIM category, *OBX-2* should be valued to TS. Consequently, *OBX-5* should have a length of 26 given the format of the TS data type. Note the expectations on which fields are required as well as the fields that should not be valued.

Figure 7-26. OBX attributes - TIM category

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	SI	O			00569	Set ID - OBX
2	2	ID	R		0125	00570	Value Type
3	80	CE	R			00571	Observation Identifier
4	20	ST	R			00572	Observation Sub-ID
5	26	TS	R			00573	Observation Value
6	60	CE	X			00574	Units
7	60	ST	X			00575	References Range
8	5	ID	X		0078	00576	Abnormal Flags
9	5	NM	X	Y/5		00577	Probability
10	2	ID	X		0080	00578	Nature of Abnormal Test
11	1	ID	R		0085	00579	Observ Result Status
12	26	TS	X			00580	Date Last Obs Normal Values
13	20	ST	X			00581	User Defined Access Checks

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
14	26	TS	X			00582	Date/Time of the Observation
15	60	CE	X			00583	Producer's ID
16	60	CN	X			00584	Responsible Observer
17	80	CE	X	Y		00936	Observation Method

7.18.2 OBX segment - CHN category

When using the OBX for the CHN category, *OBX-2* should be valued to CD. Consequently, *OBX-5* could have a length of up to 65536 given the format of the CD data type. Note the expectations on which fields are required as well as the fields that should not be valued.

Figure 7-27. OBX attributes - CHN category

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	SI	O			00569	Set ID - OBX
2	2	ID	R		0125	00570	Value Type
3	80	CE	R			00571	Observation Identifier
4	20	ST	R			00572	Observation Sub-ID
5	65536	CD	R			00573	Observation Value
6	60	CE	X			00574	Units
7	60	ST	X			00575	References Range
8	5	ID	X		0078	00576	Abnormal Flags
9	5	NM	X	Y/5		00577	Probability
10	2	ID	X		0080	00578	Nature of Abnormal Test
11	1	ID	R		0085	00579	Observ Result Status
12	26	TS	X			00580	Date Last Obs Normal Values
13	20	ST	X			00581	User Defined Access Checks
14	26	TS	X			00582	Date/Time of the Observation
15	60	CE	X			00583	Producer's ID
16	60	CN	X			00584	Responsible Observer
17	80	CE	X	Y		00936	Observation Method

Note: The length of the observation value field is variable, depending upon number of channels defined.

7.18.3 OBX segment - WAV category

When using the OBX for the WAV category, *OBX-2* can be valued as either NM or MA. Consequently, *OBX-5* could have a length of up to 65536 given the format of the data types. Note the expectations on which fields are required as well as the fields that should not be valued.

Figure 7-28. OBX attributes - WAV category

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	SI	O			00569	Set ID - OBX
2	2	ID	R		0125	00570	Value Type
3	80	CE	R			00571	Observation Identifier
4	20	ST	R			00572	Observation Sub-ID
5	65536	NA or MA	C			00573	Observation Value
6	60	CE	X			00574	Units
7	60	ST	X			00575	References Range
8	5	ID	O		0078	00576	Abnormal Flags

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SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
9	5	NM	X	Y/5		00577	Probability
10	2	ID	X		0080	00578	Nature of Abnormal Test
11	1	ID	R		0085	00579	Observ Result Status
12	26	TS	X			00580	Date Last Obs Normal Values
13	20	ST	X			00581	User Defined Access Checks
14	26	TS	X			00582	Date/Time of the Observation
15	60	CE	X			00583	Producer's ID
16	60	CN	O			00584	Responsible Observer
17	80	CE	X			00936	Observation Method

Notes:

1. The length of the observation value field is variable, depending upon number of channels and number of data points sampled.
2. Fields 8, 11 and 16 apply exclusively to the set of data points in the OBX. They do not map to a particular data point or channel.

7.18.4 OBX segment – ANO category

When using the OBX for the ANO category, *OBX-2* should be valued to CE. Consequently, *OBX-5* could have a length of up to 65536 given the format of the data types. Note the expectations on which fields are required as well as the fields that should not be valued.

Figure 7-29. OBX attributes - ANO category

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	SI	O	Y/5		00569	Set ID - OBX
2	2	ID	R		0125	00570	Value Type
3	80	CE	R			00571	Observation Identifier
4	20	ST	R			00572	Observation Sub-ID
5	65536	CE	C			00573	Observation Value
6	60	CE	X			00574	Units
7	60	ST	X			00575	References Range
8	5	ID	O		0078	00576	Abnormal Flags
9	5	NM	X			00577	Probability
10	2	ID	X		0080	00578	Nature of Abnormal Test
11	1	ID	R		0085	00579	Observ Result Status
12	26	TS	X			00580	Date Last Obs Normal Values
13	20	ST	X			00581	User Defined Access Checks
14	26	TS	O			00582	Date/Time of the Observation
15	60	CE	X			00583	Producer's ID
16	60	CN	O			00584	Responsible Observer
17	80	CE	X			00936	Observation Method

Note: The length of the observation value field is variable, depending upon number of channels defined.

7.19 WAVEFORM RESPONSE TRIGGER EVENTS

Response messages containing waveform results are identified by the trigger event provided in the message header segment (MSH-09, second component of message type). Separate trigger events have been defined to differentiate the solicited and unsolicited modes of transmission.

7.19.1 W01 - waveform result, unsolicited transmission of requested information

The waveform response unsolicited trigger event identifies ORU messages used to transmit waveform data which are results of an ordered test or series of observations. The W01 trigger event may also be used to identify ORU messages sent as the eventual response to a QRY message specifying a deferred mode query for waveform results/observations with record-oriented format (similar to the deferred response display mode DSR message type described in Chapter 2). One or more ORU messages with the W01 trigger event may result from this type of QRY message.

7.19.2 W02 - waveform result, response to query

The W02 trigger event identifies QRF messages which are a response to a QRY message specifying an immediate mode query for waveform results/observations with record-oriented format.

7.20 EXAMPLE MESSAGES FOR GENERIC WAVEFORM DATA

This section gives four example messages of type ORU (unsolicited) that each contain a three-channel waveform recording, with the same waveform in each channel. These examples contain data for one patient. In these example message transmissions, <cr> indicates an ASCII carriage return character (ASCII 13).

The following is a detailed explanation of each of the segments contained in the example messages:

Message Header (MSH) Segment - This specifies the delimiters (|^~\&), sending application (SVL, meaning Sunnyville Laboratory), receiving application (SVC, meaning Sunnyville Clinic), date and time of transmission (March 24, 1990 at 10:12:15), message type (ORU) and trigger event (W01), a message control ID that identifies this message uniquely among all messages transmitted by this sender (19264), processing ID (P, meaning production), and specification version ID (2.3).

Patient ID (PID) Segment - This contains a sequence number (1), external and internal patient IDs (both 4567890), and a patient name (Mr. John Q Doe, Jr).

Order (OBR) Segment - This contains a sequence number (1), placer order number (5678) and placer ID (SVC, meaning Sunnyville Clinic), filler order number (1234) and filler ID (SVL, meaning Sunnyville Laboratory), and test/observation ID (5, using a local coding system that is known to the intended receiver, meaning a three-channel waveform recording).

CHN Category Result (OBX) Segments - Using a value type of CD (channel definition), these define each of the three data channels by number and specify a label (waveform source) for each. The channel sensitivity (0.5 mV), sampling frequency (200), and minimum and maximum data values (-2048 to 2047) are specified for each channel in examples 1 and 2 and 4. In example 3, these are specified only for channel 1, but apply by default to all subsequent channels. No baseline or calibration parameters are specified, so defaults are used for all channels.

TIM Category Result (OBX) Segments - Using the data type TS (time stamp), these define the start of the waveform data at a time 525 ms past 8:12:37 on March 24, 1990.

WAV Category Result (OBX) Segments - The data may be transmitted in either “channel-block” (unmultiplexed) format using the NA data type, or in “channel-multiplexed” format using the MA data type. The three examples demonstrate different ways of transmitting 3 waveform channels, with 25 samples from each waveform channel. Note that in these examples, each waveform channel is identical.

ANO Category Result (OBX) Segments - Annotation segments with a single channel definition contain a single annotation string. Annotation segments with multiple channel definitions contain a separate annotation string for each defined channel - successive annotation strings are separated from each other by the repeat delimiter. In the

following examples, channel 1 has been annotated at a time 565 ms past 8:12:37 on March 24, 1990; channel 3 has been annotated at a time 605 ms past 8:12:37 on March 24, 1990.

7.20.1 Example 1: “channel-block” format, using three separate sets of TIM, CHN, WAV and category OBX segments:

```
MSH|^~\&|SVL||SVC||19900324101215||ORU^W01|19264|P|2.3<cr>
PID|1|4567890|4567890||Doe^John^Q^Jr^Mr<cr>
OBR|1|5678^SVC|1234^SVL|5^three-channel waveform recording^L<cr>
OBX|1|CD|5&CHN^^L|1|1^ONE^0.5&mv^^200^-2048&2047|||||F<cr>
OBX|2|TS|5&TIM^^L|1|19900324081237.525|||||F<cr>
OBX|3|NA|5&WAV^^L|1|0^1^2^3^4^5^6^7^8^7^6^5^4^3^2^1^0^-1^-2^-3^-4^-5^-6^-7^-8|||||F<cr>
OBX|4|CE|5&ANO^^L|1|^Channel passing through maxima|||||F||19900324081237.565<cr>
OBX|5|CD|5&CHN^^L|2|2^TWO^0.5&mv^^200^-2048&2047|||||F<cr>
OBX|6|TS|5&TIM^^L|2|19900324081237.525|||||F<cr>
OBX|7|NA|5&WAV^^L|2|0^1^2^3^4^5^6^7^8^7^6^5^4^3^2^1^0^-1^-2^-3^-4^-5^-6^-7^-8|||||F<cr>
OBX|8|CD|5&CHN^^L|3|3^THREE^0.5&mv^^200^-2048&2047|||||F<cr>
OBX|9|TS|5&TIM^^L|3|19900324081237.525|||||F<cr>
OBX|10|NA|5&WAV^^L|3|0^1^2^3^4^5^6^7^8^7^6^5^4^3^2^1^0^-1^-2^-3^-4^-5^-6^-7^-8|||||F<cr>
OBX|11|CE|5&ANO^^L|3|^Channel passing through zero|||||F||19900324081237.605<cr>
...
```

7.20.2 Example 2: “channel-block” format, using a single set of TIM, CHN, WAV and category OBX segments, with multiple channels within the one WAV category result segment:

```
MSH|^~\&|SVL||SVC||19900324101215||ORU^W01|19264|P|2.3<cr>
PID|1|4567890|4567890||Doe^John^Q^Jr^Mr<cr>
OBR|1|5678^SVC|1234^SVL|5^three-channel waveform recording^L<cr>
OBX|1|CD|5&CHN^^L|1|1^ONE^0.5&mv^^200^-2048&2047~2^TWO^0.5&mv^^200^-2048&2047~3^THREE^0.5&mv^^200^-2048&2047|||||F<cr>
OBX|2|TS|5&TIM^^L|1|19900324081237.525|||||F<cr>
OBX|3|NA|5&WAV^^L|1|
0^1^2^3^4^5^6^7^8^7^6^5^4^3^2^1^0^-1^-2^-3^-4^-5^-6^-7^-8~
0^1^2^3^4^5^6^7^8^7^6^5^4^3^2^1^0^-1^-2^-3^-4^-5^-6^-7^-8~
0^1^2^3^4^5^6^7^8^7^6^5^4^3^2^1^0^-1^-2^-3^-4^-5^-6^-7^-8|||||F<cr>
OBX|4|CE|5&ANO^^L|1|^Channel passing through maxima|||||F||19900324081237.565<cr>
OBX|5|CE|5&ANO^^L|1|~^Channel passing through zero|||||F||19900324081237.605<cr>
...
```

7.20.3 Example 3: “channel-multiplexed” format, with multiple channels within the one WAV category result segment:

```
MSH|^~\&|SVL||SVC||19900324101215||ORU^W01|19264|P|2.3<cr>
PID|1|4567890|4567890||Doe^John^Q^Jr^Mr<cr>
OBR|1|5678^SVC|1234^SVL|5^three-channel waveform recording^L<cr>
OBX|1|CD|5&CHN^^L|1|1^ONE^0.5&mv^^200^-2048&2047~2^TWO^~3^THREE^|||||F<cr>
OBX|2|TS|5&TIM^^L|1|19900324081237.525|||||F<cr>
```

```

OBX|3|MA|5&WAV^^L|1|0^0^0~1^1^1~2^2^2~3^3^3~4^4^4~5^5^5~6^6^6~7^7^7~8^8^8~7^7^7~6^6^6~5^5^5~4^4^4~3^3^3~2^2^2~1^1^1~0^0^0~1^1^1~2^2^2~3^3^3~4^4^4~5^5^5~6^6^6~7^7^7~8^8^8|||F<cr>
OBX|4|CE|5&ANO^^L|1|^Channel passing through maxima|||F||19900324081237.565<cr>
OBX|5|CE|5&ANO^^L|1|~^Channel passing through zero|||F||19900324081237.605<cr>
...
```

7.20.4 Example 4: “channel-block” format, using three separate sets of TIM, CHN, WAV and category OBX segments with a break in waveform data used to pinpoint waveform annotations for channels one and three:

```

MSH|^~\&|SVL||SVC||19900324101215||ORU^W01|19264|P|2.3<cr>
PID|1|4567890|4567890||Doe^John^Q^Jr^Mr<cr>
OBR|1|5678^SVC|1234^SVL|5^three- channel waveform recording^L<cr>
OBX|1|CD|5&CHN^^L|1|1^ONE^0.5&mv^^200^-2048&2047|||F<cr>
OBX|2|TS|5&TIM^^L|1|19900324081237.525|||F<cr>
OBX|3|NA|5&WAV^^L|1|0^1^2^3^4^5^6^7^8|||F<cr>
OBX|4|CE|5&ANO^^L|1|^Channel passing through maxima|||F||19900324081237.565<cr>
OBX|5|NA|5&WAV^^L|1|7^6^5^4^3^2^1^0^-1^-2^-3^-4^-5^-6^-7^-8|||F<cr>
OBX|6|CD|5&CHN^^L|2|2^TWO^0.5&mv^^200^-2048&2047|||F<cr>
OBX|7|TS|5&TIM^^L|2|19900324081237.525|||F<cr>
OBX|8|NA|5&WAV^^L|2|0^1^2^3^4^5^6^7^8^7^6^5^4^3^2^1^0^-1^-2^-3^-4^-5^-6^-7^-8|||F<cr>
OBX|9|CD|5&CHN^^L|3|3^THREE^0.5&mv^^200^-2048&2047|||F<cr>
OBX|10|TS|5&TIM^^L|3|19900324081237.525|||F<cr>
OBX|11|NA|5&WAV^^L|3|0^1^2^3^4^5^6^7^8^7^6^5^4^3^2^1^0|||F<cr>
OBX|12|CE|5&ANO^^L|3|^Channel passing through zero|||F||19900324081237.605<cr>
OBX|13|NA|5&WAV^^L|3|-1^-2^-3^-4^-5^-6^-7^-8|||F<cr>
...
```

7.21 OUTSTANDING ISSUES

None.

8.

Master Files

Chapter Chair/Editor:	Mark Shafarman Oacis Healthcare Systems, Inc.
Editor: Staff and Practitioner, Location, and Charge Description	Francine Kitchen, PhD Software Technologies Corporation
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Editor: 2.3.1	Cathy Wallace SMS

8.1 PURPOSE

In an open-architecture healthcare environment there often exists a set of common reference files used by one or more application systems. Such files are called master files. Some common examples of master files in the healthcare environment include:

- a) doctor master file
- b) system user (and password) master file
- c) location (census and clinic) master file
- d) device type and location (e.g., workstations, terminals, printers, etc.)
- e) lab test definition file
- f) exam code (radiology) definition file
- g) charge master file
- h) patient status master
- i) patient type master

These common reference files need to be synchronized across the various applications at a given site. The Master Files Notification message provides a way of maintaining this synchronization by specifying a standard for the transmission of this data between applications.

In many implementations, one application system will “own” a particular master file such as the doctor master file. The changes (e.g., adds, deletes, updates) to this file are made available to various other applications on a routine basis. The Master Files Notification message supports this common case, but also supports the situation where an application not “owning” a particular master file, transmits update information to other systems (usually to the “owning” system), for review and possible inclusion.

The Master Files Notification message supports the distribution of changes to various master files between systems in either online or batch modes, and allows the use of either original or enhanced acknowledgment modes, as well as

providing for a delayed application acknowledgment mode. These messages use the MSH segment to pass the basic event code (master files notification or acknowledgment). The MFI (master file identification) segment identifies the master file being updated as well as the initial and requested dates for “file-level” events (such as “replace file”). For each record being changed, the MFE (Master File Entry) segment carries the record-level event code (such as add, update, etc.), the initial and requested dates for the event, and the record-level key identifying the entry in the master file. The MFA (master file acknowledgment) segment returns record-specific acknowledgment information.

Note: The MFE segment is not the master file record, but only specifies its identifier, event, and event dates. The master file record so identified is contained in either Z-segments or HL7-defined segments immediately following the MFE segment. This record may be either a flat record contained in a single segment, or a complex record needing more than a single segment to carry its data and (usually hierarchical) structure.

The master file segments commonly needed across HL7 applications as well as those specific to the various application chapters, are defined in Sections 8.6, “STAFF AND PRACTITIONER MASTER FILES,” through 8.10, “Clinical Trials MASTER FILES,” of this chapter.

A given master files message concerns only a single master file. However, the provision of a record-level event code (and requested activation date) on the MFE and the MFA segments allows a single message to contain several types of changes (events) to that file.

The Master Files Notification events do not specify whether the receiving system must support an automated change of the master file in question, nor do they specify whether the receiving system must create a file in the same form as that maintained on the sending system.

In general, the way in which the receiving system processes the change notification message will depend on both the design of the receiving system and the requirements negotiated at the site. Some systems and/or sites may specify a manual review of all changes to a particular master file. Some may specify a totally automated process. Not every system at every site will need all the fields contained in the master file segment(s) following the MFE segment for a particular master file entry.

This also means that an application acknowledgment (or a deferred application acknowledgment) from a receiving system that it changed a particular record in its version of the master file does not imply that the receiving system now has an exact copy of the information and state that is on the sending system: it means only that whatever subset of that master file’s data (and state) that has been negotiated at the site is kept on the receiving system in such a manner that a new Master Files Notification transaction with the same primary key can be applied unambiguously (in the manner negotiated at the site) to that subset of information.

8.2 TRIGGER EVENTS

The Master Files Change Notification message can be used for the following message-level trigger events:

Mnn: A message containing notifications of changes to a single master file.

nn defines a particular HL7 master file. Currently-defined values are (see *HL7 table 0003 - Event type*): M01 - master file not otherwise specified (**for backward compatibility only**); M02 - staff/practitioner master file; M03 - test/observation master file; M04 - charge description master file; M05 - location master file; M06 - clinical study master file; M12 - M99 - reserved for future HL7-defined master files. Site-specific master files should use a code of the form Znn. (See also Section 8.4.1.0, MFI field definitions.)

A MFN message may contain the following “file-level” events, as specified in the MFI segment:

REP: Replace current version of this master file with the version contained in this message.

UPD: Change file records as defined in the record-level event codes for each record that follows.

These are the only file-level events currently defined. REP means that every MFE segment that follows will use the MAD event code.

The replace option allows the sending system to replace a file without sending delete record-level events for each record in that file. UPD means that the events are defined according to the record-level event code contained in each MFE segment in that message.

An MFN message may contain the following “record-level” events, as specified in the MFE segments.

- MAD: Add record to master file.
- MDL: Delete record from master file.
- MUP: Update record for master file.
- MDC: Deactivate; discontinue using record in master file, but do not delete from database.
- MAC: Reactivate deactivated record.

The MFD transaction is used for the following trigger event:

- MFA: Master Files Delayed Application Acknowledgment.

8.3 MESSAGES

The following messages are defined for master files transactions: MFN, master files notification; MFK, master files application acknowledgment; MFD, master files delayed application acknowledgment; and MFQ, master files query.

8.3.1 MFN/MFK - master files notification

The MFN transaction is defined as follows:

<u>MFN^M01-M06</u>	<u>Master File Notification</u>	<u>Chapter</u>
MSH	Message Header	2
MFI	Master File Identification	8
{MFE	Master File Entry	8
[Z..] }	One or more HL7 and/or Z-segments carrying the data for the entry identified in the MFE segment	(varies)

<u>MFK^M01-M06</u>	<u>Master File Application Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Acknowledgment	2
[ERR]	Error	2
MFI	Master File Identification	8
{ [MFA] }	Master file ACK segment	8

The master file record identified by the MFE segment is contained in either Z-segments and/or HL7-defined segments immediately following the MFE segment, and is denoted by “Z...” in the MFN abstract message definition given above. This record may be either a flat record contained in a single segment, or a complex record needing more than a single segment to carry its data and (usually hierarchical) structure.

The master file record “[Z..]” identified by the MFE segment is optional (indicated by square brackets) in the single case where the master file is a simple one which contains only a key and the text value of that key. For this case only, both values may be carried in *MFE-4-primary key value*.

Note: If the file-level event code is “REP” (replace file), then each MFA segment must have a record-level event code of “MAD” (add record to master file).

The MFK message is used for an application acknowledgment in either the original or enhanced acknowledgment modes.

The MFA segment carries acknowledgment information for the corresponding MFE segment (identified by *MFA-5-primary key value*).

8.3.2 MFD/ACK - master files delayed application acknowledgment

The MFD transaction is the delayed application acknowledgment. It can be used to return “deferred” application-level acknowledgment statuses at the MFE level, without reference to the original MFN message. It is defined as follows:

<u>MFD^MFA</u>	<u>Master File Delayed Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MFI	Master File Identification	8
{ [MFA] }	Master file ACK segment	8

<u>ACK^MFA</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Acknowledgment	2
[ERR]	Error	2

8.3.3 MFQ/MFR - master files query

The MFQ transaction allows a system to query for a particular record or group records (defined by the primary key) in a particular master file.

The Master files query is defined as follows:

<u>MFQ^M01-M06</u>	<u>Query for Master File Record</u>	<u>Chapter</u>
MSH	Message Header	2
QRD	Query Definition	2
[QRF]	Query Filter	2
[DSC]	Continuation	2

<u>MFR^M01-M06</u>	<u>Master Files Response</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Acknowledgment	2
[ERR]	Error	2
[QAK]	Query Acknowledgment	2
QRD	Query Definition	2
[QRF]	Query Filter	2
MFI	Master File Name	8
{MFE	Master File Entry	8
{Z..} }	One or more HL7 and/or Z-segments carrying the data for the entry identified in the MFE segment.	(varies)
[DSC]	Continuation	2

8.3.3.1 MFQ use notes

The value “MFQ” of the *QRD-what subject filter* of the QRD segment identifies a master files query. The *QRD-what department data code* of the QRD segment identifies the name of the master file in question. The *QRD-what data code value qual* of the QRD segment identifies the primary key (or keys, or range of keys) defining the master file MFE segments (and associated master file records, denoted by “Z”) to be returned with the response. The QRF segment may be used to define time ranges, particular MFN record-level event codes etc. Unless otherwise specified, the response returns only active current record(s).

8.4 GENERAL MASTER FILE SEGMENTS

The following segments are defined for the master files messages.

8.4.1 MFI - master file identification segment

The fields in the MFI segment are defined in *Figure 8-1 - MFI attributes*.

Figure 8-1. MFI attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	60	CE	R		0175	00658	Master File Identifier
2	180	HD	O			00659	Master File Application Identifier
3	3	ID	R		0178	00660	File-Level Event Code
4	26	TS	O			00661	Entered Date/Time
5	26	TS	O			00662	Effective Date/Time
6	2	ID	R		0179	00663	Response Level Code

8.4.1.0 MFI field definitions

8.4.1.1 Master file identifier (CE) 00658

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field is a CE data type that identifies a standard HL7 master file. This table may be extended by local agreement during implementation to cover site-specific master files (z-master files). Refer to *HL7 table 0175 - Master file identifier code* for valid values.

Table 0175 - Master file identifier code

Value	Description
CDM	Charge description master file
CMA	Clinical study with phases and scheduled master file
CMB	Clinical study without phases but with scheduled master file
LOC	Location master file
OMA	Numerical observation master file
OMB	Categorical observation master file
OMC	Observation batteries master file
OMD	Calculated observations master file
PRA	Practitioner master file
STF	Staff master file

8.4.1.2 Master files application identifier (HD) 00659

Components: <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field contains an optional code of up to 180 characters which (if applicable) uniquely identifies the application responsible for maintaining this file at a particular site. A group of intercommunicating applications may use more than a single instance of a master file of certain type (e.g., charge master or physician master). The particular instance of the file is identified by this field.

8.4.1.3 File-level event code (ID) 00660

Definition: This field defines the file-level event code. Refer to *HL7 table 0178 - File level event code* for valid values.

Table 0178 - File level event code

Value	Description
REP	Replace current version of this master file with the version contained in this message
UPD	Change file records as defined in the record-level event codes for each record that follows

8.4.1.4 Entered date/time (TS) 00661

Definition: This field contains the time stamp for file-level event on originating system.

8.4.1.5 Effective date/time (TS) 00662

Definition: This optional field contains the effective date/time, which can be included for file-level action specified. It is the date/time the originating system expects that the event is to have been completed on the receiving system. If this field is not present, the action date/time should default to the current date/time (when the message is received).

8.4.1.6 Response level code (ID) 00663

Definition: These codes specify the application response level defined for a given Master File Message at the MFE segment level as defined in *HL7 table 0179 - Response level*. Required for MFN-Master File Notification message. Specifies additional detail (beyond *MSH-15-accept acknowledgment type* and *MSH-16-application acknowledgment type*) for application-level acknowledgment paradigms for Master Files transactions. *MSH-15-accept acknowledgment type* and *MSH-16-application acknowledgment type* operate as defined in Chapter 2.

Table 0179 - Response level

Value	Description
NE	Never. No application-level response needed
ER	Error/Reject conditions only. Only MFA segments denoting errors must be returned via the application-level acknowledgment for this message
AL	Always. All MFA segments (whether denoting errors or not) must be returned via the application-level acknowledgment message
SU	Success. Only MFA segments denoting success must be returned via the application-level acknowledgment for this message

8.4.2 MFE - master file entry segment

Figure 8-2. MFE attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	3	ID	R		0180	00664	Record-Level Event Code
2	20	ST	C			00665	MFN Control ID
3	26	TS	O			00662	Effective Date/Time
4	200	Varies	R	Y		00667	Primary Key Value - MFE
5	3	ID	R	Y	0355	01319	Primary Key Value Type

8.4.2.0 MFE field definitions

8.4.2.1 Record-level event code (ID) 00664

Definition: This field defines the record-level event for the master file record identified by the MFI segment and the primary key field in this segment. Refer to *HL7 table 0180 - Record level event code* for valid values.

Table 0180 - Record-level event code

Value	Description
MAD	Add record to master file
MDL	Delete record from master file
MUP	Update record for master file
MDC	Deactivate: discontinue using record in master file, but do not delete from database
MAC	Reactivate deactivated record

Note: If the file-level event code is "REP" (replace file), then each MFE segment must have a record-level event code of "MAD" (add record to master file).

8.4.2.2 MFN control ID (ST) 00665

Definition: A number or other identifier that uniquely identifies this change to this record from the point of view of the originating system. When returned to the originating system via the MFA segment, this field allows the target system to precisely identify which change to this record is being acknowledged. It is only required if the MFI response level code requires responses at the record level (any value other than NE).

Note: Note that this segment does not contain a Set ID field. The *MFE-2-MFN control ID* implements a more general concept than the Set ID. It takes the place of the SET ID in the MFE segment.

8.4.2.3 Effective date/time (TS) 00662

Definition: An optional effective date/time can be included for the record-level action specified. It is the date/time the originating system expects that the event is to have been completed on the receiving system. If this field is not present, the effective date/time should default to the current date/time (when the message is received).

8.4.2.4 Primary key value - MFE (Varies) 00667

Definition: This field uniquely identifies the record of the master file (identified in the MFI segment) to be changed (as defined by the record-level event code). The data type of field is defined by the value of *MFE-5-value type*, and may take on the format of any of the HL7 data types defined in *HL7 table 0355 – Primary key value type*. The PL data type is used only on Location master transactions.

The following exception to the use of the CE data type is deprecated in v 2.3.1, and left only to satisfy backwards compatibility. When the CE data type is used, the first component of this CE data field carries an optional subcomponent, the application ID, that uniquely identifies the application responsible for creating the primary key value. The application ID subcomponent can be used to guarantee uniqueness of the primary key across multiple applications.

The repetition of the primary key permits the identification of an individual component of a complex record as the object of the record-level event code. This feature allows the Master Files protocol to be used for modifications of single components of complex records. If this field repeats, the field *MFE-5-value type* must also repeat (with the same number of repetitions), and the data type of each repetition of *MFE-4-primary key value type* is specified by the corresponding repetition of *MFE-5-value type*.

8.4.2.5 Primary key value type (ID) 01319

Definition: This field contains the HL7 data type of *MFE-4-primary key value*. The valid values for the data type of a primary key are listed in *HL7 table 0355 – Primary key value type*.

Table 0355 - Primary key value type

Value	Description
PL	Person location
CE	Coded element

8.4.3 MFA - master file acknowledgment segment

The MFA segment contains the following fields as defined in *Figure 8-3 - MFA attributes*.

Figure 8-3. MFA attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	3	ID	R		0180	00664	Record-Level Event Code
2	20	ST	C			00665	MFN Control ID
3	26	TS	O			00668	Event Completion Date/Time
4	60	CE	R		0181	00669	MFN Record Level Error Return
5	60	CE	R	Y		01308	Primary Key Value – MFA
6	3	ID	R	Y	0355	01320	Primary Key Value Type - MFA

8.4.3.0 MFA field definitions**8.4.3.1 Record-level event code (ID) 00664**

Definition: This field defines record-level event for the master file record identified by the MFI segment and the primary key in this segment. Refer to *HL7 table 0180 - Record level event code* for valid values.

8.4.3.2 MFN control ID (ST) 00665

Definition: This field contains a number or other identifier that uniquely identifies this change to this record from the point of view of the originating system. This field uniquely identifies the particular record (identified by the MFE segment) being acknowledged by this MFA segment. When returned to the originating system via the MFA segment, this field allows the target system to precisely identify which change to this record is being acknowledged. It is only required if *MFI-6-response level code* requires responses at the record level (any value other than NE).

8.4.3.3 Event Completion date/time (TS) 00668

Definition: This field may be required or optional depending on the site specifications for the given master file, master file event, and receiving facility.

8.4.3.4 MFN Record Level error return (CE) 00669

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the status of the requested update. Site-defined table, specific to each master file being updated via this transaction.

Refer to *user-defined table 0181 - MFN record level error return* for suggested values. All such tables will have at least the following two return code values:

User-defined Table 0181 - MFN record-level error return

Value	Description
S	Successful posting of the record defined by the MFE segment
U	Unsuccessful posting of the record defined by the MFE segment

8.4.3.5 Primary key value - MFA (CE) 01308

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field uniquely identifies the record of the master file (identified in the MFI segment) to be change status is being acknowledged (as defined by the field *MFN-4-record level error return*). The data type of this field is defined by the value of *MFA-6-value type-MFA*, and may take on the format of any of the HL7 data types defined in *HL7 table 0355 - Primary key value type*. The PL data type is used only on location master transactions.

The following exception to the use of the CE data type is deprecated in V2.3.1, and left in for backward compatibility. When the CE data type is used, the first component of this CE data field carries an optional subcomponent, the application ID, that uniquely defines the application responsible for creating the primary key value. The application ID subcomponents can be used to guarantee uniqueness of the primary key across multiple applications.

The repetition of the primary key permits the identification of an individual component of a complex record as the object of the record-level event code. This feature allows the Master Files protocol to be used for modifications of single components of complex records. If this field repeats, the field *MFA-6-primary key value type-MFA* must also repeat (with the same number of repetitions), and the data type of each repetition of *MFA-5-primary key value-MFA* is specified by the corresponding repetition of *MFA-6-value type-MFA*.

8.4.3.6 Primary key value type - MFA (ID) 01320

Definition: This field contains the HL7 data type of *MFA-5-primary key value-MFA*. The valid HL7 data types are listed in *HL7 table 0355 - Primary key value type*.

8.5 GENERIC MASTER FILE EXAMPLES

This is an example of a proposed generic method of updating a standard HL7 table. This particular example shows two records being added to *HL7 table 0006-Religion*.

Note: A standard HL7 table segment can be constructed by defining two fields: a table entry field (as a CE field) and a display-sort-key field (a numeric field) as follows.

8.5.1 ZL7 segment (proposed example only)

Figure 8-4. ZL7 attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	60	CE	R		Xxxx	xxxxx	HL7 table entry for table xxxx
2	3	NM	R		Xxxx	xxxxx	Display-sort-key

8.5.1.0 ZL7 field definitions

8.5.1.1 HL7 table entry for table xxxx (CE) xxxxx

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains HL7 table values for identifier and text encoded as a CE data type.

8.5.1.2 Display-sort-key (NM) xxxxx

Definition: This field is used to specify a non-alphabetic ordering for display or print versions of a standard HL7 table.

8.5.2 MFN message with original acknowledgment mode

```
MSH|^~\&|HL7REG|UH|HL7LAB|CH|19910918060544||MFN^MD1|MSGID002|P|2.3.1
MFI|0006^RELIGION^HL7||UPD||AL
MFE|MAD|199109051000|199110010000|U^Buddhist^HL7|CE
ZL7|U^Buddhist^HL7|3^^Sortkey
MFE|MAD|199109051015|199110010000|Z^Zen Buddhist^HL7|CE
ZL7|Z^Zen Buddhist^HL7|12^^Sortkey
```

In this case, the primary key contains all the data needed for this simple table, so that the HL7 segment could be constructed with ONLY the single field, “sort-key,” rather than repeating the primary key value as we have done in this example.

MFN, master file application acknowledgment, as original mode acknowledgment of the HL7 message according to MFI Response Level Code of “AL.”

```
MSH|^~\&|HL7LAB|CH|HL7ADT|UH|19910918060546||MFK|MSGID99002|P|2.3.1
MSA|AA|MSGID002
MFI|0006^RELIGION^HL7||UPD||AL
MFA|MAD|199109051000|19910918060545|S|U^Buddhist^HL7|CE
MFA|MAD|199109051015|19910918060545|S|Z^Zen Buddhist^HL7|CE
```

8.5.3 Enhanced mode application-level acknowledgment to the MFN message

8.5.3.1 Initial message with accept acknowledgment

```
MSH|^~\&|HL7REG|UH|HL7LAB|CH|19910918060544||MFN^MD1|MSGID002|P|2.3.1||AL|AL
MFI|0006^RELIGION^HL7||UPD||AL
MFE|MAD|199109051000|199110010000|U^Buddhist^HL7|CE
ZL7|U^Buddhist^HL7|3^^Sortkey
MFE|MAD|199109051015|199110010000|Z^Zen Buddhist^HL7|CE
ZL7|Z^Zen Buddhist^HL7|12^^Sortkey
```

```
MSH|^~\&|HL7LAB|CH|HL7ADT|UH|19910918060545||MSA|MSGID99002|P|2.3.1
MSA|CA|MSGID002
```

8.5.3.2 Enhanced mode application acknowledgment message

```
MSH|^~\&|HL7LAB|CH|HL7ADT|UH|19911001080504||MFK|MSGID99502|P|2.3.1||AL|
MSA|AA|MSGID002
MFI|0006^RELIGION^HL7||UPD||AL
MFA|MAD|199109051000|19910918010040|S|U^Buddhist^HL7|CE
MFA|MAD|199109051015|19910918010040|S|Z^Zen Buddhist^HL7|CE

MSH|^~\&|HL7ADT|UH|HL7LAB|CH|19911001080507||ACK|MSGID444|P|2.3.1
MSA|CA|MSGID5002
```

8.5.4 Delayed application-level acknowledgment

8.5.4.1 Initial message with accept acknowledgment

```
MSH|^~\&|HL7REG|UH|HL7LAB|CH|19910918060544||MFN^M01|MSGID002|P|2.3.1||AL|NE
MFI|0006^RELIGION^HL7||UPD|||AL
MFE|MAD|199109051000|199110010000|U^Buddhist^HL7
ZL7|U^Buddhist^HL7|3^^Sortkey
MFE|MAD|199109051015|199110010000|Z^Zen Buddhist^HL7
ZL7|Z^Zen Buddhist^HL7|12^^Sortkey
```

```
MSH|^~\&|HL7LAB|CH|HL7ADT|UH|19910918060545||ACK|MSGID99002|P|2.3.1
MSA|CA|MSGID002
```

8.5.4.2 Deferred application acknowledgment message

```
MSH|^~\&|HL7LAB|CH|HL7ADT|UH|19910919060545||MFD|MSGID99002|P|2.3.1||AL
MFI|0006^RELIGION^HL7||UPD|||AL
MFA|MAD|199109051000|19910919020040|S|U^Buddhist^HL7
MFA|MAD|199109051015|19910919020040|S|Z^Zen Buddhist^HL7
```

```
MSH|^~\&|HL7ADT|UH|HL7LAB|CH|19910919060546||ACK|MSGID444|P|2.3.1
MSA|CA|MSGID500
```

8.6 STAFF AND PRACTITIONER MASTER FILES

8.6.1 MFN/MFK - staff/practitioner master file message

The staff (STF) and practitioner (PRA) segments can be used to transmit master files information between systems. The STF segment provides general information about personnel; the PRA segment provides detailed information for a staff member who is also a health practitioner. Other segments may be defined to follow the STF segment to provide additional detail information for a particular type of staff member: the PRA segment is the first such segment. When the STF and PRA segments are used in an MFN message, the abstract definition is as follows:

<u>MFN^M01-M06</u>	<u>Master File Notification for Staff/Practitioner</u>	<u>Chapter</u>
MSH	Message Header	2
MFI	Master File Identification	8
{MFE	Master File Entry	8
STF	Staff Identification	8
[PRA]	Practitioner Detail	8
}		

<u>MFK^M01-M06</u>	<u>Master File Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Acknowledgment	2
MFI	Master File Identification	8
[{MFA}]	Master File ACK segment	8

When the STF and PRA segments are used in the MFR message, the part of the message represented by:

```
{MFE
```

{Z...}

is replaced by:

```
{MFE
 STF
 [PRA]
 }
```

8.6.2 STF - staff identification segment

The STF segment can identify any personnel referenced by information systems. These can be providers, staff, system users, and referring agents. In a network environment, this segment can be used to define personnel to other applications; for example, order entry clerks, insurance verification clerks, admission clerks, as well as provider demographics. *MFE-4-primary key value* is used to link all the segments pertaining to the same master file entry. Therefore, in the MFE segment, *MFE-4-primary key value* must be filled in. Other segments may follow the STF segment to provide data for a particular type of staff member. The PRA segment (practitioner) is one such. It may optionally follow the STF segment in order to add practitioner-specific data. Other segments may be defined as needed.

Figure 8-5. STF attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	60	CE	R			00671	Primary Key Value - STF
2	60	CX	O	Y		00672	Staff ID Code
3	48	XPN	O	Y		00673	Staff Name
4	2	IS	O	Y	0182	00674	Staff Type
5	1	IS	O		0001	00111	Sex
6	26	TS	O			00110	Date/Time Of Birth
7	1	ID	O		0183	00675	Active/Inactive Flag
8	200	CE	O	Y	0184	00676	Department
9	200	CE	O	Y	0069	00677	Hospital Service
10	40	XTN	O	Y		00678	Phone
11	106	XAD	O	Y		00679	Office/Home Address
12	26	CM	O	Y		00680	Institution Activation Date
13	26	CM	O	Y		00681	Institution Inactivation Date
14	60	CE	O	Y		00682	Backup Person ID
15	40	ST	O	Y		00683	E-Mail Address
16	200	CE	O		0185	00684	Preferred Method Of Contact
17	80	CE	O		0002	00119	Marital Status
18	20	ST	O			00785	Job Title
19	20	JCC	O		0327/ 0328	00786	Job Code/Class
20	2	IS	O		0066	01276	Employment Status
21	1	ID	O		0136	01275	Additional Insured on Auto
22	25	DLN	O			01302	Driver's License Number – Staff
23	1	ID	O		0136	01229	Copy Auto Ins
24	8	DT	O			01232	Auto Ins. Expires
25	8	DT	O			01298	Date Last DMV Review
26	8	DT	O			01234	Date Next DMV Review

8.6.2.0 STF field definitions

8.6.2.1 Primary key value - STF (CE) 00671

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field must match *MFE-4-primary key value* to identify which entry is being referenced.

8.6.2.2 Staff ID code (CX) 00672

Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility (HD)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains a personnel identification code or institution user number, used by the institution to identify this person. Repeating field allows multiple ID codes per person, with the type of ID code indicated in the third component of the coded entry data type.

8.6.2.3 Staff name (XPN) 00673

Components: <family name (ST)> & <last_name_prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <name type code (ID)> ^ <name representation code (ID)>

Definition: This field contains the staff person's name.

8.6.2.4 Staff type (IS) 00674

Definition: This field contains a code identifying what type of staff. *User-defined table 0182 - Staff type* is used as the HL7 identifier for the user-defined table of values for this field. Values may include codes for staff, practitioner (physician, nurse, therapist, etc.), referral agent or agency, etc.

8.6.2.5 Sex (IS) 00111

Definition: This field contains the staff person's sex. Refer to *user-defined table 0001 - Sex* for suggested values.

8.6.2.6 Date/time of birth (TS) 00110

Definition: This field contains a staff member's date and time of birth.

8.6.2.7 Active/inactive flag (ID) 00675

Definition: This field indicates whether person is currently a valid staff member. Refer to *HL7 table 0183 - Active/inactive* for valid values.

Table 0183 - Active/inactive

Value	Description
A	Active Staff
I	Inactive Staff

8.6.2.8 Department (CE) 00676

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the institution department to which this person reports or belongs. *User-defined table 0184 - Department* is used as the HL7 identifier for the user-defined table of values for this field. .

8.6.2.9 Service (CE) 00677

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the hospital or ancillary service with which this staff person is associated. *User-defined table 0069 - Hospital service* is used as the HL7 identifier for the user-defined table of values for this field.

8.6.2.10 Phone (XTN) 00678

Components: [NNN] [(999)]999-9999 [X99999] [B99999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <county code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Definition: This field contains the staff person's phone number. This is a repeating field with a component for indicating which phone number is which. It is recommended that the last part of the XTN, [C any text], start with a code from the table associated below with *STF-16-preferred method of contact*, in order to indicate the type of each phone number in this repeating field.

8.6.2.11 Office/home address (XAD) 00679

Components: <street address (ST)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code (ST)> ^ <country (ID)> ^ <address type (ID)> ^ <other geographic designation (ST)> ^ <county/parish code (IS)> ^ <census tract (IS)> ^ <address representation code (ID)> ^ <address representation code (ID)>

Definition: This field contains the office address and home address of the staff person. This is a repeating field.

8.6.2.12 Institution activation date(CM) 00680

Components: <date (TS)> ^ <institution name (CE)>

Subcomponents for institution name: <identifier (ST)> & <text (ST)> & <name of coding system (ST)> & <alternate identifier (ST)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Definition: This field contains the date when staff became active for an institution. Repeats.

8.6.2.13 Institution Inactivation date (CM) 00681

Components: <date (TS)> ^ <institution name (CE)>

Subcomponents for institution name: <identifier (ST)> & <text (ST)> & <name of coding system (ST)>
& <alternate identifier (ST)> & <alternate text (ST)> & <name of alternate coding
system (ST)>

Definition: This field contains the date when staff became inactive for an institution. Repeats.

8.6.2.14 Backup person ID (CE) 00682

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the *MFE-4-primary key value* of the master file entry which corresponds to the designated backup person for this staff person.

8.6.2.15 E-mail address (ST) 00683

Definition: ***This field has been retained for backward compatibility.*** (It is now present in the fourth component of *STF-10-phone*).

8.6.2.16 Preferred method of contact (CE) 00684

Definition: This field indicates which of a group of multiple phone numbers is the preferred method of contact for this person. Note that all values of this code refer to this segment's phone field, except for the value "E," which refers to the E-mail address field. If more than one phone number of the preferred type exists in *STF-10-phone*, this field refers to the first such instance. Refer to *HL7 table 0185 - Preferred method of contact* for valid values.

Table 0185 - Preferred method of contact

Value	Description
H	Home Phone Number
O	Office Phone Number
F	FAX Number
C	Cellular Phone Number
B	Beeper Number
E	E-Mail Address (for backward compatibility)

8.6.2.17 Marital status (CE) 00119

Definition: This field contains the staff member's marital status. Refer to *user-defined table 0002 - Marital status* for suggested values. Same values as those for *PID-16-marital status*.

8.6.2.18 Job title (ST) 00785

Definition: This field contains a descriptive name of the staff member's occupation (e.g., Sr. Systems Analyst, Sr. Accountant).

8.6.2.19 Job code/class (JCC) 00786

Components: <job code (IS)> ^ <job class (IS)>

Definition: This field contains the staff member's job code and employee classification. *User-defined table 0327 - Job code* and *User-defined table 0328 - Employee classification*. are used as the HL7 identifiers for the user-defined table of values for this field.

8.6.2.20 Employment status (IS) 01276

Definition: This field contains the code that indicates the staff member's employment status, e.g., full-time, part-time, self-employed, etc. *User-defined table 0066 - Employment status* for suggested values is used as the HL7 identifier for the user-defined table of values for this field.

8.6.2.21 Additional insured on auto (ID) 01275

Definition: This field contains an indicator for whether the present institution is named as an additional insured on the staff member's auto insurance, especially for use when staff is a driver for the institution. Refer to *HL7 table 0136 - Yes/no indicator* for valid values.

Y indicates that the institution is named as an additional insured

N indicates that the institution is not named as an additional insured

8.6.2.22 Driver's license number - staff (DLN) 01302

Components: <license number (ST)> ^ <issuing state, province, country (IS)> ^ <expiration date (DT)>

Definition: This field contains the driver's license information of staff, especially for use when staff is a driver for the institution. For state or province refer to official postal codes for that country; for country refer to ISO 3166 for codes.

8.6.2.23 Copy auto ins (ID) 01229

Definition: This field contains an indicator for whether the institution has on file a copy of the staff member's auto insurance, especially for use when staff is a driver for the institution. Refer to *HL7 table 0136 - Yes/no indicator* for valid values.

Y indicates that the institution has a copy on file

N indicates that the institution does not have a copy on file

8.6.2.24 Auto ins. expires (DT) 01232

Definition: This field contains the date on which the staff member's driver's license expires, especially for use when staff is a driver for the institution.

8.6.2.25 Date last DMV review (DT) 01298

Definition: This field contains the date of the staff member's most recent Department of Motor Vehicles review, especially for use when staff is a driver for the institution.

8.6.2.26 Date next DMV review (DT) 01234

Definition: This field contains the date of the staff member's next Department of Motor Vehicles review, especially for use when staff is a driver for the institution.

8.6.3 PRA - practitioner detail segment

The PRA segment adds detailed medical practitioner information to the personnel identified by the STF segment. A PRA segment may optionally follow an STF segment. A PRA segment must always have been preceded by a corresponding STF segment. The PRA segment may also be used for staff who work in healthcare who are not practitioners, but need to be certified, e.g., "medical records staff."

Figure 8-6. PRA attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	60	CE	R			00685	Primary Key Value - PRA
2	60	CE	O	Y	0358	00686	Practitioner Group
3	3	IS	O	Y	0186	00687	Practitioner Category
4	1	ID	O		0187	00688	Provider Billing
5	100	CM	O	Y	0337	00689	Specialty
6	100	CM	O	Y	0338	00690	Practitioner ID Numbers
7	200	CM	O	Y		00691	Privileges
8	8	DT	O			01296	Date Entered Practice

8.6.3.0 PRA field definitions

8.6.3.1 Primary key value - PRA (CE) 00685

Definition: This field must match *MFE-4-primary key value*, to identify which entry is being referenced.

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

8.6.3.2 Practitioner group (CE) 00686

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the name and/or code of a group of practitioners to which this practitioner belongs. *User-defined table 0358 Practitioner group* is used as the HL7 identifier for the user-defined table of values for this field.

8.6.3.3 Practitioner category (IS) 00687

Definition: This field contains the category of practitioner. *User-defined table 0186 - Practitioner category* is used as the HL7 identifier for the user-defined table of values for this field whose values may include codes for staff physician, courtesy physician, resident, physician assistant, physical therapist, psychiatrist, psychologist, pharmacist, registered nurse, licensed practical nurse, licensed vocational nurse, nurse practitioner, etc.

8.6.3.4 Provider billing (ID) 00688

Definition: This field indicates how provider services are billed. Refer to *HL7 table 0187 - Provider billing* for valid values.

Table 0187 - Provider billing

Value	Description
P	Provider does own billing
I	Institution bills for provider

8.6.3.5 Specialty (CM) 00689

Components: <specialty name (ST)> ^ <governing board (ST)> ^ <eligible or certified (ID)> ^ <date of certification (DT)>

Definition: This repeating field is made up of multiple components to record the practitioner's specialties. The multiple components of each specialty are: (1) specialty name or abbreviation, identifies provider's specialty, (2) name of specialty governing board, (3) Certification Status, (4) certified date contains the date of certification, if certified.

Table 0337 - Certification status

Value	Description
E	Eligible
C	Certified

8.6.3.6 Practitioner ID numbers (CM) 00690

Components: <ID number (ST)> ^ <type of ID number (IS)> ^ <state/other qualifying info (ST)> ^ <expiration date>

Definition: This repeating field contains this practitioner's license numbers and other ID numbers. This is a field made up of the following components: (1) the ID number, and (2) the type of number, and optionally (3) the state or province in which it is valid, if relevant, or other qualifying information. It is recommended that state qualifications use the abbreviations from the postal service of the country. The practitioner ID number type (component 2) is a user-defined table (table 0338).

User-defined Table 0338 - Practitioner ID number type

Value	Description
UPIN	Unique physician ID no.
SL	State license number
MCD	Medicaid number
GL	General ledger number
CY	County number
TAX	Tax ID number
DEA	Drug Enforcement Agency no.
MCR	Medicare number
L&I	Labor and industries number
QA	QA number
TRL	Training license number

8.6.3.7 Privileges (CM) 00691

Components: <privilege (CE)> & <privilege class (CE)> ^ <expiration date (DT)> ^ <activation date (DT)> ^ <facility (EI)>

Subcomponents for privilege: < identifier (ID)> & <text (ST)> & <name of coding system (ST)> & <alternate identifier (ID)> & <text (ST)> & <name of alternate coding system(ST)>

Subcomponents for privilege class: < identifier (ID)> & <text (ST)> & <name of coding system (ST)> & <alternate identifier (ID)> & <text (ST)> & <name of alternate coding system(ST)>

Subcomponents for facility: < entity identifier (ST)> & <namespace ID (IS)> & <universal ID> & <universal ID type (ID)>

Definition: This field contains the institutional privileges which this provider may exercise. Depends upon institutional needs. For example, admit, transfer, discharge, place orders, verify orders, review results, etc. Can also be used for privileges other than patient services. This is a repeating field, with each privilege made up of the following components: (1) privilege; (2) privilege class; (3) privilege expiration date, if any; (4) privilege activation date, if any, and (5) facility. Note that the privilege and privilege class components are CE data types, and thus they are encoded with the subcomponent delimiter (&) rather than the component delimiter (^). The facility component is an EI data type specifying the facility to which the privilege applies and is encoded with the subcomponent delimiter (&) rather than the component delimiter (^).

8.6.3.8 Date entered practice (DT) 01296

Definition: This field contains the date the practitioner began practicing at the present institution (e.g., at hospital, at physician organization, at managed care network).

8.6.4 Example: doctor master file MFN message

```
MSH|^~\&|HL7REG|UH|HL7LAB|CH|19910918060544||MFN^MD2|MSGID002|P|2.3.1||AL|NE
MFI|0004^DOCTOR^HL7||UPD||AL
MFE|MAD|U2246|199110011230|PMF98123789182^^PLW
STF|PMF98123789182^^PLW|U2246^^^PLW-111223333^^^USSA^SS|KILDARE^RICHARD^J^JR^DR^M.D.
|P|M|19511004|A|^ICU|^MED|(206)689-1999X345C0~(206)283-3334CH(206)689-
1345X789CB|214JOHNSON ST^SUITE 200^SEATTLE^WA^98199^H-3029 24TH AVE W^SEATTLE,
WA^98198^O|19890125^UMC&University Medical
Center&L01|PMF88123453334|74160.2326@COMPUSERV.COM|B
PRA|PMF98123789182^^PLW|^KILDARE FAMILY PRACTICE|ST|I|OB/GYN^STATE BOARD OF
OBSTETRICS AND
GYNECOLOGY^C^19790123|1234887609^UPIN~1234987^CTY^MECOSTA~223987654^TAX~123498775
7^DEA~12394433879^MDD^CA|ADM T&ADT^MED&L2^19941231~DISCH&ADT^MED&L2^19941231|
```

8.7 TEST/OBSERVATIONS MASTER FILES

8.7.1 General approach of test/observation master files

These segments define the format for the general information about the observations that a clinical or diagnostic service produces and sends to its “clients.” This format can be used to send the producer’s entire test/observation definition or a few of the producer’s observations, such as those with procedure, technique, or interpretation changes.

In anticipation of an object-oriented organization of segments in future releases of this Standard, the attributes of observations/batteries have been grouped into six different segments:

OM1 contains the attributes that apply to all observations

OM2 applies to numerically-valued observations

OM3 applies to text or code-valued observations

OM4 applies to observations or batteries that require specimens

OM5 contains the attributes of batteries, or sets of observations or other batteries

OM6 contains the quantities (observations in a most general sense) that are calculated from one or more other observations

Thus, the full definition of a numerically-valued laboratory observation would require the transmission of OM1, OM2, and OM4.

In the following discussion, we use OMx to refer to any of the six observation-defining segments. Each instance of an OMx segment contains the information about one observation or observation battery. These OMx segments are designed to be “inclusive” and accommodate the attributes of many kinds of observations. Thus, the fact that a field is listed in a particular segment should not be construed as meaning that a producer must include information about that item in its definition transmission. Many fields will apply to some terms; others will not. One observation producer may choose to populate one set of fields; another may choose to populate a different set of fields, according to the requirements of that producer’s “client.”

Most of the fields of data type TX in those segments are intended to include information typically contained in a diagnostic service’s user manual. Such fields should describe how the data is to be interpreted or used, and are not intended for computer interpretation.

Remember that the magnitude of a treatment can also be regarded as an observation and, as such, can be represented as an observation within these segments. Many examples exist. When a blood gas is transmitted, the requesting service usually transmits the amount of inspired O₂ (a treatment) on requisition. (In an electronic transmission, the service would send this as an OBX segment, along with the electronic order for the test.) When blood levels are drawn, the amount and time of the last dose are routinely included as observations on the request for service. A pharmacy system could routinely send to a medical record system the average daily dose of each outpatient medication it dispenses. In such cases, the treatment amounts would be observations to the receiving system and would be transmitted as OBX segments. When received, they would be treated like any other observation. A medical record system could then create, for example, a flowchart of lab results, or lab results mixed with relevant treatments.

8.7.2 MFN/MFR - test/observation master file

The usage of the OMx segments in the Master Files MFN and MFR messages is described in Sections 8.3.1, “MFN/MFK - master files notification,” and 8.3.3, “MFQ/MFR - master files query,” above. Basically the segment groupings described below follow the MFI and MFE segments in those messages (replacing the [Z...] section as follows:

<u>MFN^M03</u>	<u>Master File Notification</u>	<u>Chapter</u>
MSH	Message Header	2
MFI	Master File Identification	8
{MFE	Master File Entry	8
OM1	General Segment (Fields That Apply to Most Observations)	8
???	[other segments(s)]	
}		

where *other segments* can be any of the following combinations:

MFI-1-master file identifier = OMA, for numeric observations (second component of *MSH-9-message type* = M08).

```
[
  [OM2]      Numeric Observation Segment
  [OM3]      Categorical Test/Observation Segment
  [OM4]      Observations that Require Specimens
]
```

or

MFI-1-master file identifier = OMB, for categorical observations (second component of *MSH-9- message type* = M09).

```
[OM3      Categorical Test/Observation Segment
  [{OM4}]  Observations that Require Specimens
]
```

or

MFI-1-master file identifier = OMC, for observation batteries (second component of *MSH-9-message type* = M10).

```
[OM5      Observation Batteries
  [{OM4}]  Observations that Require Specimens
]
```

or

MFI-1-master file identifier = OMD, calculated observations (second component of *MSH-9-message type* = M11).

```
[OM6      Observations Calculated from Other Observations
  OM2]     Numeric Observation Segment
]
```

Note: A test/observation definition may have both an OM2 (numeric) and OM3 (categorical) segment included in case the value may be either numeric and/or categorical.

8.7.3 OM1 - general segment (fields that apply to most observations)

The OM1 segment contains the attributes that apply to the definition of most observations. This segment also contains the field attributes that specify what additional segments might also be defined for this observation.

Figure 8-7. OM1 attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	NM	R			00586	Sequence Number – Test/Observation Master File
2	200	CE	R			00587	Producer's Test/Observation ID
3	12	ID	O	Y	0125	00588	Permitted Data Types
4	1	ID	R		0136	00589	Specimen Required
5	200	CE	R			00590	Producer ID
6	200	TX	O			00591	Observation Description
7	200	CE	O			00592	Other Test/Observation IDs for the Observation
8	200	ST	R	Y		00593	Other Names
9	30	ST	O			00594	Preferred Report Name for the Observation
10	8	ST	O			00595	Preferred Short Name or Mnemonic for Observation
11	200	ST	O			00596	Preferred Long Name for the Observation
12	1	ID	O		0136	00597	Orderability
13	60	CE	O	Y		00598	Identity of Instrument Used to Perform this Study
14	200	CE	O	Y		00599	Coded Representation of Method
15	1	ID	O		0136	00600	Portable
16	1	CE	O	Y		00601	Observation Producing Department/Section
17	40	XTN	O			00602	Telephone Number of Section
18	1	IS	R		0174	00603	Nature of Test/Observation
19	200	CE	O			00604	Report Subheader
20	20	ST	O			00605	Report Display Order
21	26	TS	O			00606	Date/Time Stamp for any change in Definition for the Observation
22	26	TS	O			00607	Effective Date/Time of Change
23	20	NM	O			00608	Typical Turn-Around Time
24	20	NM	O			00609	Processing Time
25	40	ID	O	Y	0168	00610	Processing Priority
26	5	ID	O		0169	00611	Reporting Priority
27	200	CE	O	Y		00612	Outside Site(s) Where Observation may be Performed
28	1000	XAD	O	Y		00613	Address of Outside Site(s)
29	400	XTN	O			00614	Phone Number of Outside Site
30	1	IS	O		0177	00615	Confidentiality Code
31	200	CE	O			00616	Observations Required to Interpret the Obs
32	64K	TX	O			00617	Interpretation of Observations
33	64K	CE	O			00618	Contraindications to Observations
34	200	CE	O	Y		00619	Reflex Tests/Observations
35	80	TX	O			00620	Rules that Trigger Reflex Testing
36	64K	CE	O			00621	Fixed Canned Message
37	200	TX	O			00622	Patient Preparation
38	200	CE	O			00623	Procedure Medication

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
39	200	TX	O	Y		00624	Factors that may Effect the Observation
40	60	ST	O			00625	Test/Observation Performance Schedule
41	64K	TX	O			00626	Description of Test Methods
42	60	CE	O			0254 00937	Kind of Quantity Observed
43	60	CE	O			0255 00938	Point Versus Interval
44	200	TX	O			0256/0257 00939	Challenge Information
45	200	CE	O			0258 00940	Relationship Modifier
46	200	CE	O			00941	Target Anatomic Site Of Test
47	200	CE	O			0259 00942	Modality Of Imaging Measurement

8.7.3.0 OM1 field definitions

8.7.3.1 Sequence number – test/observation master file (NM) 00586

Definition: This field contains the first OM1 segment in a message and is described as 1, the second as 2, and so on.

8.7.3.2 Producer's test/observation ID (CE) 00587

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the producer's usual or preferred identification of the test or observation. Only three components should be included: <ID code>^<service text name/description>^<source list of code>. All components should be non-null. The source list may be any of those included in ASTM Tables 3 and 5, or a local code.

8.7.3.3 Permitted data types (ID) 00588

Definition: This field contains the allowed data type(s) for this observation. The codes are the same as those listed for OBX (a given observation may, under different circumstances, take on different data types). Indeed, under limited circumstances, an observation can consist of one or more fragments of different data types. When an observation may have more than one data type, e.g., coded (CE) and numeric (NM) the allowable data types should be separated by repeat delimiters. Refer to *HL7 table 0125 - Value type* for valid values.

8.7.3.4 Specimen required (ID) 00589

Definition: This field contains a flag indicating whether or not at least one specimen is required for the test/observation. Refer to *HL7 table 0136 - Yes/no indicator* as defined in Chapter 2.

Y one or more specimens are required to obtain this observation

N a specimen is not required

When a specimen is required, segment OM4 will usually be included (one per specimen is required).

8.7.3.5 Producer ID (CE) 00590

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field uniquely identifies the service producing the observation described in this segment. Three components should be included: an identifying code, the name of the producer, and the identity of the coding system (e.g., 323-5678^Acme Special Lab^MC). The identity of the coding system will usually be MC (Medicare provider number or HIBCC site codes) in the United States. Each country may want to specify its preferred coding system and define a coding system ID to identify it.

Remember that the magnitude of a treatment or the setting on a machine, such as a ventilator, can be regarded as an observation. Thus, pharmacy, respiratory care, and nursing may be producers of such observations.

8.7.3.6 Observation description (TX) 00591

Definition: This field contains a text description of this observation.

8.7.3.7 Other test/observation IDs for the observation (CE) 00592

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains all alias codes/identifiers for this observation. If more than one alias code needs to be specified, multiple three-component, CE-format entries (<code 1>^<name 1>^<code system 1>) may be given, separated by repeat delimiters. An observation may have as many names/codes as are applicable (e.g., ICD9, ACR-NEMA, SNOMED, and READ). We encourage the inclusion of as many different codes as may apply to assist cross-system mapping of terminology. All components of each triplet should be non-null (that is, names and coding system IDs within the CE data type are required in addition to codes). The source list may be any of those included in ASTM Tables 3 and 5.

Because the size (dose) of a treatment can also be an observation, codes that identify treatments (e.g., NDC, ICCS) may also be included in this field.

Note: In this field, the names within the CE data type are required.

8.7.3.8 Other names (recognized by the producer for the observation) (ST) 00593

Definition: This field contains any test aliases or synonyms for the name in the context of the ordering service. These are alternative names, not associated with a particular coding system, by which the battery, test, or observation (e.g., measurement, test, diagnostic study, treatment) is known to users of the system. Multiple names in this list are separated by repeat delimiters.

8.7.3.9 Preferred report name for the observation (ST) 00594

Definition: This field contains the preferred name for reporting the observation or battery. The name can contain up to 30 characters (including blanks). It is the preferred name for columnar reports that require a maximum name size.

8.7.3.10 Preferred short name or mnemonic for the observation (ST) 00595

Definition: This field contains the name that can be used in space-limited reports (e.g., specimen labels) to identify the observation for the convenience of human readers. The name can contain up to eight characters.

8.7.3.11 Preferred long name for the observation (ST) 00596

Definition: This field contains the fully-specified name for the observation or battery. It may include the full (unabbreviated) multiple-word names and contain up to 200 characters. It should be as scientifically precise as possible.

8.7.3.12 Orderability (ID) 00597

Definition: This field indicates whether or not a test/observation is an orderable code. Refer to *HL7 table 0136 - Yes/no indicator* for valid values.

Y the test/observation is an orderable code

N the test/observation is not orderable

For example, blood differential count is usually an orderable “test,” MCV, contained within the differential count, is usually not independently orderable.

8.7.3.13 Identity of Instrument used to perform this study (CE) 00598

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: When applicable, this field identifies the instrument or device that is used to generate this observation or battery. Examples are the automated instrument in the laboratory, the imaging device and model number in radiology, and the automatic blood pressure machine on the ward. The instrument is specified as a coded entry in anticipation that these identifiers could be specified as codes. Initially, we expect that most of the information about devices will be transmitted as text in the second component of the CE identifier. If more than one kind of instrument is used, all of them can be listed, separated by repeat delimiters.

8.7.3.14 Coded representation of method (CE) 00599

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the method(s) used to produce the observation and should be recorded in a computer-understandable (coded) form here. This field should report the same method(s) reported in narrative in the following field. More than one method may be listed, but only if they produce results that are clinically indistinguishable. Multiple methods must be separated by repeat delimiters.

8.7.3.15 Portable (ID) 00600

Definition: This field indicates whether or not a portable device may be used for the test/observation. Refer to *HL7 table 0136 - Yes/no indicator* for valid values.

Y the observation can be obtained with a portable device brought to the patient

N the patient or specimen must be transported to the device

8.7.3.16 Observation producing department/section (CE) 00601

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field permits the sorting of observation orders and values by the providing service's department/section. It provides “source oriented” reporting when required. The codes for this field should be taken from ASTM Table 15 (Diagnostic Service Codes). Free text may be used instead of these codes, but in that case, they should be recorded as the second “component” of the field to distinguish them from the standard codes. Multiple codes in this field are separated by repeat delimiters.

8.7.3.17 Telephone number of section (XTN) 00602

Definition: This field contains the telephone number for calling responsible parties in this section to ask results or advice about the use of this test.

8.7.3.18 Nature of test/observation (IS) 00603

Definition: This field indicates whether the definition entry identifies a test battery, an entire functional procedure or study, a single test value (observation), multiple test batteries or functional procedures as an orderable unit (profile), or a single test value (observation) calculated from other independent observations. Refer to *user-defined table 0174 - Nature of test/observation* for suggested values.

User-defined Table 0174 - Nature of test/observation

Value	Description
P	Profile or battery consisting of many independent atomic observations (e.g., SMA12, electrolytes), usually done at one instrument on one specimen
F	Functional procedure that may consist of one or more interrelated measures (e.g., glucose tolerance test, creatine clearance), usually done at different times and/or on different specimens
A	Atomic test/observation (test code or treatment code)
S	Superset--a set of batteries or procedures ordered under a single code unit but processed as separate batteries (e.g., routines = CBC, UA, electrolytes) This set indicates that the code being described is used to order multiple test/observation batteries. For example, a client who routinely orders a CBC, a differential, and a thyroxine as an outpatient profile might use a single, special code to order all three test batteries, instead of having to submit three separate order codes.
C	Single observation calculated via a rule or formula from other independent observations (e.g., Alveolar--arterial ratio, cardiac output)

Codes P, F, and S identify sets (batteries) and should be associated with an OM5 segment that defines the list of elements. The definitions for the contained elements would have to be sent in other independent OMx segments, one for each contained element. In the ASTM context, most text reports--such as discharge summaries, admission H&Ps, and chest X-ray reports--are considered as sets, in which each section of the report (e.g., description, impression, and recommendation of an X-ray report) is considered a separate observation.

Code A identifies a single direct observation and would usually be associated with an OM2 and/or OM3 segments.

Code C identifies a derived quantity and would usually be associated with an OM6 segment.

All of these codes can be associated with one or more OM4 (specimen) segments.

8.7.3.19 Report subheader (CE) 00604

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains an optional string that defines the preferred header under which this observation should be listed on a standard display. For example, if the test is hemoglobin, this string might be "Complete blood count." It is represented as a coded data type so that a battery can be a header. Only the description part of the string may be included in case the subheader does not have an associated code. When a series of observations is displayed according to the sort order given below, the subheader that groups those observations is presented whenever the subheader changes.

8.7.3.20 Report display order (ST) 00605

Definition: This field contains an optional string that defines the sort order in which this observation is presented in a standard report or display that contains the many observations.

8.7.3.21 Date/time stamp for any change in definition for the observation (TS) 00606

Definition: This field contains the date and time that the last of any field change was made and in the host's record corresponding to the OM1 segment.

8.7.3.22 Effective date/time of change . (TS) 00607

Definition: This field contains the date and time of the last change in the test procedure that would make previous results incompatible with new results, e.g., the last time that normal reference range or units changed for a numeric test/observation.

We strongly suggest that observation producers never use the same observation ID when the measurement procedures change in such a way that results produced under the new procedure are clinically different from those produced with the old procedure. Rather, the producer should try to adjust the new procedure so that its values are clinically indistinguishable from the old. Failing that, one should create a new observation ID for the observation produced under the new procedure.

In the rare circumstances when a procedure change occurs and neither of the above two options is viable, this field shall be used to transmit the effective date/time of the new procedure. The receiving system shall assume that any values that come across under this observation ID are under the new procedure after this date and take appropriate steps to distinguish the old from the new observations.

This number is included to provide a means of communicating with the observation producing service when they have questions about particular observations or results.

8.7.3.23 Typical turn-around time (NM) 00608

Definition: This field contains the typical processing time for single test/observation. This field indicates the time from the delivery of a specimen or transport of a patient to a diagnostic service and the completion of the study. It includes the usual waiting time. The units are measured in minutes.

8.7.3.24 Processing time (NM) 00609

Definition: This field contains the usual length of time (in minutes) between the start of a test process and its completion.

8.7.3.25 Processing priority (ID) 00610

Definition: This field contains one or more available priorities for performing the observation or test. This is the priority that can be placed in *OBR-27-quantity/timing*. For tests that require a specimen, this field may contain two components in the format <specimen priority>^<processing priority>. The first component in this case indicates the priority with which the specimen will be collected and is the priority that is specified in an OBR segment when ordering the observation. The second component indicates the corresponding priority with which the producer service will process the specimen, produce the observation, and return results, when this differs from collection priority. Refer to *HL7 table 0168 - Processing priority* for valid values.

Table 0168 - Processing priority

Value	Description
S	Stat (do immediately)
A	As soon as possible (a priority lower than stat)
R	Routine
P	Preoperative (to be done prior to surgery)
T	Timing critical (do as near as possible to requested time)
C	Measure continuously (e.g., arterial line blood pressure)
B	Do at bedside or portable (may be used with other codes)

The priority for obtaining the specimen is included in OM4. Multiple priorities may be given, separated by repeat delimiters. For example, S~A~R~P~T indicates that the test may be ordered using codes S, A, R, P, or T.

8.7.3.26 Reporting priority (ID) 00611

Definition: This field contains the available priorities reporting the test results when the user is asked to specify the reporting priority independent of the processing priority. Refer to *HL7 table 0169 - Reporting priority* for valid values.

Table 0169 - Reporting priority

Value	Description
C	Call back results
R	Rush reporting

8.7.3.27 Outside site(s) where observation may be performed (CE) 00612

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the identification(s) of the outside service(s) that produce(s) the observation. The format of this CE field uses the producer ID (as defined in *OM1-5-producer ID*) and the name of the service separated by component delimiters. An example is 39221^ACME lab^MC. If multiple services are used, they should be separated by repeat delimiter(s).

8.7.3.28 Address of outside site(s) (XAD) 00613

Components: <street address (ST)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code (ST)> ^ <country (ID)> ^ <address type> (ID)> ^ <other geographic designation (ST)> ^ <country/parish code (IS)> ^ <census tract (S)> ^ <address representation code (ID)>

Definition: This field contains the address of the outside services listed in *OM1-28-address of outside site(s)* where observation may be performed. If multiple services are recorded in that field, their addresses should be separated by repeat delimiters, and the addresses should appear in the same order in which the services appear in the preceding field.

8.7.3.29 Phone number of outside site (XTN) 00614

Components: [NNN] [(999)]999-9999 [X99999] [B99999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <county code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Definition: This field contains the telephone number of the outside site.

8.7.3.30 Confidentiality code (IS) 00615

Definition: This field contains the degree to which special confidentiality protection should be applied to the observation. For example, a tighter control may be applied to an HIV test than to a CBC. Refer to *user-defined table 0177 - Confidentiality code* for suggested values.

User-defined Table 0177 - Confidentiality code

Value	Description
V	Very restricted
R	Restricted

Value	Description
U	Usual control
EMP	Employee
UWM	Unwed mother
VIP	Very important person or celebrity
PSY	Psychiatric patient
AID	AIDS patient
HIV	HIV(+) patient
ETH	Alcohol/drug treatment patient

8.7.3.31 Observations required to interpret this observation (CE) 00616

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the list of variables that the diagnostic service needs to interpret the results of an ordered study. The observations specified here should be sent to the diagnostic service as OBX segments along with the order (OBR) segment.

Example for cervical pap smear:

2000.32^date last menstrual period^AS4~2000.33^menstrual state^AS4

Example for arterial blood gas:

94700^inspired O2^AS4

These examples use AS4 codes in code/text format to identify the variables. Separate multiple items by repeat delimiters.

8.7.3.32 Interpretation of observations (TX) 00617

Definition: This field contains the clinical information about interpreting test results. Examples are the conditions (drugs) that may cause false abnormal, and the information about the sensitivity and specificity of the test for diagnoses.

8.7.3.33 Contraindications to observations (CE) 00618

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the diagnosis or problem for which the test is a contraindication or of possible danger (e.g., pacemaker, pregnancy, diabetes). For example, if the test identified in OM1 was an intravenous pyelogram, this field would include warnings about the use of contrast media in diabetes. The contraindication diagnoses should be separated by repeat delimiters.

Most contraindication rules will be transmitted as free text. In such cases, the contents serve only as information for human reading. However, an alternative for machine readable contraindication rules also exists. The rule may be defined formally in the Arden Syntax (ASTM 1460-1992) which has syntax for defining algebraic and transcendental equations, as well as temporal and logical selection criteria based on patient information stored in the computer record. Reflex rules that are written in Arden Syntax should begin and end with a double semi-colon (;:), the Arden slot delimiter.

8.7.3.34 Reflex tests/observations (CE) 00619

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the test names as type CE (i.e., <code>^<text name>^<coding system>) that may be ordered automatically by the diagnostic service, depending on the results obtained from the ordered battery. A screening CBC might trigger a reticulocyte count if the Hgb is less than 12. Multiple reflex tests are separated by repeat delimiters.

8.7.3.35 Rules that trigger reflex testing (TX) 00620

Definition: This field contains the rules that trigger the reflex tests listed above. If multiple reflex tests are listed in *OMI-34-reflex tests/observations* separated by repeat delimiters, a set of corresponding rules will be included in this section. The first rule will apply to the first test, the second to the second test, and so on.

Most reflex rules will usually be transmitted as free text. In such cases, the contents serve only as information for human reading. However, an alternative for machine readable rules also exists. The rule may be defined formally in the Arden Syntax (ASTM 1460-1992) which has syntax for defining algebraic and transcendental equations, as well as temporal and logical selection criteria based on patient information stored in the computer record. Reflex rules that are written in Arden Syntax should begin and end with a double semi-colon (;), the Arden slot delimiter.

8.7.3.36 Fixed canned message (CE) 00621

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the codes and a fixed text message that is always associated with an abbreviation. The field may include multiple messages separated by repeat delimiters.

Most rules about patient testing will be transmitted as free text. In such cases, the contents serves only as information for human reading. However, an alternative for machine readable rules also exists. The rule may be defined formally in the Arden Syntax (ASTM 1460-1992) which has syntax for defining algebraic and transcendental equations, as well as temporal and logical selection criteria based on patient information stored in the computer record. Rules about patient preparation are written in Arden Syntax should begin and end with a double semi-colon (;), the Arden slot delimiter.

8.7.3.37 Patient preparation (TX) 00622

Definition: This field contains the tests or observations that require special patient preparation, diet, or medications. For GI contrast studies, this field would contain the pretest diet, e.g., low residue for two days, NPO before study, and the preferred purgatives. Each separate med, diet, or preparation should be delimited by a repeat delimiter. Separate each requirement by a repeat delimiter. Example for a sigmoidectomy: clear liquid diet full day before procedure~take 8 oz mag citrate 6pm day before procedure~take 2 ducat tabs (5m) at 4pm day before procedure~NPO past midnight.

8.7.3.38 Procedure medication (CE) 00623

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the treatments that may be needed as part of the procedure. Examples are radioactive iodine for a thyroid screen, and methacholine for a methacholine spirometry challenge. This field should be identified as a CE data type.

8.7.3.39 Factors that may effect the observation (TX) 00624

Definition: This field contains the text description of the foods, diagnoses, drugs, or other conditions that may influence the interpretation of the observation. Information about the direction of the effect, and any recommendation about altering the diet, conditions, or drug before initiating the test observation.

Most rules about factors that effect the test interpretation will be transmitted as free text. In such cases, the contents serves only as information for human reading. However, an alternative for machine readable rules also exists. The rule may be defined formally in the Arden Syntax (ASTM 1460-1992) which has syntax for defining algebraic and transcendental equations, as well as temporal and logical selection criteria based on patient information stored in the computer record. Rules about patient preparation are written in Arden Syntax and should begin and end with a double semi-colon (;), the Arden slot delimiter.

8.7.3.40 Test/observation performance schedule (ST) 00625

Definition: This field contains the diagnostic studies/tests that are performed only at certain times during the course of a work day or work week. This field indicates the maximum interval between successive test performances (the test may actually be performed more frequently). The format given in Chapter 4, Section 4.4.2.1, "Repeat Pattern," should be used. If necessary, multiple codes may be given, separated by repeat delimiters. The use of multiple codes indicates that the test is performed at multiple concurrent intervals. For example, Q6H indicates that the test is performed at least once every 6 hours around the clock. QJ1 indicates that the test is performed at least every week on Mondays. QAM~QPM indicates that the test is performed at least once every morning and every evening. QJ1~QJ3~QJ5 indicates that the test is performed at least every week on Mondays, Wednesdays, and Fridays. C indicates that the test is performed continuously, 7 days per week.

8.7.3.41 Description of test methods (TX) 00626

Definition: This field contains the text description of the methods used to perform the test and generate the observations. Bibliographic citations may be included.

8.7.3.42 Kind of quantity observed (CE) 00937

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definitions: This optional attribute describes the underlying kind of property represented by this observation. This attribute distinguishes concentrations from total amounts, molar concentrations from mass concentrations, partial pressures from colors, and so forth. These are discussed more fully in the LOINC Users' Manual.¹ They are derived from the approach described in 1995 edition of the IUPAC Silver Book.² These distinctions are used in IUPAC and LOINC standard codes. Defined categories are listed in *HL7 table 0254 - Kind of quantity*.

The distinctions of true quantities in this table are based primarily on dimensional analyses. The table contains a number of "families," those related to simple counts (number, number concentration, etc.), to mass (mass, mass concentration, etc.), to enzyme activity (catalytic content, catalytic concentration, etc.), and molar or equivalents (substance content, substance concentration).

By this classification, a glucose (in the US) would be classed as a mass concentration. A sodium would be classed as a substance concentration. Within the family, a total amount should be described as the un-adorned variant; e.g., the property of measure for a patient's weight would be mass, not mass content. Most chemical measures produce concentrations, as exemplified by sodium and glucose. However, a 24-hour urine protein is not a mass concentration, but a mass rate (mass per unit time). The content variants (e.g., mass content, substance content) are used to reflect an amount per mass (usually) of tissue.

¹ LOINC Committee. Logical Observation identifier Names and Codes. Indianapolis: Regenstrief Institute and LOINC Committee, 1995.

² International Union of Pure and Applied Chemistry/International Federation of Clinical Chemistry. The Silver Book: Compendium of terminology and nomenclature of properties in clinical laboratory sciences. Oxford: Blackwell Scientific Publishers, 1995.

This attribute would be valued in a master file only if the service sending the master file classified observations by their principle of measurement.

Table 0254 - Kind of quantity

Value	Description
CACT	*Catalytic Activity
CNC	*Catalytic Concentration
CCRTO	Catalytic Concentration Ratio
CCNT	*Catalytic Content
CFR	*Catalytic Fraction
CRAT	*Catalytic Rate
CRTO	Catalytic Ratio
ENT	*Entitic
ENTSUB	*Entitic Substance of Amount
ENTCAT	*Entitic Catalytic Activity
ENTNUM	*Entitic Number
ENTVOL	*Entitic Volume
MASS	*Mass
MCNC	*Mass Concentration
MCRTO	*Mass Concentration Ratio
MCNT	Mass Content
MFR	*Mass Fraction
MINC	*Mass Increment
MRAT	*Mass Rate
MRTO	*Mass Ratio
NUM	*Number
NCNC	*Number Concentration
NCNT	*Number Content
NFR	*Number Fraction
NRTO	*Number Ratio
SUB	*Substance Amount
SCNC	*Substance Concentration
SCRTO	*Substance Concentration Ratio
SCNT	*Substance Content
SCNTR	*Substance Content Rate
SFR	*Substance Fraction
SCNCIN	*Substance Concentration Increment
SRAT	*Substance Rate
SRTO	*Substance Ratio

Value	Description
VOL	*Volume
VCNT	*Volume Content
VFR	*Volume Fraction
VRAT	*Volume Rate
VRTO	*Volume Ratio
ACNC	Concentration, Arbitrary Substance
RLMCNC	*Relative Mass Concentration
RLSCNC	*Relative Substance Concentration
THRMNC	*Threshold Mass Concentration
THRSCNC	*Threshold Substance Concentration
TIME	*Time (e.g. seconds)
TMDF	*Time Difference
TMSTP	*Time Stamp -- Date and Time
TRTO	*Time Ratio
RCRLTM	*Reciprocal Relative Time
RLTM	*Relative Time
ABS	Absorbance
ACT	*Activity
APER	Appearance
ARB	*Arbitrary
AREA	Area
ASPECT	Aspect
CLAS	Class
CNST	*Constant
COEF	*Coefficient
COLOR	Color
CONS	Consistency
DEN	Density
DEV	Device
DIFF	*Difference
ELAS	Elasticity
ELPOT	Electrical Potential (Voltage)
ELRAT	Electrical current (amperage)
ELRES	Electrical Resistance
ENGR	Energy
EQL	Equilibrium
FORCE	Mechanical force

Value	Description
FREQ	Frequency
IMP	Impression/ interpretation of study
KINV	*Kinematic Viscosity
LEN	Length
LINC	*Length Increment
LIQ	*Liquefaction
MGFLUX	Magnetic flux
MORPH	Morphology
MOTIL	Motility
OD	Optical density
OSMOL	*Osmolality
PRID	Presence/Identity/Existence
PRES	*Pressure (Partial)
PWR	Power (wattage)
RANGE	*Ranges
RATIO	*Ratios
RDEN	*Relative Density
REL	*Relative
SATFR	*Saturation Fraction
SHAPE	Shape
SMELL	Smell
SUSC	*Susceptibility
TASTE	Taste
TEMP	*Temperature
TEMPDF	*Temperature Difference
TEMPIN	*Temperature Increment
TITR	*Dilution Factor (Titer)
TYPE	*Type
VEL	*Velocity
VELRT	*Velocity Ratio
VISC	*Viscosity

*Starred items are adopted from the IUPAC Silver Book,² non-starred items are extensions.

8.7.3.43 Point versus interval (CE) 00938

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This optional attribute allows master files to classify observations as measuring the patient's state at a point in time (e.g., spot urines, random urines, serum potassium), or averaged over an interval of

time (e.g., concentration, total amount, or clearance over a 24-hour collection). Interval measures most often apply to urine and stool specimens (e.g., 24-hour urines, 3-day stool fats). They also apply to clinical measurements such as urine outputs, which are reported as shift totals and 24-hour totals, and event counts on physiologic monitors such as the number of PVCs on a 24-hour Holter monitor.

This field would only be valued in a transaction if the service sending this master file message classified its observation by point versus time interval. This field is **not** used to record the time collection interval for a particular sample. It is used to specify a characteristic of an observation which has a defined normal range and to distinguish observations of the same kind but observed over varying periods of time. A spot urine sodium would have PT stored in this field. A 24-hour urine sodium and a 24-hour Holter monitor would have 24H stored here. This attribute would only be valued if the filling service classified its observations by timing. Refer to *user-defined table 0255 - Duration categories* for suggested values.

User-defined Table 0255 - Duration categories

Value	Description
PT	To identify measures at a point in time. This is a synonym for "spot" or "random" as applied to urine measurements.
*(star)	Life of the "unit." Used for blood products.
30M	30 minutes
1H	1 hour
2H	2 hours
2.5H	2½ hours
3H	3 hours
4H	4 hours
5H	5 hours
6H	6 hours
7H	7 hours
8H	8 hours
12H	12 hours
24H	24 hours
2D	2 days
3D	3 days
4D	4 days
5D	5 days
6D	6 days
1W	1 week
2W	2 weeks
3W	3 weeks
4W	4 weeks
1L	1 months (30 days)
2L	2 months
3L	3 months

8.7.3.44 Challenge information (TX) 00939

Definition: This optional attribute provides information for classifying observations by the challenge component of the test, if a challenge does speciate the observation. For example, distinguishing tests that have a challenge component in database. There co-ascribes the physiologic or drug challenge that is intrinsic to the measurement. To identify, for example, tests that include a glucose challenge.

To construct this text string, use the following template. (Note: This field is not constructed of formally defined components; it is a free text field. Component delimiters are not used and it is not necessary to supply placeholders if some "components" are not used.)

The time delay follows the syntax: n<S|M|H|D|W> where n is a number (possibly a decimal); S denotes seconds; M denotes minutes; H denotes hours; D denotes days; and W denotes weeks. The time delay can be preceded by a 'greater than' (>) sign, e.g. >4H.

HL7 table 0256 - Time delay post challenge lists possible values for time delay.

Examples

```
PRE 100 GM GLUCOSE PO
PRE 100 GM GLUCOSE PO
30M POST 100 GM GLUCOSE PO
2H POST 100 GM GLUCOSE PO
TROUGH
```

For drug peak and trough measures the nature of the substance challenged is the same as the analyte name, and need not be included.

We denote the route of the challenge via abbreviations for medication routes (see Chapter 4, Section 4.8.3.1, "Route," *HL7 table 0162 - Route of administration*). An oral route of administration would be denoted by "PO," an intravenous route by "IV."

Details of the drug dose, time the dose was given, route of administration, etc., would be noted in separate OBX, and would have corresponding master observation definitions stored in the observation master file map to different records stored in the master file segments contained in the drug level message.

Table 0256 - Time delay post challenge

Value	Description
BS	Baseline (time just before the challenge)
PEAK	The time post drug dose at which the highest drug level is reached (differs by drug)
TROUGH	The time post drug dose at which the lowest drug level is reached (varies with drug)
RANDOM	Time from the challenge, or dose not specified. (random)
1M	1 minute post challenge
2M	2 minutes post challenge
3M	3 minutes post challenge
4M	4 minutes post challenge
5M	5 minutes post challenge
6M	6 minutes post challenge
7M	7 minutes post challenge

Value	Description
8M	8 minutes post challenge
9M	9 minutes post challenge
10M	10 minutes post challenge
15M	15 minutes post challenge
20M	20 minutes post challenge
25M	25 minutes post challenge
30M	30 minutes post challenge
1H	1 hour post challenge
2H	2 hours post challenge
2.5H	2 1/2 hours post challenge
3H	3 hours post challenge
4H	4 hours post challenge
5H	5 hours post challenge
6H	6 hours post challenge
7H	7 hours post challenge
8H	8 hours post challenge
8H SHIFT	8 hours aligned on nursing shifts
12H	12 hours post challenge
24H	24 hours post challenge
2D	2 days
3D	3 days
4D	4 days
5D	5 days
6D	6 days
7D	7 days
1W	1 week
10D	10 days
2W	2 weeks
3W	3 weeks
4W	4 weeks
1L	1 month (30 days) post challenge
2L	2 months (60 days) post challenge
3L	3 months (90 days) post challenge

The nature of a physiologic (non-drug) challenge may also be specified, using the terms in *HL7 table 0257 - Nature of challenge*.

Table 0257 - Nature of challenge

Value	Description
CFST	Fasting (no calorie intake) for the period specified in the time component of the term, e.g., 1H POST CFST
EXCZ	Exercise undertaken as challenge (can be quantified)
FFST	No fluid intake for the period specified in the time component of the term

8.7.3.45 Relationship modifier (CE) 00940

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This optional attribute provides a mechanism for classifying observations according to the subject, in relation to the patient whose results might be stored with as “patient” data. It is standard practice, for example, to report values for controls, donors, and blood product units as well as the patient’s own values, and store them in the patient’s record. (This may not be the best way to model such information, but it is the way it is usually reported.) This should be valued when two values (e.g., one for patient and one for a blood product unit) could otherwise be confused.

The default value is “Patient,” and if not specified, this value is assumed. The persons sub-component can refer to *HL7 table 0258 - Relationship modifier* for valid values.

Table 0258 - Relationship modifier

Value	Description
CONTROL	Control
PATIENT	Patient
DONOR	Donor
BPU	Blood product unit

8.7.3.46 Target anatomic site of test (CE) 00941

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This optional attribute formally indicates the site of the observation (to make it easy for a system to find all tests related to one anatomic site). It can be used to classify the observation by target site of the examination. For example, “heart” might be recorded as the target of the electrocardiogram, cardiac echo, and thallium exercise test. This attribute would be applicable to most imaging and electrophysiologic examinations. The SNOMED topology axis is an example of a coding system for anatomic sites. User-defined tables may also apply here.

8.7.3.47 Modality of imaging measurement (CE) 00942

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This optional attribute describes the modality used to classify the observations, e.g., radiograph, ultrasound, CT scan, NMR, etc. This attribute is especially important for imaging studies. Refer to *user-defined table 0259 - Modality* for suggested values; it is adopted from DICOM C.7.3.1.1.1 Modality. If these are used, the code source ID would be DCM.

User-defined Table 0259 - Modality

Value	Description
AS	Angioscopy

Value	Description
BS	Biomagnetic imaging
CD	Color flow doppler
CP	Colposcopy
CR	Computed radiography
CS	Cystoscopy
CT	Computed tomography
DD	Duplex doppler
DG	Diapanography
DM	Digital microscopy
EC	Echocardiography
ES	Endoscopy
FA	Fluorescein angiography
FS	Fundoscopy
LP	Laparoscopy
LS	Laser surface scan
MA	Magnetic resonance angiography
MS	Magnetic resonance spectroscopy
NM	Nuclear Medicine (radioisotope study)
OT	Other
PT	Positron emission tomography (PET)
RF	Radio fluoroscopy
ST	Single photon emission computed tomography (SPECT)
TG	Thermography
US	Ultrasound
XA	X-ray Angiography

8.7.4 OM2 - numeric observation segment

This segment contains the attributes of observations with continuous values (including those with data types of numeric, date, or time stamp). It can be applied to observation batteries of type A and C (see *OM1-18-nature of test/observation*).

Figure 8-8. OM2 attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	NM	O	Y		00586	Sequence Number – Test/Observation Master File
2	60	CE	O			00627	Units of Measure
3	10	NM	O			00628	Range of Decimal Precision
4	60	CE	O			00629	Corresponding SI Units of Measure
5	60	TX	O			00630	SI Conversion Factor
6	200	CM	O			00631	Reference (Normal) Range - Ordinal & Continuous Obs
7	200	CM	O			00632	Critical Range for Ordinal & Continuous Obs

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
8	200	CM	O			00633	Absolute Range for Ordinal & Continuous Obs
9	200	CM	O	Y		00634	Delta Check Criteria
10	20	NM	O			00635	Minimum Meaningful Increments

8.7.4.0 OM2 field definitions

8.7.4.1 Sequence number – test/observation master file (NM) 00586

Definition: This field contains the same value as the sequence number of the associated OM1 segment.

8.7.4.2 Units of measure (CE) 00627

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the single tests/observations (those with a nature code of A or C, as described in *OMI-18-nature of test/observation*) that have numeric values. This field contains their customary units of measure.

8.7.4.3 Range of decimal precision (NM) 00628

Definition: This field contains the numerically valued single observations (code A or C as described in *OMI-18-nature of test/observation*), specifies the total length in characters of the field needed to display the observation, and the number of digits displayed to the right of the decimal point. This is coded as a single number in the format <length>.<decimal-digits>. For example, a value of 6.2 implies 6 characters total (including the sign and decimal point) with 2 digits after the decimal point. For integer values, the period and <decimal-digits> portion may be omitted (that is, 5.0 and 5 are equivalent). More than one such mask may be transmitted (separated by repeat delimiters) when it is necessary to define multiple display formats that are possible.

8.7.4.4 Corresponding SI units of measure (CE) 00629

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the single tests/observations - the corresponding SI units of measure in the format, when these differ from the customary units of measure given in the previous field.

8.7.4.5 SI conversion factor (TX) 00630

Definition: This field contains the continuous, numerically valued tests/observations, with a nature code of A or C (see *OMI-18-nature of test/observation*). This is a factor for converting the customary units to SI units.

In the case that the observation units are not SI units, this field provides the formula needed to convert from the reported units to SI units, this shall include the equation needed to convert from the reporting to the SI units.

In the case that the relation is simply multiplicative, this field shall include only the conversion factor. For example., if (results SI units) = c * (results reporting units), then only c would be stored in this field. In the case of any other functional relationship, the entire equation would be stored as a test.

8.7.4.6 Reference (normal) range for ordinal and continuous observations (CM) 00631

Definition: This field contains the reference (normal) ranges for “numeric” observations/tests with a nature code of A or C (see *OMI-18-nature of test/observation*). It can identify different reference (normal) ranges for different categories of patients according to age, sex, race, and other conditions.

The general format is:

```
<ref. (normal) range1>^<sex1>^<age range1>^<age gestation1>^<species1>^<race/subspecies1>^<text condition1>~  
<ref. (normal) range2>^<sex2>^<age range2>^<age gestation2>^<species2>^<race/subspecies2>^<text condition2>~  
.  
.  
.  
  
<ref. (normal) rangen>^<sexn>^<age rangen>^<age gestationn>^<speciesn>^<race/subspeciesn>^<text conditionn>
```

The components are defined in the following sections.

8.7.4.6.1 *The reference (normal) range (CM)*

Components: <low value & high value>

Definition: This subcomponent contains the reference (normal) range. The format of this field is where the range is taken to be inclusive (i.e., the range includes the end points). In this specification, the units are assumed to be identical to the reporting units given in *OM2-2-units of measure*).

8.7.4.6.2 *Sex (IS)*

Definition: This subcomponent contains the sex of the patient. Refer to *user-defined table 0001 - Sex* for suggested values.

8.7.4.6.3 *Age range (CM)*

Subcomponents: <low value & high value>

Definition: This component contains the age range (in years or fractions thereof) specified as two values separated by a subcomponent delimiter (in order to allow a simple and consistent machine interpretation of this component). Ages of less than one year should be specified as a fraction (e.g., 1 month = 0.0830, 1 week = 0.01920, 1 day = 0.0027300). However, for most purposes involving infants, the gestational age (measured in weeks) is preferred. The lower end of the range is not indicated; the upper end is, assuring that series of ranges do not overlap.

8.7.4.6.4 *Gestational age range (CM)*

Subcomponents: <low value & high value>

Definition: This component contains the gestational age and is relevant only when the reference range is influenced by the stage of pregnancy. A range of values is required. The gestational age is measured in weeks from conception. For example, <1&10> implies that the normals apply to gestational ages from 1 week to 4 weeks inclusive (1&4). The lower end of the range is not included; the upper end is, assuring that series of age ranges do not overlap.

8.7.4.6.5 *Species (TX)*

Definition: This component is assumed to be human unless otherwise stated. The species should be represented as text (e.g., rabbit, mouse, rat).

8.7.4.6.6 Race/subspecies (ST)

Definition: In the case of humans (the default), the race is specified when race influences the reference range. When normal ranges for animals are being described, this component can be used to describe subspecies or special breeds of animals.

8.7.4.6.7 Conditions (TX)

Definition: This component contains the condition as simply free text. This component allows for definition of normal ranges based on any arbitrary condition, e.g., phase of menstrual cycle or dose of a particular drug. It is provided as a way to communicate the normal ranges for special conditions. It does not allow automatic checking of these text conditions.

8.7.4.6.8 Examples

A range that applies unconditionally, such as albumin, is transmitted as:

3.0 & 5.5

A normal range that depends on sex, such as Hgb, is transmitted as:

13.5 & 18^M~

12.0 & 16^F

A normal range that depends on age, sex, and race (a concocted example) is:

10 & 13 ^M^0 & 2 ^^B

11 & 13.5 ^M^2 & 20 ^^B~

12 & 14.5 ^M^20 & 70 ^^B~

13 & 16.0 ^M^70 & ^^B

When no value is specified for a particular component, the range given applies to all categories of that component. For example, when nothing is specified for race/species, the range should be taken as the human range without regard to race. If no age range is specified, the normal range given is assumed to apply to all ages. If the upper or lower end of a range is left out, it is assumed to be +infinity or -infinity, respectively.

When two different methods result in two different reference ranges, two different observations and corresponding OMx segments should be defined.

8.7.4.7 Critical range for ordinal and continuous observations (CM) 00632

Components: <low value ^ high value>

Definition: This field applies only to single tests/observations (i.e., a nature code of A or C, as described in *OM1-18-nature of test/observation*) with numeric results. When a critical range is defined for such observations, it should be recorded here in the same format as the normal range (see *OM2-6-reference (normal) range-ordinal & continuous obs*).

8.7.4.8 Absolute range for ordinal and continuous observations (CM) 00633

Components: <range> ^ <numeric change> ^ <%/a change> ^ <days>

Definition: This field applies only to single tests/observations with a nature code of A or C (see *OM1-18-nature of test/observation*). It defines the range of possible results. Results outside this range are not possible. The field should be recorded in the same format as the normal and critical ranges.

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8.7.4.9 Delta check criteria (CM) 00634

Components: <low & high (CM)> ^ <numeric threshold (NM)> ^ <change (ST)> ^ <length of time-days (NM)>

Definition: This field applies to numeric tests/observations with a nature code of A or C (see *OM1-18-nature of test/observation*). The field describes the information that controls delta check warnings and includes four components.

- 1) The range to which the following applies: <low & high>.
All the ranges are defined in terms of the customary reporting units given in OM2-2-units of measure. If no value range is given, the check applies to all values.
- 2) The numeric threshold of the change that is detected, e.g., 10.
- 3) Whether the change is computed as a percent change or an absolute change. This component can have two possible values:
% Indicates a percent change
a Absolute change
- 4) The length of time that the service retains a value for computing delta checks. This is recorded in number of days.

More than one delta check rule can apply. 13&16^10%^100~16.1&20^2^a^100 implies that the delta check will trigger on a 10% change when the value of the observation is between 13 and 16. The check will trigger on an absolute change of 2 when the value is between 16.1 and 20. In both cases, the system will keep the last result for 100 days. In this example, beyond 100 days, the computer will not compute a delta check because it will not have a comparison value.

8.7.4.10 Minimum meaningful increments (NM) 00635

Definition: This field contains the numerically valued single observations (a nature code of A or C, as described in *OM1-18-nature of test/observation*) and specifies the smallest meaningful difference between reported values (the effective resolution of the measuring instrument or technique for continuous data, or the smallest discrete interval that can occur for discrete data).

8.7.5 OM3 - categorical test/observation segment

This segment applies to free text and other non-numeric data types.

Figure 8-9. OM3 attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	NM	O			00586	Sequence Number – Test/Observation Master File
2	60	CE	O			00636	Preferred Coding System
3	60	CE	O			00637	Valid Coded “Answers”
4	200	CE	O	Y		00638	Normal Text/Codes for Categorical Observations
5	200	CE	O			00639	Abnormal Text/Codes for Categorical Observations
6	200	CE	O			00640	Critical Text Codes for Categorical Observations
7	3	ID	O		0125	00570	Value Type

8.7.5.0 OM3 field definitions

8.7.5.1 Sequence number – test/observation master file (NM) 00586

Definition: This field contains the same value as the sequence number of the associated OM1 segment.

8.7.5.2 Preferred coding system (CE) 00636

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the observations whose categorical responses are taken from a specified table of codes (e.g., CE data types). Record the preferred coding system for this observation (e.g., ICD9, SNOMED III). Take the codes from ASTM Table 3 or 5, or specify a local code.

8.7.5.3 Valid coded "answers" (CE) 00637

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains a list of valid coded answers. In the case that the list of coded answers is easily enumerated, list the valid coded answers for this observation here using the preferred coding system given in *OM3-2-preferred coding system*. If, for example, the given observation was VDRL, the valid answers might be non-reactive, 86^ intermediate, and 87^ reactive.

8.7.5.4 Normal text/codes for categorical observations (CE) 00638

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: Certain observations/tests with a nature code of A or C (see *OM1-18-nature of test/observation*) have text (alpha) results (e.g., reactive, nonreactive). Alpha normals for those tests should be entered in this field (e.g., "nonreactive").

The format of this field is:

The first component is a code taken from a standard code source list. The second component is the text associated with the code. The third component is the identification of the code table source. When only a text description of a possible answer is available, it is recorded as ^<text>.

Care should be taken to transmit only those results that are considered normal for that test. A drug screen may have possible results of "negative" and "positive." However, only a result of "negative" is considered to be normal. When an observation has more than one "normal" result, multiple values in this field should be separated with a repeat delimiter.

8.7.5.5 Abnormal text/codes for categorical observations (CE) 00639

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the list of the text answers that are abnormal for the test.

8.7.5.6 Critical text/codes for categorical observations (CE) 00640

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the list of coded results that are critically abnormal for this observation.

8.7.5.7 Value type (ID) 00570

Definition: This field contains the allowed data type for a single categorical observation (code A or C in *OM1-18-nature of observation*). Refer to *HL7 table - 0125 - Value type* for valid values.

8.7.6 OM4 - observations that require specimens segment

This segment applies to observations/batteries that require a specimen for their performance. When an observation or battery requires multiple specimens for their performance (e.g., creatinine clearance requires a 24-hour urine specimen and a serum specimen), multiple segments may be included, one for each specimen type.

Figure 8-10. OM4 attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	4	NM	O			00586	Sequence Number – Test/Observation Master File
2	1	ID	O		0170	00642	Derived Specimen
3	60	TX	O			00643	Container Description
4	20	NM	O			00644	Container Volume
5	60	CE	O			00645	Container Units
6	60	CE	O			00646	Specimen
7	60	CE	O			00647	Additive
8	10K	TX	O			00648	Preparation
9	10K	TX	O			00649	Special Handling Requirements
10	20	CQ	O			00650	Normal Collection Volume
11	20	CQ	O			00651	Minimum Collection Volume
12	10K	TX	O			00652	Specimen Requirements
13	1	ID	O	Y	0027	00653	Specimen Priorities
14	20	CQ	O			00654	Specimen Retention Time

8.7.6.0 OM4 field definitions

8.7.6.1 Sequence number – test/observation master file (NM) 00586

Definition: This field contains the same value as the sequence number of the associated OM1 segment.

8.7.6.2 Derived specimen (ID) 00642

Definition: This field contains the codes that identify the parents and children for diagnostic studies -- especially in microbiology -- where the initial specimen (e.g., blood) is processed to produce results (e.g., the identity of the bacteria grown out of the culture). The process also produces new “specimens” (e.g., pure culture of staphylococcus, and E. Coli), and these are studied by a second order process (bacterial sensitivities). The parents (e.g., blood culture) and children (e.g., penicillin MIC) are identified in such cases. Refer to *HL7 table 0170 – Derived specimen* for valid values:

Table 0170 - Derived specimen

Value	Description
P	Parent Observation
C	Child Observation
N	Not Applicable

8.7.6.3 Container description (TX) 00643

Definition: This field contains the physical appearance, including color of tube tops, shape, and material composition (e.g., red-top glass tube). Note that the color is not necessarily a unique identifier of the additive and/or use of the tube. This is especially true for black and some blue tube tops, as can be seen above. Color is included here for user convenience.

8.7.6.4 Container volume (NM) 00644

Definition: This field indicates the capacity of the container.

8.7.6.5 Container units (CE) 00645

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the units of measure of the container volume. If the units are ISO+ units, they should be recorded as single case abbreviations. If the units are ANS+ or L (local), the units and the source code table must be recorded, except that in this case, component delimiters should be replaced by subcomponent delimiters. For example, 1 indicates liters, whereas pt&&ANS+ indicates pints (ANSI units). The default unit is milliliters (ml), which should be assumed if no units are reported.

8.7.6.6 Specimen (CE) 00646

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field reports the specimen as one of the specimen codes described in ASTM Table 14 of 1238-91. If multiple kinds of specimen are associated with this observation (as in the case for a creatinine clearance), separate them with repeat delimiters.

8.7.6.7 Additive (CE) 00647

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the codes that should be those provided by NCCLS³. The following list is not exhaustive; it includes only examples.

NAME	NCCLS		DESCRIPTION
	Code	Color	
(1) Lithium Heparin -- anticoagulant	LIH	Green	Dry powder. 10 to 30 USP units per mL of blood
(2) Sodium Heparin -- anticoagulant	NAH	Green	Dried solution. 10 to 30 U.S.P. units per mL of blood
(3) Ethylenediaminetetraacetic acid; dipotassium salt [EDTA(K ₂)]	K2E	Lavender	Dry powder. 1.5 to 2.2 mg per mL of blood
(4) Ethylenediaminetetraacetic acid; tripotassium salt [EDTA (K ₃)]	K3E	Lavender	Clear solution. 1.5 to 2.2 mg per mL of blood
(5) Ethylenediaminetetraacetic acid; disodium salt [EDTA (Na ₂)]	N2E	Lavender	

8.7.6.8 Preparation (TX) 00648

Definition: This field contains the special processing that should be applied to the container, e.g., add acidifying tablets before sending.

8.7.6.9 Special handling requirements (TX) 00649

Definition: This field contains the special handling requirements here (e.g., ice specimen, deliver within two hours of obtaining).

³ NCCLS Document H1-A3: Evacuated tubes for blood specimen collection -- Third Edition, Volume 11, Number 9, Approved standard. July 1991.

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8.7.6.10 Normal collection volume (CQ) 00650

Components: <quantity> ^ <units>

Definition: This field contains the normal specimen volume required by the lab. This is the amount used by the normal methods and provides enough specimens to repeat the procedure at least once if needed. The default unit is milliliters (ml).

8.7.6.11 Minimum collection volume (CQ) 00651

Components: <quantity> ^ <units>

Definition: This field contains the amount of specimen needed by the most specimen sparing method (e.g., using micro techniques). The minimum amount allows for only one determination. The default unit is milliliters (ml).

8.7.6.12 Specimen requirements (TX) 00652

Definition: This field contains the other requirements for specimen delivery and special handling (e.g., delivery within one hour, iced).

8.7.6.13 Specimen priorities (ID) 00653

Definition: This field contains the allowed priorities for obtaining the specimen. Note that they may be different from the processing priorities given in *OM1-25-processing priority*. When a test is requested, the specimen priority given in *OBR-27-quantity/timing* should be one of the priorities listed here. Multiple priorities are separated by repeat delimiters. Refer to *HL7 table 0027 - Priority* for valid values.

Table 0027 - Priority

Value	Description
S	Stat (do immediately)
A	As soon as possible (a priority lower than stat)
R	Routine
P	Preoperative (to be done prior to surgery)
T	Timing critical (do as near as possible to requested time)

8.7.6.14 Specimen retention time (CQ) 00654

Components: <quantity> ^ <units>

Definition: This field contains the usual time that a specimen for this observation is retained after the observation is completed, for the purpose of additional testing. The first component is the duration, and the second component is an ISO time unit.

8.7.7 OM5 - observation batteries (sets) segment

This segment contains the information about batteries and supersets (a nature code of F, P or S, as described in *OM1-18-nature of test/observation*).

Figure 8-11. OM5 attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	NM	O			00586	Sequence Number – Test/Observation Master File

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
2	200	CE	O	Y		00655	Test/Observations Included within an Ordered Test Battery
3	200	ST	O			00656	Observation ID Suffixes

8.7.7.0 OM5 field definitions

8.7.7.1 Sequence number – test/observation master file (NM) 00586

Definition: This field contains the same value as the sequence number of the associated OM1 segment.

8.7.7.2 Tests/observations included within an ordered test battery (CE) 00655

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the codes and names of all tests/observations included within a single battery (nature code P, as described in *OM1-18-nature of test/observation*), a single functional procedure (nature code F), or a given superset (nature code S). When a segment includes a list of component elements, the sending system should be sure that the segments defining all of the components are sent before the segment that references them. An entry in this list can itself be a battery.

The individual test/observation IDs should be recorded as type CE, i.e., in the standard format for coded observation identifiers. Multiple observations should be separated by repeat delimiters.

If the definition segment defined serum electrolytes, this field might look like the following:

```
84132^potassi um^AS4~
84295^sodi um^AS4~
82435^chl ori de^AS4~
82374^HC03^^AS4~
```

For S (superset) parameters, this field contains the batteries that are included within the “super” battery. For example, ROUTINES might be defined as:

```
402^El ectrolytes~352^Uri nal ysi s~432^CBC~520^SMA12
```

8.7.7.3 Observation ID suffixes (ST) 00656

Definition: This field contains the tests or procedures that produce a type which uses observation ID suffixes following the test/observation ID code. This field lists the possible options. The applicable three-character mnemonics given in ASTM Table 20 (or others appropriate to the application) are listed, separated by repeat delimiters. For example, a chest X-ray may use the suffixes IMP, REC, DEV, or others. Each of the expected suffixes should be listed here.

8.7.8 OM6 - Observations that are calculated from other observations segment

This segment contains the information about quantities that are derived from one or more other quantities or direct observations by mathematical or logical means.

Figure 8-12. OM6 attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	NM	O			00586	Sequence Number – Test/Observation Master File
2	10K	TX	O			00657	Derivation Rule

8.7.8.0 OM6 field definitions**8.7.8.1 Sequence number – test/observation master file (NM) 00586**

Definition: This field contains the same value as the sequence number of the associated OM1 segment.

8.7.8.2 Derivation rule (TX) 00657

Definition: This field is used when there are patient variables that are derived from one or more other patient variables (e.g., creatinine clearance, ideal weight, maximum daily temperature, average glucose, framingham risk). This field contains the rules for deriving the value of this variable (i.e., nature code C, as given in *OM1-18-nature of test/observation*). These can be described in terms of humanly understandable formulas or descriptions.

When possible, however, they should be defined in terms of the Arden Syntax for specifying selection and transcendative functions and algebraic operations, ASTM E1460-92. Derivation rules that are represented in Arden Syntax should begin and end with an Arden slot delimiter (;). Within this syntax, variables should be identified by *OM1-2-producer's test/observation ID*. We recommend the use of the Arden Syntax because it permits the unambiguous specification of most such derived values and is a published standard for medical logic modules.

8.8 LOCATION MASTER FILES

8.8.1 Patient location master file message (MFN/MFK)

This section is specifically concerned with describing a master file message that should be used to transmit information which identifies the inventory of healthcare patient locations, such as nursing units, rooms, beds, clinics, exam rooms, etc. In a network environment, this segment can be used to define patient locations to other applications. The segment also includes the readiness states and support locations for the patient locations.

The LOC, LCH, LRL, LDP, and LCC segments must be preceded by the MFI and MFE segments, as described in Sections 8.8.2, “LOC - location identification segment,” through 8.8.68.3.” In the following message, the *MFI-1-master file identifier* field should equal “LOC”

<u>MFN ^M05</u>	<u>Master File Notification</u>	<u>Chapter</u>
MSH	Message Header	2
MFI	Master File Identification	8
{MFE	Master File Entry	8
LOC	Patient Location Master	8
[{LCH}]	Location Characteristic	8
[{LRL}]	Location Relationship	8
{LDP	Location Department	8
[{LCH}]	Location Characteristic	8
[{LCC}]	Location Charge Code	8
}		
}		

When the LCH segment appears immediately following the LOC segment, it communicates characteristics which are the same across multiple departments that may use the same room. When the LCH segment appears immediately following the LDP segment, it communicates characteristics which differ for different departments that may use the same room.

<u>MFK ^M05</u>	<u>Master File Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Acknowledgment	2
MFI	Master File Identification	8
[{MFA}]	Master File ACK	8

Master Files Query Response: When the LOC segment is used in the MFR message, the part of the message represented by:

```
{MFE
                                [Z...]}
```

is replaced by:

```
{MFE          Master File Entry
  LOC          Patient Location Master
  [{LCH}]     Location Characteristic
  [{LRL}]     Location Relationship
  {LDP        Location Department
  [{LCH}]     Location Characteristic

  [{LCC}]     Location Charge Code }}
```

8.8.2 LOC - location identification segment

The LOC segment can identify any patient location referenced by information systems. This segment gives physical set up information about the location. This is not intended to include any current occupant or current use information. There should be one LOC segment for each patient location. If desired, there can also be one LOC segment for each nursing unit and room.

Figure 8-13. LOC attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	200	PL	R			01307	Primary Key Value - LOC
2	48	ST	O			00944	Location Description
3	2	IS	R	Y	0260	00945	Location Type - LOC
4	90	XON	O	Y		00947	Organization Name - LOC
5	106	XAD	O	Y		00948	Location Address
6	40	XTN	O	Y		00949	Location Phone
7	60	CE	O	Y		00951	License Number
8	3	IS	O	Y	0261	00953	Location Equipment

8.8.2.0 LOC field definitions

8.8.2.1 Primary key value - LOC (PL) 01307

Components: <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <person location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <location description (ST)>

Subcomponents of facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the institution's identification code for the location. The identifying key value. Must match *MFE-4-primary key value*. This field has the same components as the patient location fields in the PV1 segment (except that bed status is not included here).

At least the first component of this field is required. The first component can be an identifying code for the nursing station for inpatient locations, or clinic, department or home for patient locations other than inpatient ones.

8.8.2.2 Location description (ST) 00944

Definition: This field contains the optional free text description of the location, to elaborate upon LOC primary key value.

8.8.2.3 Location type - LOC (IS) 00945

Definition: This field contains the code identifying what type of location this is. Refer to *user-defined table 0260 - Patient location type* for suggested values.

User-defined Table 0260 - Patient location type

Value	Description
N	Nursing Unit
R	Room
B	Bed
E	Exam Room
O	Operating Room
C	Clinic
D	Department
L	Other Location

8.8.2.4 Organization name - LOC (XON) 00947

Components: <organization name (ST)> ^ <organization name type code (ID)> ^ <ID number (ID)> ^ <check digit (NM)> ^ <check digit scheme (ID)> ^ <assigning authority (HD)> ^ <identifier type code (ID)> ^ <assigning facility ID (HD)> ^ <name representation code>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the organization of which this location is a part. For inpatient locations, this can be the hospital or institution name. For outpatient locations, this can be the clinic or office name.

8.8.2.5 Location address (XAD) 00948

Components: <street address (ST)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code (ST)> ^ <country (ID)> ^ <address type (ID)> ^ <other geographic designation (ST)> ^ <county/parish code (IS)> ^ <census tract (IS)> ^ <address representation code (ID)>

Definition: This field contains the address of the patient location, especially for use for outpatient clinic or office locations.

8.8.2.6 Location phone (XTN) 00949

Components: [NNN] [(999)999-9999 [X99999] [B99999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <county code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Definition: This field contains the phone number within the patient location, if any. For example, the room or bed phone for use by the patient.

8.8.2.7 License number (CE) 00951

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the multiple license numbers for the facility.

8.8.2.8 Location equipment (IS) 00953

Definition: This repeating field indicates what types of equipment are built in. Applies only to room or bed locations. If *LOC-3-location type* indicates that this is a room, this will be the equipment in the room which can be used by more than one bed. If *LOC-3-location type* indicates this is a bed, this will be the bedside devices available to this bed. Refer to *user-defined table 0261 - Location equipment* for suggested values.

User-defined Table 0261 - Location equipment

Value	Description
OXY	Oxygen
SUC	Suction
VIT	Vital signs monitor
INF	Infusion pump
IVP	IV pump
EEG	Electro-Encephalogram
EKG	Electro-Cardiogram
VEN	Ventilator

8.8.3 LCH - location characteristic segment

The LCH segment is used to identify location characteristics which determine which patients will be assigned to the room or bed. It contains the location characteristics of the room or bed identified in the preceding LOC segment. There should be one LCH segment for each attribute.

When the LCH segment appears immediately following the LOC segment, it communicates characteristics which are the same across multiple departments that may use the same room. When the LCH segment appears immediately following the LDP segment, it communicates characteristics which differ for different departments that may use the same room. For example, the following characteristics are more likely to vary by which department is using the room: teaching, gender, staffed, set up, overflow, whereas the other characteristics are likely to remain the same.

Figure 8-14. LCH attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	200	PL	R			01305	Primary Key Value - LCH
2	3	ID	O		0206	00763	Segment Action Code
3	80	EI	O			00764	Segment Unique Key
4	80	CE	R		0324	01295	Location Characteristic ID
5	80	CE	R		0136/ 0262/ 0263	01294	Location Characteristic Value-LCH

8.8.3.0 LCH field definitions

8.8.3.1 Primary key value - LCH (PL) 01305

Components: <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <person location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <location description (ST)>

Subcomponents of facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the institution's identification code for the location. The identifying key value. This field has the same components as the patient location fields in the PV1 segment (except that bed status is not included here). At least the first component of this field is required. The contents of this field must exactly match the content of its preceding MFE (*MFE-4-primary key value-MFE*), its preceding LOC (*LOC-1- primary key value-LOC*), and its preceding LDP (*LDP-1- primary key value-LDP*).

8.8.3.2 Segment action code (ID) 00763

Definition: This field indicates whether this repetition of the segment is being added, changed or deleted. This repetition of the repeating segment must be identified using *FT1-25-segment unique key*. The action code adds a validation check to indicate, from the point of view of the sending system, whether this repetition of a segment is being added, changed or deleted. This and the following field are used to implement the "unique key" mode of updating repeating segments. (See Chapter 2, Section 2.23.4.2, "Action code/unique identifier mode update definition.") Refer to *HL7 table 0206 - Segment action code* for valid values.

8.8.3.3 Segment unique key (EI) 00764

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field contains a unique identifier for one of the multiple repetitions of this segment, to be used in conjunction with the preceding field. Each of the repetitions of the segment will be uniquely identified by this unique key field for the purposes of updates.

8.8.3.4 Location characteristic ID (CE) 01295

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains an identifier code to show WHICH characteristic is being communicated with this segment. Refer to *user-defined table 0324 - Location characteristic ID* for suggested values.

User-defined Table 0324 - Location characteristic ID

Value	Description
SMK	Smoking
LIC	Licensed
IMP	Implant: can be used for radiation implant patients
SHA	Shadow: a temporary holding location that does not physically exist
INF	Infectious disease: this location can be used for isolation
PRL	Privacy level: indicating the level of private versus non-private room
LCR	Level of care
OVR	Overflow
STF	Bed is staffed
SET	Bed is set up
GEN	Gender of patient(s)
TEA	Teaching location

8.8.3.5 Location characteristic value (CE) 01294

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the value of the above field's characteristic. The expected coded values for this field will depend upon the previous field. For example, if the previous field is SMK, IMP, INF, the values would be "Y" or "N".

When LCH-4-location characteristic ID contains "SHA"- Shadow, refer to HL7 table 0136 - Yes/no indicator for valid values for LRL-5-organizational location relationship value.

Y not a real bed, but a temporary holding location that does not physically exist in the census

N this is a real bed

When LCH-4-location characteristic ID contains "PRL"- Privacy level (CE), then LRL-5- *organizational location relationship value* indicates how the room is set up and intended to be used, disregarding different uses under special circumstances. Refer to *user-defined table 0262 - Privacy level* for suggested values.

User-defined Table 0262 - Privacy level

Value	Description
F	Isolation
P	Private room
J	Private room - medically justified
Q	Private room - due to overflow
S	Semi-private room
W	Ward

When LCH-4-location characteristic ID contains "LCR"- Level of care, then LRL-5- *organizational location relationship value* contains the code which indicates what severity of the patient's medical condition which this location is designed to handle. This indicates how the room is set up and intended to be used, disregarding different uses under special circumstances. Refer to *user-defined table 0263 - Level of care*.

User-defined Table 0263 - Level of care

Value	Description
A	Ambulatory
E	Emergency
F	Isolation
N	Intensive care
C	Critical care
R	Routine
S	Surgery

When LCH-4-location characteristic ID contains "IFD"- Infectious disease, refer to HL7 table 0136 - Yes/no indicator for valid values for LRL-5- *organizational location relationship value*.

Y patients with infectious diseases can be admitted to this location, that is, this location can be used for isolation

N this location cannot be used for isolation

When LCH-4-location characteristic ID contains "SMO"- Smoking, refer to HL7 table 0136 - Yes/no indicator for valid values for LRL-5- *organizational location relationship value*.

Y this is a smoking location

N this is a non-smoking location

When LCH-4-location characteristic ID contains “IMP”- Implant, refer to HL7 table 0136 - Yes/no indicator for valid values for LRL-5- organizational location relationship value.

Y this location can be used by radiation implant patients

N this location can not be used by radiation implant patients

When LCH-4-Location Characteristic ID contains “LIC”- Licensed, refer to HL7 table 0136 - Yes/no indicator for valid values for LRL-5- organizational location relationship value.

Y this location is licensed

N this location is not licensed

8.8.4 LRL - location relationship segment

The LRL segment is used identify one location’s relationship to another location, the nearest lab, pharmacy, etc.

Figure 8-15. LRL attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	200	PL	R			00943	Primary Key Value - LRL
2	3	ID	O		0206	00763	Segment Action Code
3	80	EI	O			00764	Segment Unique Key
4	80	CE	R		0325	01277	Location Relationship ID
5	80	XON	C	Y		01301	Organizational Location Relationship Value
6	80	PL	C			01292	Patient Location Relationship Value

8.8.4.0 LRL field definitions

8.8.4.1 Primary key value - LRL (PL) 00943

Components: <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <person location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <location description (ST)>

Subcomponents of facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the institution’s identification code for the location. The identifying key value. This field has the same components as the patient location fields in the PV1 segment (except that bed status is not included here). At least the first component of this field is required. The contents of this field must exactly match the content of its preceding MFE (*MFE-4-primary key value-MFE*), its preceding LOC (*LOC-1-primary key value-LOC*), and its preceding LDP (*LDP-1-primary key value-LDP*).

8.8.4.2 Segment action code (ID) 00763

Definition: This field indicates whether this repetition of the segment is being added, changed or deleted. This repetition of the repeating segment must be identified using *FT1-25-segment unique key*. The action code adds a validation check to indicate, from the point of view of the sending system, whether this repetition of a segment is being added, changed or deleted. This and the following field are used to implement the “unique key” mode of updating repeating segments. (See Chapter 2, Section 2.23.4.2, “Action code/unique identifier mode update definition.”) Refer to *HL7 table 0206 - Segment action code* for valid values.

8.8.4.3 Segment unique key (EI) 00764

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field contains a unique identifier for one of the multiple repetitions of this segment, to be used in conjunction with the preceding field. Each of the repetitions of the segment will be uniquely identified by this unique key field for the purposes of updates.

8.8.4.4 Location relationship ID (CE) 01277

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains an identifier code to show WHICH relationship is being communicated with this segment. Refer to *user-defined table 0325 - Location relationship ID* for suggested values.

User-defined Table 0325 - Location relationship ID

Value	Description
RX	Nearest pharmacy
RX2	Second pharmacy
LAB	Nearest lab
LB2	Second lab
DTY	Nearest dietary
ALI	Location Alias(es)
PAR	Parent location

8.8.4.5 Organizational location relationship value (XON) 01301

Components: <organization name (ST)> ^ <organization name type code (IS)> ^ <ID number (NM)> ^ <check digit (NM)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility ID (HD)> ^ <name representation code>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field is conditional on the value of *LRL-4-location relationship ID*. When *LRL-4-location relationship ID* contains "RX"- Nearest Pharmacy, "RX2"- Other Pharmacy, "LAB"- Nearest Lab, "LB2"- Other Lab, or "DTY"- Dietary, this field holds that organization's extended name i.e., the value of this field is conditional on the value of *LRL-4-location relationship ID*. For example, for an inpatient location, this could be an in-house department ID code using only the third component of this data type. For an outpatient location, this could be the nearest external pharmacy.

8.8.4.6 Patient location relationship value (PL) 01292

Components: <point of care (IS)> ^ <room (ST)> ^ <bed (ST)> ^ <facility (HD)> ^ <status (ID)> ^ <person location type (ID)> ^ <building (ID)> ^ <floor (ST)> ^ <location description (ST)>

Subcomponents of facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field is conditional on the value of *LRL-4-location relationship ID*. When *LRL-4-location relationship ID* contains "ALI"- Location aliases or "PAR"- Parent location this field holds the value of the associated patient location.

When *LRL-4-location relationship ID* contains “PAR”- Parent, this field holds the value of the parent location to allow for nested entries. For example, a bed entry can point to its containing room or nurse unit. The value for the parent location should match the *LOC-1-primary key value-LOC* of the parent entry. Not intended to be used for multiple designations of the same physical location, but for identifying the larger physical locations (supersets) which include this physical location as a subset.

8.8.5 LDP - location department segment

The LDP segment identifies how a patient location room is being used by a certain department. Multiple departments can use the same patient location, so there can be multiple LDP segments following an LOC segment. There must be at least one LDP segment for each LOC segment. This is not intended to include any current occupant information.

Figure 8-16. LDP attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	200	PL	R			00963	Primary Key Value - LDP
2	10	IS	R		0264	00964	Location Department
3	3	IS	O	Y	0069	00965	Location Service
4	60	CE	O	Y	0265	00966	Specialty Type
5	1	IS	O	Y	0004	00967	Valid Patient Classes
6	1	ID	O		0183	00675	Active/Inactive Flag
7	26	TS	O			00969	Activation Date LDP
8	26	TS	O			00970	Inactivation Date - LDP
9	80	ST	O			00971	Inactivated Reason
10	80	VH	O	Y	0267	00976	Visiting Hours
11	40	XTN	O			00978	Contact Phone

8.8.5.0 LDP field definitions

8.8.5.1 Primary key value - LDP (PL) 00963

Components: <point of care (ID)> ^ <room (ST)> ^ <bed (ST)> ^ <facility (HD)> ^ <status (ID)> ^ <person location type (IS)> ^ <building (ID)> ^ <floor (ST)> ^ <location description (ST)>

Subcomponents of facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the institution’s identification code for the location. The identifying key value. This field has the same components as the patient location fields in the PV1 segment (except that bed status is not included here). At least the first component of this field is required. The contents of this field must exactly match the content of its preceding MFE (*MFE-4-primary key value-MFE*) and its preceding LOC (*LOC-1-primary key value-LOC*).

8.8.5.2 Location department (IS) 00964

Definition: This field contains the institution’s department to which this location belongs, or its cost center. *User-defined table 0264 - Location department* is used as the HL7 identifier for the User-defined table of values for this field.

8.8.5.3 Location service (IS) 00965

Definition: This field contains the hospital or ancillary service with which this location is associated. Depends on institution use. Repeats for rooms that can be used, for example, by different services on different days. These values should match the values used for *PV1-10-hospital service*, which is site defined. *User-defined table 0069 - Hospital service* is used as the HL7 identifier for the user-defined table of values for this field.

8.8.5.4 Specialty type (CE) 00966

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the specialty type (if any) of the department or clinic. This may also be considered a bed type. Specialty type is a physical accommodation type, whereas 'accommodation type' (*LCC-3-accommodation type*) is a financial accommodation type. Refer to *user-defined table 0265 - Specialty type* for suggested values. See also *LCH-4-location characteristic ID* and *LHC-5-Location Characteristic Value*.

User-defined Table 0265 - Specialty type

Value	Description
AMB	Ambulatory
PSY	Psychiatric
PPS	Pediatric psychiatric
REH	Rehabilitation
PRE	Pediatric rehabilitation
ISO	Isolation
OBG	Obstetrics, gynecology
PIN	Pediatric/neonatal intensive care
INT	Intensive care
SUR	Surgery
PSI	Psychiatric intensive care
EDI	Education
CAR	Coronary/cardiac care
NBI	Newborn, nursery, infants
CCR	Critical care
PED	Pediatrics
EMR	Emergency
OBS	Observation
WIC	Walk-in clinic
PHY	General/family practice
ALC	Allergy
FPC	Family planning
CHI	Chiropractic
CAN	Cancer
NAT	Naturopathic
OTH	Other specialty

8.8.5.5 Valid patient classes (IS) 00967

Definition: This field contains the patient types that are allowed to be assigned to this bed. For example, Inpatient, Outpatient, Series, Clinic, ER, Ambulatory, Observation, etc. These values should be the same set of values as those used for *PVI-2-patient class*. Refer to *user-defined table 0004 - Patient class* for suggested values.

8.8.5.6 Active/inactive flag (ID) 00675

Definition: This field indicates whether the entry for this location is currently an active, that is, valid, usable entry (disregarding whether it's waiting to be maintained by housekeeping). Refer to *HL7 table 0183 - Active/inactive* for valid values.

8.8.5.7 Activation date - LDP (TS) 00969

Definition: This field contains the date and time when the location became active or "in service" for a department (disregarding whether it is waiting to be maintained by housekeeping).

8.8.5.8 Inactivation date - LDP (TS) 00970

Definition: This field contains the date when the location became inactive or "out of service" for this department (disregarding whether it is waiting to be maintained by housekeeping).

8.8.5.9 Inactivated reason (ST) 00971

Definition: This field contains the reason the location was put out of service. It is used when *LDP-8-inactivation date-LDP* is sent.

8.8.5.10 Visiting hours (VH) 00976

Components: <start day range (ID)> ^ <end day range (ID)> ^ <start hour range (TM)> ^ <end hour range (TM)>

Definition: This field contains the hours when this location is open for visiting. Refer to *HL7 table 0267 - Days of the week* for valid values for the first two components.

Table 0267 - Days of the Week

Value	Description
SAT	Saturday
SUN	Sunday
MON	Monday
TUE	Tuesday
WED	Wednesday
THU	Thursday
FRI	Friday

8.8.5.11 Contact phone (XTN) 00978

Components: [NNN] [(999)]999-9999 [X99999] [B99999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <county code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Definition: This field contains the phone number to use to contact facility personnel about the patient location, in case of inquiries about the location. This phone is not necessarily within the named patient location.

8.8.6 LCC - location charge code segment

The optional LCC segment identifies how a patient location room can be billed by a certain department. A department can use different charge codes for the same room or bed, so there can be multiple LCC segments following an LDP segment.

Figure 8-17. LCC attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	200	PL	R			00979	Primary Key Value - LCC
2	10	IS	R		0264	00964	Location Department
3	60	CE	O	Y	0129	00980	Accommodation Type
4	60	CE	R	Y	0132	00981	Charge Code

8.8.6.0 LCC field definitions

8.8.6.1 Primary key value - LCC (PL) 00979

Components: <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <person location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <location description (ST)>

Subcomponents of facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID Type (ID)>

Definition: This field contains the institution's identification code for the location. The identifying key value. This field has the same components as the patient location fields in the PV1 segment (except that bed status is not included here). At least the first component of this field is required. The content of this field must exactly match the content of its preceding MFE (*MFE-4-primary key value-MFE*), its preceding LOC (*LOC-1-LOC primary key value*), and its preceding LDP (*LDP-1-primary key value-LDP*).

8.8.6.2 Location department (IS) 00964

Definition: This field contains the institution's department to which this location belongs, or its cost center. It must match the value in its preceding LDP (*LDP-2-location department*). *User-defined table 0264 - Location department* is used as the HL7 Identifier for the user-defined table of values for this field.

8.8.6.3 Accommodation type (CE) 00980

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the financial accommodation type of the bed or room which implies the rate to be used when occupied by a patient under specific medical conditions, which determines how it is billed. Not the same as specialty type. Used for general ledger categories. Specialty type is a physical accommodation type, whereas this field is a financial accommodation type. Repeating coded value. Site-defined codes. *User-defined table 0129 - Accommodation code* is used as the HL7 identifier for the user-defined table of values for this field.

8.8.6.4 Charge code (CE) 00981

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the repeating coded entry for codes identifying how the use of this location is to be charged. For cross-referencing beds master files with the charge master files, or for generating charges when a patient is assigned to a bed. These should be the same set of values used in *FT1-7-transaction code*. Values are site negotiated. *User-defined table 0132 - Transaction code* is used as the HL7 identifier for the user-defined table of values for this field.

8.8.7 Example: MFN location master file message

```
MSH|^~\&|HL7REG|UH|HL7LAB|CH|19910918060544||MFN^M05|MSGID002|P|2.3.1||AL|NE<cr>
MFI|LOC||UPD|||AL<cr>
MFE|MAD|PMF98123789182|199110011230|3A^RM17^17-2^FAC1<cr>
LOC|3A^RM17^17-2^FAC1|BEST BED IN UNIT|B|UNIVERSITY HOSPITAL|54326 SAND POINT
WAY^^SEATTLE^WA^98199|(206) 689- 1329|92837465998|OXY<cr>
```

```
LCH|3A^RM17^17-2^FAC1|||IMP|Y<cr>
LRL|3A^RM17^17-2^FAC1|||LAB|3WEST PATH LAB<cr>
LDP|3A^RM17^17-2^FAC1|PED|MED|PIN|I|A|19941004|||(206) 689- 1363<cr>
LCC|3A^RM17^17-2^FAC1|PED|PIC|R38746<cr>
```

8.9 CHARGE DESCRIPTION MASTER FILES

8.9.1 Charge description master file message (MFN/MFK)

The charge description (CDM) master file segment should be used in conjunction with the general master file segments in Section 8.4, “general master file SEGMENTS.” Interfacing systems often need not only to communicate data about a patient’s detailed charges, but also to communicate the charge identification entries by which an application knows how to handle a particular charge code. The charge description master is a master file. The CDM segment below is a specially designed master file segment for interfacing charge description masters. In the following message, the MFI-master file identifier should equal “CDM.” When the CDM segment is used in an MFN message, the abstract definition is as follows:

<u>MFN^M04</u>	<u>Master File Notification</u>	<u>Chapter</u>
MSH	Message Header	2
MFI	Master File Identification	8
{MFE	Master File Entry	8
CDM	Charge Description Master	8
{ [PRC] }	Price Segment	*
}		

<u>MFK^M04</u>	<u>Master File Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Acknowledgment	2
MFI	Master File Identification	8
{ [MFA] }	Master File ACK segment	8

Master File Response Message: When the CDM segment is used in the MFR message, the part of the message represented by:

```
{MFE
[Z..] }
```

is replaced by:

```
{MFE
CDM
{ [PRC] }
}
```

8.9.2 CDM - charge description master segment

The CDM segment contains the fields for identifying anything which is charged to patient accounts, including procedures, services, supplies. It is intended to be used to maintain a list of valid chargeable utilization items. Its purpose is to keep billing codes synchronized between HIS, Patient Accounting, and other departmental systems. It is not intended to completely support materials management, inventory, or complex pricing structures for which additional complex fields would be required. Given an identifying charge code, the associated fields in the charge description master file will provide basic pricing and billing data. All the additional information necessary for patient accounting systems to do billing and claims is not intended to be included in this segment; those should be part of insurance or billing profile tables.

The CDM segment contains the fields which, for one chargeable item, remain the same across facilities, departments, and patient types. The following PRC segment contains the fields which, for the same chargeable item, vary depending upon facility or department or patient type.

Figure 8-18. CDM attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	200	CE	R		0132	01306	Primary Key Value - CDM
2	200	CE	O	Y		00983	Charge Code Alias
3	20	ST	R			00984	Charge Description Short
4	250	ST	O			00985	Charge Description Long
5	1	IS	O		0268	00986	Description Override Indicator
6	60	CE	O	Y		00987	Exploding Charges
7	80	CE	O	Y	0088	00393	Procedure Code
8	1	ID	O		0183	00675	Active/Inactive Flag
9	60	CE	O	Y		00990	Inventory Number
10	12	NM	O			00991	Resource Load
11	200	CK	O	Y		00992	Contract Number
12	200	XON	O	Y		000993	Contract Organization
13	1	ID	O		0136	00994	Room Fee Indicator

8.9.2.0 CDM field definitions

8.9.2.1 Primary key value - CDM (CE) 01306

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the code assigned by the institution for the purpose of uniquely identifying the thing that can be charged. The key field of the entry. For example, this field would be used to uniquely identify a procedure, item, or test for charging purposes. Probably the same set of values as used in *FT1-7 transaction code* in financial messages. Must match *MFE-4-primary key value-MFE. User-defined table 0132 - Transaction code is used as the HL7 identifier for the user-defined table of values for this field.* See Chapter 7 for discussion of the universal service ID.

8.9.2.2 Charge code alias (CE) 00983

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains an alternative charge code. For example, points to another charge description master entry in cases where one code supersedes or overrides another code. Repeating field allows for different codes used by different systems which should be handled as if they were the same; for example, the general ledger code may differ from the billing code. Or, in a multi-facility environment which does facility-specific pricing, there may be more than one of these master file entries for one charge description, each with a different facility.

8.9.2.3 Charge description short (ST) 00984

Definition: This field contains the text abbreviations or code that is associated with this CDM entry.

8.9.2.4 Charge description long (ST) 00985

Definition: This field contains the full text description of this CDM entry.

8.9.2.5 Description override indicator (IS) 00986

Definition: This field indicates whether this CDM entry's description can be overridden. Refer to *user-defined table 0268 - Override* for suggested values.

User-defined Table 0268 - Override

Value	Description
X	Override not allowed
A	Override allowed
R	Override required

8.9.2.6 Exploding charges (CE) 00987

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the repeating occurrences for a list of other CDM entry charge codes identifying the other charges which should be generated from this CDM entry. If non-null, posting a charge to this CDM entry should result in posting the charges identified here. These are sometimes called “linked items.”

In the case of “chained” charges where the “lead” charge must be included in the exploded charges, the “lead” charge should be included in the list of exploding charges. If the price of this parent charge is included in the message, then it overrides the sum of the exploded charges prices.

8.9.2.7 Procedure code (CE) 00393

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the procedure code for procedure, if any, associated with this charge description. Repeating field allows for different procedure coding systems such as CPT4, ASTM, ICD9. Coded entry made up of code plus coding schema. Refer to *user defined table 0088 - Procedure code* for suggested values.

8.9.2.8 Active/inactive flag (ID) 00675

Definition: This field indicates whether this is a usable CDM entry. Refer to *HL7 table 0183 - Active/inactive* for valid values.

8.9.2.9 Inventory number (CE) 00990

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This optional field contains an identifying stock number, if any, which might be used, for example, as a cross reference for materials management.

8.9.2.10 Resource load (NM) 00991

Definition: This field contains the Relative Value Unit (RVU) minutes and ATS, a factor related to CPT4 coding and to pricing structure for physical billing.

8.9.2.11 Contract number (CK) 00992

Components: <ID number (NM)> ^ <check digit (NM)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)>

Type Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID (ID)>

Definition: This field contains any contract number pertaining to this chargeable item. For example, supplier contract or service contract.

8.9.2.12 Contract organization (XON) 00993

Components: <organization name (ST)> ^ <organization name type code (ID)> ^ <ID number (ID)> ^ <check digit (NM)> ^ < check digit scheme (ID)> ^ <assigning authority (HD)> ^ <identifier type code (ID)> ^ <assigning facility ID (HD)> ^ <name representation code>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility ID: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the organization with whom there is a contractual arrangement for providing the service or material used for this chargeable item.

8.9.2.13 Room fee indicator (ID) 00994

Definition: This field contains a room fee indicator. Refer to *HL7 Table 0136-Yes/no indicator* for valid values.

Y this is a component of the room fees

N this is any other chargeable item other than room fees

8.9.3 PRC - pricing segment

The PRC segment contains the pricing information for the preceding CDM segment's chargeable item. It contains the fields which, for the same chargeable item, might vary depending upon facility or department or patient type. The preceding CDM segment contains the fields which, for one chargeable item, remain the same across facilities, departments, and patient types.

Figure 8-19. PRC attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	200	CE	R		0132	00982	Primary Key Value - PRC
2	60	CE	O	Y		00995	Facility ID - PRC
3	200	CE	O	Y	0184	00676	Department
4	1	IS	O	Y	0004	00967	Valid Patient Classes
5	12	CP	C	Y		00998	Price
6	200	ST	O	Y		00999	Formula
7	4	NM	O			01000	Minimum Quantity
8	4	NM	O			01001	Maximum Quantity
9	12	MO	O			01002	Minimum Price
10	12	MO	O			01003	Maximum Price
11	26	TS	O			01004	Effective Start Date
12	26	TS	O			01005	Effective End Date
13	1	IS	O		0268	01006	Price Override Flag
14	60	CE	O	Y	0293	01007	Billing Category
15	1	ID	O		0136	01008	Chargeable Flag
16	1	ID	O		0183	00675	Active/Inactive Flag
17	12	MO	O			00989	Cost
18	1	IS	O		0269	01009	Charge On Indicator

8.9.3.0 PRC fields definitions

8.9.3.1 Primary key value - PRC (CE) 00982

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the code assigned by the institution for the purpose of uniquely identifying the thing that can be charged. The key field of the entry. For example, this field would be used to uniquely identify a procedure, item, or test for charging purposes. Probably the same set of values as used in *FT1-7 transaction code* in financial messages. Must match *MFE-4-primary key-MFE* and *CDM-1-primary key-CDM*. *User-defined table 0132 - Transaction code is used as the HL7 Identifier for the user-defined table of values for this field.* See Chapter 7 for discussion of the universal service ID.

8.9.3.2 Facility ID - PRC (CE) 00995

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the facility of the institution for which this price (for the preceding CDM entry) is valid. For use when needing multi-facility pricing. If null, assume all facilities. In a multi-facility environment, the facility associated with this chargeable item may not be the same as the sending or receiving facility identified in the MSH segment. Use only when the price is not the same for all facilities, that is, a null value indicates that this pricing is valid for all facilities.

When two PRC segments are sent with the same key values but different facility identifiers, the second is sent in addition to the first, not to replace the first. The effective unique identifier is the charge code (*PRC-1-primary key value-PRC*) plus the facility ID (*PRC-2-facility ID*). Multiple facility identifiers can be sent in the same segment to indicate that those facilities use the same pricing.

8.9.3.3 Department (CE) 00676

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the department of the facility which accrues revenue/cost for this type of charge. When pricing is different for different departments within the same facility, this will indicate for which department the following pricing information is valid. Use only when the price is not the same for all departments, that is, a null value indicates that this pricing is valid for all departments.

When two PRC segments are sent the same key values but with different departments, the second is sent in addition to the first, not to replace the first. The effective unique identifier is the charge code (*PRC-1-primary key-PRC*) plus the facility ID (*PRC-2-facility ID*) plus the department (*PRC-3-department*). Multiple departments can be sent in the same segment to indicate that those departments use the same pricing. *User-defined table 0184 - Department for suggested values is used as the HL7 identifier for the user-defined table of values for this field.*

8.9.3.4 Valid patient classes (IS) 00967

Definition: This field contains the patient types for which this charge description is valid. For example, Inpatient, Outpatient, Series, Clinic, ER, Ambulatory, Observation, etc. These values should be the same set of values as those used for *PV1-3-patient class*, which is site defined. Use only when the price is not valid for all patient types, that is, a null value indicates that this pricing is valid for all patient classes. Refer to *user-defined table 0004 - Patient class* for suggested values.

When two PRC segments are sent the same key values but with different valid patient classes, the second is sent in addition to the first, not to replace the first. The effective unique identifier is the charge code (*PRC-1-PRC primary key*) plus the facility ID (*PRC-2-facility ID*) plus the department (*PRC-3-department*) plus the patient class (*PRC-4-valid patient classes*). Multiple patient classes can be sent in the same segment to indicate that those patient classes use the same pricing.

8.9.3.5 Price (CP) 00998

Components: <price (MO)> ^ <price type (ID)> ^ <from value (NM)> ^ <to value (NM)> ^ <range units (CE)> ^ <range type (ID)>

Subcomponents of price: <quantity (NM)> & <denomination (ID)>

Subcomponents of range nits: <identifier (ST)> & <text (ST)> & <name of coding system (ST)> & <alternate identifier (ST)> & <alternate text (ST)> & <name of alternate coding system (ST)>

Definition: This field contains the price to be charged for service, item, or procedure. If CDM price will always be overridden when charges are posted, then this field is optional. Otherwise, price would be a required field. The formula or calculation that is to be used to get total price from these price components is left to implementation negotiations agreed upon by the participating institutions. See Chapter 2, Section 2.8.8, "CP - composite price," for a description of the use of the composite price (CP) data type.

8.9.3.6 Formula (ST) 00999

Definition: This field contains the mathematical formula to apply to *PRC-5-price* in order to compute total price. The syntax of this formula must conform to Arden Syntax rules.

8.9.3.7 Minimum quantity (NM) 01000

Definition: This field contains the minimum number of identical charges allowed on one patient account for this CDM entry.

8.9.3.8 Maximum quantity (NM) 01001

Definition: This field contains the maximum number of identical charges allowed on one patient account for this CDM entry.

8.9.3.9 Minimum price (MO) 01002

Components: <quantity (NM)> ^ <denomination (ID)>

Definition: This field contains the minimum total price (after computation of components of price) that can be charged for this item.

8.9.3.10 Maximum price (MO) 01003

Components: <quantity (NM)> ^ <denomination (ID)>

Definition: This field contains the maximum total price (after computation of components of price) that can be charged for this item.

8.9.3.11 Effective start date (TS) 01004

Definition: This field contains the date/time when this CDM entry becomes effective.

8.9.3.12 Effective end date (TS) 01005

Definition: This field contains the date/time when this CDM entry is no longer effective.

8.9.3.13 Price override flag (IS) 01006

Definition: This field indicates whether this CDM entry's price can be overridden. Refer to *user-defined table 0268 - Override* for suggested values.

8.9.3.14 Billing category (CE) 01007

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the billing category codes for any classification systems needed, for example, general ledger codes and UB92 categories. Repeating field with coded entry made up of category code

plus category system. *User-defined table 0293 - Billing category is used as the HL7 identifier for the user-defined table of values for this field.*

8.9.3.15 Chargeable flag (ID) 01008

Definition: This field contains a chargeable indicator. Refer to *HL7 table 0136 - Yes/no Indicator* for valid values.

N charge is not billable, that is, do not create charges for this CDM entry; this is zero price item

Y item is billable (this is also the default when NULL)

8.9.3.16 Active/inactive flag (ID) 00675

Definition: This indicates whether this is a usable CDM entry. Refer to *HL7 table 0183 - Active/inactive* for valid values.

8.9.3.17 Cost (MO) 00989

Components: <quantity (NM)> ^ <denomination (ID)>

Definition: This field contains the institution's calculation of how much it costs to provide this item, that is, what the institution had to pay for the material plus any specified payment expenditure, effort or loss due to performing or providing the chargeable item.

8.9.3.18 Charge on indicator (IS) 01009

Definition: This field contains the user-defined table of values which indicates when a charge for services or procedures should be accrued. Refer to *user-defined table 0269 - Charge on indicator* for suggested values.

User-defined Table 0269 - Charge on indicator

Value	Description
O	Charge on Order
R	Charge on Result

8.9.4 Example: MRN message charge description master file

```
MSH|^~\&|HL7REG|UH|HL7LAB|CH|19910918060544||MFN^M04|MSGID002|P|2.3.1||AL|NE<cr>
MFI|CDM|UPD||AL<cr>
MFE|MAD|CDM08123789182|199110011230|P2246^^PLW<cr>
CDM|P2246^^PLW|2445|APPENDECTOMY|X||244.34|A|2321|||N<cr>
PRC|P2246^^PLW|FAC3|SURG|0~A|100.00^UP|formula|1|1
|100.00^USD|1000.00^USD|19941031||Y|GL545|Y|A|<cr>
```

8.10 CLINICAL TRIALS MASTER FILES

8.10.1 Clinical trials master file message (MFN/MFK)

The CM0 (Clinical Study Master), CM1 (Clinical Study Phase), and CM2 (Clinical Study Schedule) segments can be used to transmit master files information between systems. The CM0 segment contains the information about the study itself; the CM1 contains the information about one phase of the study identified in the preceding CM0; and the CM2 contains the information about the scheduled time points for the preceding study or phase-related treatment or evaluation events. When these segments are used in an MFN message, the abstract definition is described below.

Case 1: MFN message for Clinical Study with phases and schedules

MFN-I-master file identifier code = CMA

<u>MFN^M06</u>	<u>Master File Notification</u>	<u>Chapter</u>
MSH	Message Header	2
MFI	Master File Identification	8
{ MFE	Master File Entry	8
CM0	Clinical Study Master	8
[{ CM1	Clinical Study Phase	8
[{CM2}] }	Clinical Study Schedule	8
}		

<u>MFK^M06</u>	<u>Master File Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Acknowledgment	2
MFI	Master File Identification	8
{ [MFA] }	Master file ACK	8

Case 2: MFN message for Clinical Study without phases but with schedules

MFN-I-master file identifier code = CMB

<u>MFN^M06</u>	<u>Master File Notification</u>	<u>Chapter</u>
MSH	Message Header	2
MFI	Master File Identification	8
{ MFE	Master File Entry	8
CM0	Clinical Study Master	8

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```
[ {CM2}}
}
```

Clinical Study Schedule

8

<u>MFK^M06</u>	<u>Master File Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Acknowledgment	2
MFI	Master File Identification	8
{ [MFA] }	Master file ACK	8

When the Clinical Trials master segments are used in the MFR message, the part of the message represented by:

```
MFE
[Z..] }
```

is replaced by, in case 1 above:

```
{ MFE
CM0
[ { CM1
  [ {CM2}}
}
```

In case 2 above, the corresponding segments in the MFR message represented by:

```
{MFE
[Z..] }
```

are replaced by

```
{ MFE
  CM0
    [ {CM2}} ] ]
}
```

8.10.2 CM0 - clinical study master segment

The Clinical Study Master (CM0) segment contains the information about the study itself. The sending application study number for each patient is sent in the CSR segment. The optional CM0 enables information about the study at the sending application that may be useful to the receiving systems. All of the fields in the segment describe the study status at the sending facility unless otherwise agreed upon.

Figure 8-20. CM0 attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	SI	O			01010	Set ID - CM0
2	60	EI	R			01011	Sponsor Study ID
3	60	EI	O	Y/3		01036	Alternate Study ID
4	300	ST	R			01013	Title of Study
5	60	XCN	O	Y		01014	Chairman of Study
6	8	DT	O			01015	Last IRB Approval Date
7	8	NM	O			01016	Total Accrual to Date
8	8	DT	O			01017	Last Accrual Date
9	60	XCN	O	Y		01018	Contact for Study
10	40	XTN	O			01019	Contact's Tel. Number
11	100	XAD	O	Y		01020	Contact's Address

8.10.2.0 CM0 field definitions

8.10.2.1 Set ID - CM0 (SI) 01010

Definition: This field contains a number that uniquely identifies this transaction for the purpose of adding, changing, or deleting the transaction. For those messages that permit segments to repeat, the Set ID field is used to identify the repetitions.

8.10.2.2 Sponsor study ID (EI) 01011

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field contains the study number established by the study sponsor. Please see discussion in Section 7.7.1.1, "Sponsor study ID."

8.10.2.3 Alternate study ID (EI) 01036

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field contains the local or collaborators' cross-referenced study numbers.

8.10.2.4 Title of study (ST) 01013

Definition: This field contains the sending institution's title for the clinical trial. It gives recipients further identification of the study.

8.10.2.5 Chairman of study (XCN) 01014

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (ST)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility ID (HD)> ^ <name representation code>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility ID: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the sending institution's chairman. It further identifies the study. The chairman's name may be needed for communication purposes.

8.10.2.6 Last IRB approval date (DT) 01015

Definition: This field contains an institution's Internal Review Board approval dates which are required annually to continue participation in a clinical trial.

8.10.2.7 Total accrual to date (NM) 01016

Definition: This field is a quality control field to enable checks that patient data have been transmitted on all registered patients.

8.10.2.8 Last accrual date (DT) 01017

Definition: This field contains the status information on the patient registration activity for quality control and operations purposes.

8.10.2.9 Contact for study (XCN) 01018

Components: <ID number (ST)> ^ <family name (ST)> ^ <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (ST)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility ID (HD)> ^ <name representation code>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility ID: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the name of the individual who should be contacted for inquiries about data transmitted for this study.

8.10.2.10 Contact's telephone number (XTN) 01019

Components: [NNN] [(999)]999-9999 [X9999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <county code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Definition: This field contains the phone number of the study contact identified in *CM0-9-contact for study*.

8.10.2.11 Contact's address (XAD) 01020

Components: <street address (ST)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code (ST)> ^ <country (ID)> ^ <address type (ID)> ^ <other geographic designation (ST)> ^ <county/parish code (IS)> ^ <census tract (IS)> ^ <address representation code (ID)>

Definition: This field contains the address of the study contact identified in *CM0-9-contact for study*.

8.10.3 CM1 - clinical study phase master segment

Each Clinical Study Phase Master (CM1) segment contains the information about one phase of a study identified in the preceding CM0. This is an optional structure to be used if the study has more than one treatment or evaluation phase within it. The identification of study phases that the patient enters are sent in the CSP segment: sequence 2. The CM1 segment describes the phase in general for the receiving system.

Figure 8-21. CM1 attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	SI	R			01021	Set ID - CM1
2	60	CE	R			01022	Study Phase Identifier
3	300	ST	R			01023	Description of Study Phase

8.10.3.0 CM1 field definitions**8.10.3.1 Set ID - CM1 (SI) 01021**

Definition: This field contains a number that uniquely identifies this transaction for the purpose of adding, changing, or deleting the transaction. For those messages that permit segments to repeat, the Set IF field is used to identify the repetitions.

8.10.3.2 Study phase identifier (CE) 01022

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field should correspond to the study phase ID coding system in Section 7.7.2.1, “Study phase ID.”

8.10.3.3 Description of study phase (ST) 01023

Definition: This field contains a brief explanation for recipients to understand what the phase represents.

8.10.4 CM2 - clinical study schedule master segment

The Clinical Study Schedule Master (CM2) contains the information about the scheduled time points for study or phase-related treatment or evaluation events. The fact that a patient has data satisfying a scheduled time point is sent in the CSS segment, sequence 2. The CM2 segment describes the scheduled time points in general.

Figure 8-22. CM2 attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	SI	O			01024	Set ID- CM2
2	60	CE	R			01025	Scheduled Time Point
3	300	ST	O			01026	Description of Time Point
4	60	CE	R	Y/200		01027	Events Scheduled This Time Point

8.10.4.0 CM2 field definitions

8.10.4.1 Set ID - CM2 (SI) 01024

Definition: This field contains a number that uniquely identifies this transaction for the purpose of adding, changing, or deleting the transaction. For those messages that permit segments to repeat, the Set ID field is used to identify the repetitions.

8.10.4.2 Scheduled time point (CE) 01025

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field should correspond to the scheduled time point coding system in Section 7.7.3.1, “Study scheduled time point.”

8.10.4.3 Description of time point (ST) 01026

Definition: This field contains a brief explanation so recipients will understand what the time point represents.

8.10.4.4 Events scheduled this time point (CE) 01027

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains a study-specific event. Coding systems may be developed for this field or applications may use facility-wide or standardized orders and procedures coding systems. This enables integration of procedures or events ordered for clinical trials with medical order entry systems.

8.11 OUTSTANDING ISSUES

8.11.1 We invite proposals for the specification of other HL7-wide master files segments.

9. Medical Records/Information Management (Document Management)

Chapter Chair/Editor: Wayne Tracy, MS
Health Patterns, LLC

Chapter Chair/Editor: Anne Shanney
IDX Systems Corporation

9.1 PURPOSES

This chapter currently supports document management. In the future, it is intended also to support the data exchange needs of applications supporting other medical record functions, including chart location and tracking, deficiency analysis, consents, and release of information. The main purpose of the medical record is to produce an accurate, legal, and legible document that serves as a comprehensive account of healthcare services provided to a patient.

This chapter defines the transactions at the seventh level, i.e., the abstract messages. Various schemes may be used to generate the actual characters that comprise the messages according to the communications environment. The HL7 Encoding Rules will be used where there is not a complete Presentation Layer. This is described in Chapter 1, “Relationship to Other Protocols.” The examples in this chapter were constructed using the HL7 Encoding Rules.

9.1.1 Definition of terms and concepts

This part provides definition of terms used throughout this chapter. The intent of this part is to provide clarification on use and interpretation.

9.1.1.1 Addendum:

An appendage to an existing document that contains supplemental information. The parent document remains in place and its content is unaltered.

9.1.1.2 Archived:

A storage status in which a document has been stored off-line for long-term access.

9.1.1.3 Canceled:

An availability status in which a document has been “removed” from a patient’s record with no replacement. This is done when a document has been erroneously created or assigned to the incorrect patient.

9.1.1.4 Composite document:

A document which consists of an original document and one or more addenda.

9.1.1.5 Document completion table:

The following terms are used to describe the workflow progression of a document:

9.1.1.6 Authenticated:

A completion status in which a document or entry has been signed manually or electronically by one or more individuals who attest to its accuracy. No explicit determination is made that the assigned individual has performed the authentication. While the standard allows multiple instances of authentication, it would be typical to have a single instance of authentication, usually by the assigned individual.

9.1.1.6.1 *Dictated:*

A completion status in which information has been orally recorded but not yet transcribed.

9.1.1.6.2 *Documented:*

A completion status in which document content, other than dictation, has been received but has not been translated into the final electronic format. Examples include paper documents, whether hand-written or typewritten, and intermediate electronic forms, such as voice to text.

9.1.1.6.3 *In progress/assigned:*

A workflow status in which the recipient has assigned the material to personnel to perform the task of transcription. The document remains in this state until the document is transcribed.

9.1.1.6.4 *Incomplete:*

A completion status in which information is known to be missing from a transcribed document.

9.1.1.7 Legally authenticated:

A completion status in which a document or entry has been signed manually or electronically by the individual who is legally responsible for that document or entry. This is the most mature state in the workflow progression.

9.1.1.7.1 *Pre-authenticated:*

A completion status in which a document is transcribed but not authenticated.

9.1.1.8 Edited document:

A document that alters an existing document which had not been made available for patient care (see also Section 9.1.1.10, "Replacement document").

9.1.1.9 New or original document:

The first version of a document. The original may or may not be final or authenticated. An original document should have a set of associated statuses to define its current condition.

9.1.1.10 Obsolete:

An availability status in which a document has been replaced by a document which contains revised content.

9.1.1.11 Purged:

A storage status in which a document is no longer available in this system.

9.1.1.12 Replacement document:

A document that replaces an existing document. The original document becomes obsolete, but is still retained in the system for historical reference.

9.1.1.13 Restricted:

A confidentiality status in which access to a document has institutionally assigned limitations.

9.1.1.14 Revised document:

This is not a supported trigger event. See Sections 9.1.1.6, “Edited document”, and 9.1.1.10 “Replacement document”.

9.1.1.15 Transcription:

A process of transforming dictated or otherwise documented information into an electronic format.

9.2 DOCUMENT MANAGEMENT SECTION

This section defines the Medical Document Management (MDM) transaction set. It supports transmission of new or updated documents or information about their status(es). The trigger events and messages may be divided into two broad categories, one which describes the statuses of documents, and one which both describes the statuses and contains the document content itself.

The document management section is concerned primarily with the management of those documents and entries which are created as a result of a transcription process. These documents are created in two distinct contexts, one of which is related to an order and describes the procedures or activities associated with that order, and another which occurs independent of the order process. The scope of this section also includes any document that contains data derived from orders or results but which must be treated as aggregate display data due to system limitations. This is a transition strategy to support integration of data across the continuum of care.

The content of a document can be represented with one or more observation segments (OBX). Where headings or separations naturally exist within the text, it is preferred that each of these blocks be represented as a separate OBX record. **Where systems are able to decompose the text into separate medical concepts, the most atomic level of granularity of content should be represented, ideally with each medical concept being represented in its own OBX segment.** Many of these concepts can be represented as coded entities.

9.3 ASSUMPTIONS

Within this section, we have created a single message whose contents vary predicated on the trigger event. The following assumptions are made when the Medical Document Management (MDM) message is used:

- The application system is responsible for meeting all legal requirements (on the local, state, and federal levels) in the areas of document authentication, confidentiality, and retention.
- All documents are unique, and document numbers and file names are not reused.

- Documents may be associated with one or more orders.

9.4 TRIGGER EVENTS AND MESSAGE DEFINITIONS

Each triggering event is listed below, along with the applicable form of the message exchange. The notation used to describe the sequence, optionality, and repetition of segments is described in Chapter 2, “Format for Defining Abstract Messages.” There are two classes of events, those which contain notifications only, and those which contain both notifications and content (text contained in OBX segments).

These triggering events are mainly associated with documents or entries that will be or have been transcribed. The types and appearance of the transcribed documents can vary greatly within a healthcare organization and between organizations. However, the main purpose of the transcription process is to document patient care or diagnostic results in a legible manner; these documents then become part of the legal medical record. The conceptual purpose of document notification is to facilitate updating the receiving system(s) with information from the source system(s), typically dictation or transcription systems, to indicate that an electronic document has been created or altered. The document notification message can be attached to an entire document (i.e., transcribed document) or can be transmitted stand-alone. In either case, the document notification is transmitted in the form of an unsolicited update or in response to a record-oriented query. A document notification message can be created under a variety of circumstances such as when: 1) dictation has been completed; 2) a document has been transcribed; or 3) the status of a document has been changed, for example, when a document has been authenticated.

9.4.1 MDM/ACK - original document notification (event T01)

This is a notification of the creation of a document without the accompanying content. There are multiple approaches by which systems become aware of documents:

Scenario A: A document is dictated and chart tracking system is notified that it has been dictated and is awaiting transcription.

Scenario B: Dictation is transcribed and chart tracking system is notified that the document exists and requires authentication.

Scenario C: A provider orders a series of three X-rays. The radiologist dictates a single document which covers all three orders. Multiple placer numbers are used to identify each of these orders.

<u>MDM^T01</u>	<u>Original Document Notification</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
PV1	Patient Visit	3
TXA	Document Notification	9

<u>ACK^T01</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

9.4.2 MDM/ACK - original document notification and content (event T02)

This is a notification of the creation of a document with the accompanying content.

Scenario A: Dictation is transcribed and the chart tracking system is notified that the document exists and requires authentication. The content of the document is transmitted along with the notification.

Scenario B: A provider orders a series of three X-rays. The radiologist's dictation is transcribed in a single document, which covers all three orders. Multiple placer numbers are used to identify each of the orders within the single document message. The notification and document content are transmitted.

<u>MDM^T02</u>	<u>Original Document Notification & Content</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
PV1	Patient Visit	3
TXA	Document Notification	9
{OBX}	Observation/Result (one or more required)	7

<u>ACK^T02</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error Information	2

9.4.3 MDM/ACK - document status change notification (event T03)

This is a notification of a change in a status of a document without the accompanying content.

Scenario: A document is authenticated. Notification is sent to the chart tracking system and is used to update the document status from pre-authenticated to authenticated or legally authenticated.

A change in any of the following independent status characteristics would cause a message to be sent:

- Completion Status
- Confidentiality Status
- Availability Status (the Availability Status of "cancelled" is supported in T11 (document cancel notification) or T03)
- Storage Status

<u>MDM^T03</u>	<u>Document Status Change Notification</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
PV1	Patient Visit	3
TXA	Document Notification	9

<u>ACK^T03</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

9.4.4 MDM/ACK - document status change notification and content (event T04)

This is a notification of a change in a status of a document with the accompanying content.

Scenario: A document is authenticated. Notification is sent to the chart tracking system and is used to update the document status from pre-authenticated to authenticated or legally authenticated. The document content is also transmitted.

<u>MDM^T04</u>	<u>Document Status Change Notification & Content</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3

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PV1	Patient Visit	3
TXA	Document Notification	9
{OBX}	Observation/Result (one or more required)	7

<u>ACK^T04</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

9.4.5 MDM/ACK - document addendum notification (event T05)

This is a notification of an addendum to a document without the accompanying content.

Scenario: Author dictates additional information as an addendum to a previously transcribed document. A new document is transcribed. This addendum has its own new unique document ID that is linked to the original document via the parent ID. Addendum document notification is transmitted. This creates a composite document.

<u>MDM^T05</u>	<u>Document Addendum Notification</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
PV1	Patient Visit	3
TXA	Document Notification	9

<u>ACK^T05</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

9.4.6 MDM/ACK - document addendum notification and content (event T06)

This is a notification of an addendum to a document with the accompanying content.

Scenario: Author dictates additional information as an addendum to a previously transcribed document. A new document is transcribed. This addendum has its own new unique document ID that is linked to the original document via the parent ID. Addendum document notification is transmitted, along with the document content. This creates a composite document.

<u>MDM^T06</u>	<u>Document Addendum Notification & Content</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
PV1	Patient Visit	3
TXA	Document Notification	9
{OBX}	Observation/Result (one or more required)	7

<u>ACK^T06</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

9.4.7 Document edit notification (event T07)

Note: The only valid use of this trigger event is for documents whose availability status is "Unavailable," i.e., the document has not been made available for patient care.

This is a notification of an edit to a document without the accompanying content.

Scenario: Errors, which need to be corrected, are discovered in a document. The original document is edited, and an edit notification is sent.

<u>MDM^T07</u>	<u>Document Edit Notification</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
PV1	Patient Visit	3
TXA	Document Notification	9

<u>ACK^T07</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

9.4.8 MDM/ACK - document edit notification and content (event T08)

Note: The only valid use of this trigger event is for documents whose availability status is "Unavailable," i.e., the document has not been made available for patient care.

This is a notification of an edit to a document with the accompanying content.

Scenario: Errors, which need to be corrected, are discovered in a document. The original document is edited, and an edit notification and document content are sent.

<u>MDM^T08</u>	<u>Document Edit Notification & Content</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
PV1	Patient Visit	3
TXA	Document Notification	9
{OBX}	Observation/Result (one or more required)	7

<u>ACK^T08</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

9.4.9 MDM/ACK - document replacement notification (event T09)

Note: This trigger event is generally used when the original document availability status is "Available."

This is a notification of replacement to a document without the accompanying content.

Scenario: Errors discovered in a document are corrected. The original document is replaced with the revised document. The replacement document has its own new unique document ID that is linked to the original document via the parent ID. The availability status of the original document is changed to "Obsolete" but the original document should be retained in the system for historical reference. Document replacement notification is sent.

<u>MDM^T09</u>	<u>Document Replacement Notification</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
PV1	Patient Visit	3
TXA	Document Notification	9

<u>ACK^T09</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

9.4.10 MDM/ACK - document replacement notification and content (event T10)

Scenario: Errors discovered in a document are corrected. The original document is replaced with the revised document. The replacement document has its own new unique document ID that is linked to the original document via the parent ID. The availability status of the original document is changed to “Obsolete” but the original document should be retained in the system for historical reference. Document replacement notification and document content are sent.

<u>MDM^T10</u>	<u>Document Replacement Notification & Content</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
PV1	Patient Visit	3
TXA	Document Notification	9
{OBX}	Observation/Result (one or more required)	7

<u>ACK^T10</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

9.4.11 MDM/ACK - document cancel notification (event T11)

This is a notification of a cancellation of a document. This trigger event should be used only for an original document with an availability status of “Unavailable.” When a document has been made available for patient care, the process should be to replace the original document, which then becomes obsolete. The replacement document describes why the erroneous information exists.

Scenario: When the author dictated a document, the wrong patient identification was given, and the document was transcribed and sent to the wrong patient’s record. When the error is discovered, a cancellation notice is sent to remove the document from general access in the wrong patient’s record. In these cases, a reason should be supplied in the cancellation message. To protect patient privacy, the correct patient’s identifying information should not be placed on the erroneous document that is retained in the wrong patient’s record for historical reference. A new document notification and content will be created using a T02 (original document notification and content) event and sent for association with the correct patient’s record.

<u>MDM^T11</u>	<u>Document Cancel Notification</u>	<u>Chapter</u>
MSH	Message Header	2
EVN	Event Type	3
PID	Patient Identification	3
PV1	Patient Visit	3
TXA	Document Notification	9

<u>ACK^T11</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

9.5 MESSAGE SEGMENTS

9.5.1 TXA - transcription document header segment

The TXA segment contains information specific to a transcribed document but does not include the text of the document. The message is created as a result of a document status change. This information is used to update other healthcare systems to identify reports that are available in the transcription system. By maintaining the TXA message information in these systems, the information is available when constructing queries to the transcription system requesting the full document text.

Figure 9-1. TXA attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	SI	R			00914	Set ID- TXA
2	30	IS	R		0270	00915	Document Type
3	2	ID	C		0191	00916	Document Content Presentation
4	26	TS	O			00917	Activity Date/Time
5	60	XCN	C	Y		00918	Primary Activity Provider Code/Name
6	26	TS	O			00919	Origination Date/Time
7	26	TS	C			00920	Transcription Date/Time
8	26	TS	O	Y		00921	Edit Date/Time
9	60	XCN	O	Y		00922	Originator Code/Name
10	60	XCN	O	Y		00923	Assigned Document Authenticator
11	48	XCN	C	Y		00924	Transcriptionist Code/Name
12	30	EI	R			00925	Unique Document Number
13	30	EI	C			00926	Parent Document Number
14	22	EI	O	Y		00216	Placer Order Number
15	22	EI	O			00217	Filler Order Number
16	30	ST	O			00927	Unique Document File Name
17	2	ID	R		0271	00928	Document Completion Status
18	2	ID	O		0272	00929	Document Confidentiality Status
19	2	ID	O		0273	00930	Document Availability Status
20	2	ID	O		0275	00932	Document Storage Status
21	30	ST	C			00933	Document Change Reason
22	60	PPN	C	Y		00934	Authentication Person, Time Stamp
23	60	XCN	O	Y		00935	Distributed Copies (Code and Name of Recipients)

9.5.1.0 TXA field definitions

9.5.1.1 Set ID - TXA (SI) 00914

Definition: This field contains a number that uniquely identifies this transaction for the purpose of adding, changing, or deleting the transaction.

9.5.1.2 Document type (IS) 00915

Definition: This field identifies the type of document (as defined in the transcription system). Refer to *user-defined table 0270 - Document type* for suggested values. The organization is free to add more entries.

User-defined Table 0270 - Document type

Value	Description
AR	Autopsy report
CD	Cardiodiagnostics
CN	Consultation
DI	Diagnostic imaging
DS	Discharge summary
ED	Emergency department report
HP	History and physical examination
OP	Operative report
PC	Psychiatric consultation
PH	Psychiatric history and physical examination
PN	Procedure note
PR	Progress note
SP	Surgical pathology
TS	Transfer summary

9.5.1.3 Document content presentation (ID) 00916

Definition: This is a conditional field which is required whenever the message contains content as presented in one or more OBX segments. This field identifies the method by which this document was obtained or originated. Refer to *HL7 table 0191 – Type of referenced data* for valid values.

Table 0191 - Type of referenced data

Value	Description
SI	Scanned image
NS	Non-scanned image
SD	Scanned document
TX	Machine readable text document
FT	Formatted text
IM	Image data (new with HL7 v 2.3)
AU	Audio data (new with HL7 v 2.3)
AP	Other application data, typically uninterpreted binary data (new with HL7 v 2.3)

9.5.1.4 Activity date/time (TS) 00917

Definition: This field contains the date/time identified in the document as the date a procedure or activity was performed. This date can identify date of surgery, non-invasive procedure, consultation, examination, etc.

9.5.1.5 Primary activity provider code/name (XCN) 00918

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code(ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the name of the person identified in the document as being responsible for performing the procedure or activity. This field includes the code and name (if available) of the caregiver. This field is conditional based upon the presence of a value in *TXA-4-activity date/time*.

9.5.1.6 Origination date/time (TS) 00919

Definition: This field contains the date and time the document was created (i.e., dictated, recorded, etc.).

9.5.1.7 Transcription date/time (TS) 00920

Definition: This field contains the date and time the input was actually transcribed. This field is conditional based upon the presence of a value in *TXA-17-document completion status* of anything except “dictated.”

9.5.1.8 Edit date/time (TS) 00921

Definition: This field contains the date and time the document was edited.

9.5.1.9 Originator code/name (XCN) 00922

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code(ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field identifies the person who originated (i.e., dictated) the document. The document originator may differ from the person responsible for authenticating the document.

9.5.1.10 Assigned document authenticator (XCN) 00923

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code(ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field identifies the person(s) responsible for authenticating the document, who may differ from the originator. Multiple persons may be responsible for authentication, especially in teaching facilities. This field is allowed to repeat an undefined number of times.

9.5.1.11 Transcriptionist code/name (XCN) 00924

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^

```
<name type code(ID)> ^ <identifier check digit (ST)> ^ <code identifying the check  
digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)>  
^ <name representation code (ID)>
```

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field identifies the person transcribing the document. This is a conditional value; it is required on all transcribed documents.

9.5.1.12 Unique document number (EI) 00925

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (IS)> ^ <universal ID type (ID)>

Definition: This field contains a unique document identification number assigned by the sending system. This document number is used to assist the receiving system in matching future updates to the document, as well as to identify the document in a query. When the vendor does not provide a unique document ID number, some type of document identifier should be entered here, or the Unique Document File name should be utilized. See Chapter 2, Section 2.8.49, "XTN - extended telecommunication number." Where the system does not customarily have a document filler number, this number could serve as that value, as well.

9.5.1.13 Parent document number (EI) 00926

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (IS)> ^ <universal ID type (ID)>

Definition: This field contains a document number that identifies the parent document to which this document belongs. The parent document number can be used to assist the receiving system in matching future updates to this document. This is a conditional field that is always required on T05 (document addendum notification), T06 (document addendum notification and content), T09 (document replacement notification), and T10 (document replacement notification and content) events.

9.5.1.14 Placer order number (EI) 00216

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (IS)> ^ <universal ID type (ID)>

Definition: This field is the placer application's order number.

This is a composite field. The first component is a string of characters that identifies an individual order (e.g., OBR). It is assigned by the placer (ordering application). It identifies an order uniquely among all orders from a particular ordering application. The second through fourth components contain the (filler) assigning authority of the placing application. The (filler) assigning authority is a string of characters that will be uniquely associated with an application. A given institution or group of intercommunicating institutions should establish a unique list of applications that may be potential placers and fillers and assign unique entity identifiers. The components are separated by component delimiters.

9.5.1.15 Filler order number (EI) 00217

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (IS)> ^ <universal ID type (ID)>

Definition: This field is the order number associated with the filling application. Where a transcription service or similar organization creates the document and uses an internally unique identifier, that number should be inserted in this field. Its first component is a string of characters that identifies an order detail segment (e.g., OBR). This string must uniquely identify the order (as specified in the order detail segment)

from other orders in a particular filling application (e.g., transcription service). This uniqueness must persist over time. Where a number is reused over time, a date can be affixed to the non-unique number to make it unique.

The second through fourth components contains the (filler) assigning authority. The (filler) assigning authority is a string of characters that uniquely defines the application from other applications on the network. The second through fourth components of the filler order number always identify the actual filler of an order.

For further details, please see the definitions provided in Chapter 4.

9.5.1.16 Unique document file name (ST) 00927

Definition: This field contains a unique name assigned to a document by the sending system. The file name is used to assist the receiving system in matching future updates to the document.

9.5.1.17 Document completion status (ID) 00928

Definition: This field identifies the current completion state of the document. This is a required, table-driven field. Refer to *HL7 table 0271 - Document completion status* for valid values.

Table 0271 - Document completion status

Value	Description
DI	Dictated
DO	Documented
IP	In Progress
IN	Incomplete
PA	Pre-authenticated
AU	Authenticated
LA	Legally authenticated

Figure 9-2. Document completion status state transition table

Transition (Action)	Old State	New State
T01 Original Notification T02 Original Notification and Content	NA	Dictated In Progress Incomplete Pre-authenticated Authenticated Legally authenticated
T03 Status Change Notification T04 Status Change Notification and Content	Dictated	In Progress Incomplete Pre-authenticated Authenticated Legally authenticated

Transition (Action)	Old State	New State
	In Progress	Incomplete Pre-authenticated Authenticated Legally authenticated
	Incomplete	Pre-authenticated Authenticated Legally authenticated
	Pre-authenticated	Authenticated Legally authenticated
	Authenticated	Legally authenticated
	Legally authenticated	NA
	Documented	Pre-authenticated Authenticated Legally authenticated
T05 Addendum Notification T06 Addendum Notification and Content	NA	Dictated In Progress Incomplete Pre-authenticated Authenticated Legally authenticated
T07 Edit Notification T08 Edit Notification and Content	Dictated	In Progress Incomplete Pre-authenticated Authenticated Legally authenticated
	In Progress	Incomplete Pre-authenticated Authenticated Legally authenticated
	Incomplete	Pre-authenticated Authenticated Legally authenticated
	Pre-authenticated	Authenticated Legally authenticated
	Authenticated	Legally authenticated
	Legally authenticated	NA
	Documented	Pre-authenticated

Transition (Action)	Old State	New State
		Authenticated Legally authenticated
T09 Replacement Notification T10 Replacement Notification and Content	NA	Dictated In Progress Incomplete Pre-authenticated Authenticated Legally authenticated
T11 Cancel Notification	Dictated In Progress Incomplete Pre-authenticated and Availability status of “Unavailable”	Canceled

Note: NA means not applicable. Document confidentiality status (ID) 00929

9.5.1.18 Document confidentiality status (ID) 00929

Definition: This is an optional field which identifies the degree to which special confidentiality protection should be applied to this information. The assignment of data elements to these categories is left to the discretion of the healthcare organization. Refer to *HL7 table 0272 - Document confidentiality status* for valid values.

Table 0272 - Document confidentiality status

Value	Description
V	Very restricted
R	Restricted
U	Usual control

9.5.1.19 Document availability status (ID) 00930

Definition: This is an optional field which identifies a document's availability for use in patient care. If an organization's business rules allow a document to be used for patient care before it is authenticated, the value of this field should be set to "AV." If a document has been made available for patient care, it cannot be changed or deleted. If an erroneous document has been made available at any point in time and a replacement is not appropriate, then it may be marked as "Canceled" and removed, as in the case of a document being assigned to the wrong patient. Additional information must be provided via an addendum, which is separately authenticated and date/time stamped. If the content of a document whose status is "Available" must be revised, this is done by issuing a replacement, which is separately authenticated and date/time stamped. Refer to *HL7 table 0273 - Document availability status* for valid values.

Table 0273 - Document availability status

Value	Description
AV	Available for patient care
CA	Deleted
OB	Obsolete

Value	Description
UN	Unavailable for patient care

Figure 9-3. Document availability status state transition table

Transition (Action)	Old State	New State	Notes
T01 Original Notification T02 Original Notification and Content	NA	Unavailable Available	
T03 Status Change Notification T04 Status Change Notification and Content	Unavailable	Unavailable Available Obsolete	
	Available	Available Obsolete	
	Obsolete	NA	
T05 Addendum Notification T06 Addendum Notification and Content	NA	Unavailable Available	
T07 Edit Notification T08 Edit Notification and Content	Unavailable	Unavailable Available	
T09 Replacement Notification T10 Replacement Notification and Content	NA	Unavailable Available	Set parent document to "obsolete"
T11 Cancel	Unavailable	Delete	

Note: NA means not applicable.

9.5.1.20 Document storage status (ID) 00932

Definition: This optional field identifies the storage status of the document. Refer to *HL7 table 0275 - Document storage status* for valid values.

Table 0275 - Document storage status

Value	Description
AC	Active
AA	Active and archived
AR	Archived (not active)
PU	Purged

9.5.1.21 Document change reason (ST) 00933

Definition: This free text field (limited to 30 characters) contains the reason for document status change.

9.5.1.22 Authentication person, time stamp (set) (PPN) 00934

Components: <ID number (ST)> ^ <family name (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (ST)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code(ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ < date/time action performed (TS)>

Definition: This is a conditional field. When the status of *TXA-17-document completion status* is equal to AU (authenticated) or LA (legally authenticated), all components are required. This field contains a set of components describing by whom and when authentication was performed. Whenever any one of the ID number - Name type code component s is valued, the when authenticated component, which is time stamp, must be valued as non-null. If the time component of a set is valued as non-null, the person component becomes required. These subcomponents are normally delimited by an ampersand (&). See Chapter 2.

9.5.1.22.1 Authentication person (component) (XCN)

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code(ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (IS)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (IS)>

Definition: This component identifies the person who has authenticated the document (either manually or electronically).

9.5.1.22.2 Authentication time stamp (component) (TS)

Definition: This component contains the date and time the document was authenticated (either manually or electronically).

9.5.1.23 Distributed copies (XCN) 00935

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code(ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (IS)>

Subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (IS)>

Definition: This field identifies the persons who received a copy of this document.

9.5.2 OBX - observation segment usage

The OBX segment is documented in its entirety in Chapter 7. Its usage as it applies to Medical Records/ Information Management is documented here for clarity.

Figure 9-4. OBX attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	SI	R			00569	Set ID- OBX
2	2	ID	R		0125	00570	Value Type
3	80	CE	O			00571	Observation Identifier
4	20	ST	O			00572	Observation Sub-Id
5	*	*	C/R			00573	Observation Value

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
6	60	CE	O			00574	Units
7	60	ST	O			00575	Reference Range
8	10	ID	O	Y/5	0078	00576	Abnormal Flags
9	5	NM	O			00577	Probability
10	5	ID	O		0080	00578	Nature of Abnormal Test
11	2	ID	R/NA		0085	00579	Observation Result Status
12	26	TS	C			00580	Date Last Obs Normal Values
13	20	ST	C			00581	User Defined Access Checks
14	26	TS	O			00582	Date/Time of Observation
15	60	CE	C			00583	Producer's ID
16	60	XCN	O	Y		00584	Responsible Observer
17	60	CE	O	Y		00936	Observation Method

C = For fields OBX-12, OBX-13, and OBX-15, the field should be valued conditionally. These fields should be valued only when the result (OBX-5-observation value) contains a single concept. This is typically true when the result type is numeric, ID, or CE. When multiple medical concepts are expressed, the values of these three fields are ambiguous.* = 256 K or site negotiated

Specialized usage: Observation Identifier/Observation Sub-ID have been used as optional fields that are not required in unstructured text where the nature of the document has been identified in *TXA-2-document type*, which is a required field, but is expressly allowed in the richer structured documentation. An example includes cases where anatomic reports may have separate OBXs for gross examination, microscopic examination, clinical impression, and final diagnosis. Another possible use includes imbedding non-textual observations within textual reports.

9.6 EXAMPLE MESSAGE

The following is an example of an original transmission of a history and physical examination which has been authenticated prior to this message being initiated:

```
MSH|...<cr>
EVN|T02|19960215154405||04|097220^Smith^Frederick^A^Jr^Dr^MD^|<cr>
PID|...<cr>
PR1|...<cr>
TXA|0001|HP^history &
    physical|TX^text|19960213213000|099919^Tracy^Wayne^R^III^Mr^MS^|
    19960213153000|19960215134500||099919^Tracy^Wayne^R^III^Mr^MS^|097220^Smith^Frede
    ri ck^A^Jr^Dr^MD^|01234567^Baxter^Catherine^S^Ms|1996021500001^transA||example. do
    c|LA|UC|AV||AC|||097220^Smith^Frederick^A^Jr^Dr^MD^|<cr>
OBX|1|CE|2000.40^CHIEF COMPLAINT||...<cr>
OBX|2|ST|2000.01^SOURCE||PATIENT<cr>
OBX|3|TX|2000.02^PRESENT ILLNESS||SUDDEN ONSET OF CHEST PAIN. 2 DAYS, PTA ASSOCIATED
    WITH NAUSEA, VOMITING & SOB. NO RELIEF WITH ANTACIDS OR NTG. NO OTHER SX. NOT
    PREVIOUSLY ILL.<cr>
.
.
and so on.
```

9.7 QUERY

A query may be used to retrieve a list of documents or a specific document. See Chapter 2 for details of queries.

9.7.1 QRY/DOC - document query (event T12)

<u>QRY^T12</u>	<u>Document Query</u>	<u>Chapter</u>
MSH	Message Header	2
QRD	Query Definition	2
[QRF]	Query Filter	2

<u>DOC^T12</u>	<u>Document Response</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgement	2
[ERR]	Error	2
[QAK]	Query Acknowledgement	2
QRD	Query Definition	2
{		
[EVN]	Event Type	3
PID	Patient Identification	3
PVI	Patient Visit	3
TXA	Document Notification	9
[{OBX}]	Observation	7
}		
[DSC]	Continuation Pointer	2

9.7.1.1 Query usage notes

The QRD and QRF segments are defined in Chapter 2, Sections 2.24.4, “QRD - original style query definition segment,” and 2.24.5, “QRF - original style query filter segment.”

The subject filters contained in the QRD and QRF segments describe the kind of information that is required to satisfy the request. They are defined by local agreement between the inquiring system and the ancillary system. See the Implementation Guide for detailed examples of the use of query filter fields.

The Set ID fields in the various segments (including PID) are used to count the number of segments of one kind transmitted at one level of the hierarchy.

QRD-12-query results level determines the amount of data requested. See Chapter 2, Section 2.24.4.12, “Query results level.”

10.

Scheduling

Chapter Chair/Editor: John Lynch, CHREF
David C. Means, Oacis Healthcare Systems, Inc.

Editor: David C. Means
Oacis Healthcare Systems, Inc.

10.1 PURPOSE

This chapter defines abstract messages for the purpose of communicating various events related to the scheduling of appointments for services or for the use of resources. There are three basic types of messages defined in this transaction set: *request transactions* and their responses, *query transactions* and their responses, and *unsolicited transactions* and their responses. Request transactions communicate requests for the scheduling of appointments for services or for the use of resources. These transactions occur between *placer* (requesting) applications and *filler* (processing) applications. The query and unsolicited transaction sets provide for the exchange of scheduling information between systems. The exchange of this information is achieved either actively or passively. The active gathering of scheduling information is performed by issuing query transactions to a filler application from a querying application. The passive gathering of this information is performed by accepting unsolicited transactions issued by a filler application.

This chapter describes various roles under which applications might operate. The roles discussed in this chapter illustrate the underlying model used to develop this specification. They do not imply the need for a particular application model or method of implementation.

This chapter defines the transactions at the seventh level, that is, the abstract message. Various schemes are used to generate the actual characters that comprise the messages according to the communication environment. The HL7 Encoding Rules will be used where there is not a complete Presentation Layer. This is described in Chapter 1, “Relationship to Other Protocols.” The examples included in this chapter were constructed using the HL7 Encoding Rules.

10.1.1 Schedules, appointments, and services and resources

The goal of this specification is to facilitate the communication of scheduling requests and information between applications. Such communication involves three main subjects: *schedules*, *appointments*, and *services and resources*. Schedules control the occurrence of certain services and the use of particular resources. They consist of a set of open, booked and blocked slots for one particular service or resource. *Open slots* are periods of time on a schedule during which a service may occur, and/or a resource is available for use. *Booked slots* are periods of time on a schedule that have already been reserved. *Appointments* occupy sets of one or more booked slots on a schedule. They describe the nature of the service and/or the use of the resource, the person or persons responsible for the appointment’s booking, and other information relevant to the booking and execution of an appointment. *Blocked slots* on a schedule are periods of time during which a service or resource is unavailable for reasons other than booked appointments (for example, a piece of equipment might be unavailable for maintenance reasons).

In the context of this chapter, services and resources are those things that are controlled by schedules. *Services* are real-world events, such as clinic appointments, the performance of which is controlled by a

Chapter 10: Scheduling

schedule. Often, these kinds of activities relate to the care of a patient. In other words, appointments for services often schedule a service for one or more patients. *Resources* are tangible items whose use is controlled by a schedule. These “items” are often people, locations, or things low in supply but high in demand.

10.1.1.1 Schedules

A *schedule* controls the dates and times available for the performance of a service and/or the use of a resource. One schedule applies to one service or resource, since each service or resource can be reserved independently of the others. (If two or more services, people, locations, or things cannot be reserved independently of one another, they are considered to be one activity or resource.) A schedule consists of slots of time during which the controlled service or resource is potentially available for performance or use. Slots are categorized as open, booked, or blocked. An open slot on a schedule indicates that the service or resource is available for performance or use during that period of time. A booked slot indicates that the service or resource is not available during the time period, because an appointment has been scheduled. A blocked slot indicates that a service or resource is unavailable for reasons other than a scheduled appointment.

The real-world, non-automated analog of the schedule described above is a standard appointment book. These books are generally organized with rows of time slots, during which a service or resource is available. The following figure illustrates an excerpt from such an appointment book.

Figure 10-1. An example excerpt from an appointment book

Date:		May 17, 1994						
	Room A		Room B		Room C		Room D	
8:00 am		Pat: B Smith						
		Dr.: Peters				Closed for		
		Physical		Pat: N Drew		remodeling		
		Exam		Dr.: Collins				
9:00 am		Pat: J Adams		Allergy				Pat: A Jones
		Dr.: Anders		Scratch Test				Dr.: Peters
:30		Follow-up						

Each cell in the figure above represents a slot on a schedule. Different shading patterns represent booked and blocked slots. Information identifying the appointments scheduled in booked slots is written in the appointment book. Similarly, explanations are written into the book when resources are blocked. Those cells with no shading and comments represent open slots.

As in the figure above, appointment books commonly contain more than one column. This format allows the scheduling of more than one resource or activity within the same book. This chapter defines a schedule as an entity controlling the availability of only one resource or service for a given period of time. Given that definition, each column in the above excerpt from the appointment book represents a separate schedule for a separate resource.

10.1.1.2 Services and resources

Services and resources are the “what” in any communication of scheduling transactions, that is, they are things—either tangible or intangible—that the transaction is attempting to affect or describe. The services and resources that are controlled by schedules are typically in high demand. In any case, their use or performance is managed through the process of reserving blocks of time.

Services are typically activities that occur in a certain location, where specific people and equipment exist to carry out the activity. The activity must be scheduled prior to its occurrence. The schedule that controls the activity may not be the same schedule that controls the location, people, and equipment. For example, patient visits to a clinic are typically controlled through scheduling. Patients receive an appointment at the clinic, and at the appointed time are seen by a member of the clinic staff. From the point of view of the person or application requesting the appointment for the patient, the “thing” being scheduled is a service (e.g., a doctor’s consult, an X-ray, etc.). The assignment of an exam room and (in this example) a physician, nurse practitioner, or other staff member is incidental to the actual appointment.

Resources are tangible things that must be reserved prior to their use. Examples might include MRI equipment, portable X-ray machines, or rooms. People are also tangible resources that are often scheduled. Typically these people controlled by schedules have special roles, perform special activities, and are in high demand.

The following are the primary attributes that describe a resource:

- A unique identification code

The unique identification code for a service or resource describes a specific instance of that service or resource. For tangible resources, this may be a serial number, a location, an employee number, or another unique designation. For services, the identification of a slot on the schedule is usually sufficient for unique identification.

- A code describing the type or class of service or resource

This code describes a type or class of service, or resource groups like services or resources together. For services, this is typically a universal service ID similar to the field used in the OBR segment defined in the Order Entry chapter (Chapter 4). This Universal Service ID uniquely identifies clinical services performed in a healthcare provider organization.

For tangible resources, this code may be a model number, a staff classification (such as physician, nurse, physical therapist, etc.), or a kind of room. This kind of information can be used to request a resource from a pool, where a specific instance of the resource scheduled is unknown and unimportant (as long as it is of the specified type or class).

- A name or text description of the resource

The name or text description of the resource provides a human-readable identification of the service or resource.

When a resource is associated with an appointment, or is requested for an appointment, the following attributes describe the relationship (or requested relationship):

- The start date and time the service or resource is required for the appointment

The start date and time the service or resource is required for the appointment describes the point at which the service or resource should be made available to the activity. In this specification, this is represented as a positive or negative time offset from the start date and time of the appointment.

- The duration for which the service or resource is needed for the appointment

The duration for which the service or resource is required for the appointment describes how long the service or resource is needed to complete the appointment. By adding the duration to the start date and time, the end date and time can be calculated for the required resource or service within the activity.

Other attributes further describe services and resources. These attributes are communicated, as necessary, in transactions between applications.

10.1.1.3 Appointments

Appointments are instances of the performance of a service or the use of a resource. They describe the “why,” the “who,” and the “when” in any communication of scheduling transactions. These appointments occupy one or more slots on a service or resource schedule, causing those slots to become unavailable or “booked.” Appointments can describe scheduled activities related to patients in a healthcare setting, or they can describe scheduled activities wholly unrelated to patients.

In its simplest form, an appointment consists of one service or resource reserved for a period of time, for a specific reason. More complex activities involve multiple services or resources, or parent-child relationships to other appointments.

The primary attributes for the appointment which describes a scheduled activity include the following:

- a unique placer appointment identification code

The placer appointment identification code uniquely describes an instance of an appointment. It is used in communications between placer and filler applications to identify a particular appointment (or a request for an appointment booking) on the placer application. Except in special circumstances, the code is assigned by the placer application upon making an initial scheduling request. This concept is similar in practice to the placer order number found in Chapter 4, Order Entry.

- a unique filler appointment identification code

The filler appointment identification code uniquely describes an instance of an appointment. It is the filler application’s counter-part to the placer appointment identification code. It is used in communications between placer and filler applications to identify a particular appointment (or request for an appointment booking) on the filler application. Except under special circumstances, it is assigned by the filler application when an appointment (or a request for an appointment booking) is created by the filler application. This concept is similar in practice to the filler order number found in Chapter 4, Order Entry.

- an appointment start date and time

The appointment start date and time describe the beginning of the appointment. In request transactions, the appointment start date and time are expressed as a preference or list of preferences. The filler application uses this expression of preference to book the appointment. Once an appointment has been booked, the start date and time are expressed in the actual scheduled start date and time.

- an appointment duration

The appointment duration describes how long the appointment will last, and consequently, the end date and time of the appointment.

Supporting information about service and resource activities includes the following:

- reason codes to describe the reason that the service is occurring or the resource is being used;
- patient information to describe for whom the appointment is taking place, whether the appointment or scheduled activity is for, or related to, a patient;
- requestor information to describe the person responsible for initiating and executing the appointment;
- location information to describe where the appointment is scheduled to occur.
- Other attributes further describe appointments. These attributes are communicated as necessary in transactions between applications.

10.1.1.4 Parent and child appointments

Parent appointments are those appointments that embody one or more child appointments. For example, a request for a repeating appointment results in a logical parent (the original scheduled appointment request), and one or more children (each individual occurrence of the appointment). This specification provides no information about how individual applications store or handle parent and child appointments, but it does provide a mechanism for identifying individual occurrences (children) within transactions.

Either the placing application or the filling application can specify child appointments--and in one of two ways. If each individual child appointment is assigned a separate and unique Placer Appointment ID and/or Filler Appointment ID, then that unique identifier may be used in transactions to specify an individual child. If, however, neither the placer nor filler application assigns a unique identifier separately, an occurrence number can be used. Both the ARQ and SCH segments allow for an occurrence number, which is a unique serial number assigned to each child within a parent appointment.

10.1.2 Application roles

In this specification, there are four roles that an application can assume: a filler application role, a placer application role, a querying application role, and an auxiliary application role. These application roles define the interaction that an application will have with other applications in the messaging environment. In many environments, any one application may take on more than one application role.

In this specification, the definition of application roles is not intended to define or limit the functionality of specific products developed by vendors of such applications. Instead, this information is provided to help define the model used to develop this specification, and to provide an unambiguous way for applications to communicate with each other.

10.1.2.1 The filler application role

The filler application role in the scheduling model is very similar to the filler application concept presented in Chapter 4, Order Entry. A filler application, in the scheduling model, is one that “owns” one or more schedules for one or more services or resources. In other words, a filler application exerts control over a certain set of services or resources and the schedules that define the availability of those services or resources. Because of this control, no other application has the ability to reserve, or to otherwise modify, the schedules controlled by a particular filler application.

Other applications can, on the other hand, make requests to modify the schedules owned by the filler application. The filler application either fulfills or denies requests to book slots, or to otherwise modify the schedules for the services and resources over which it exerts control.

Finally, the filler application also provides information about scheduled activities to other applications. The reasons that an application may be interested in receiving such information are varied. An application may have previously requested bookings or modifications on the schedule, or may simply be interested in the in-

formation for its own reporting or statistical purposes. There are two methods whereby filler applications disseminate this information: by issuing unsolicited information messages, or by responding to queries.

The analog of a filler application in a non-automated environment might be an appointment book and the person in charge of maintaining that book. The appointment book describes when the resources are available and when they are booked. This appointment book is the only official record of this information, and controls the availability of the resources to any user. The person in charge of this appointment book takes requests to book the resources, and decides whether to accept or reject the requests based on the information recorded in the appointment book. Anyone needing information from the appointment book either consults the book directly, or contacts the person in charge of the book.

10.1.2.2 The placer application role

The placer application role in the scheduling model is also very similar to its counterpart in the Order Entry chapter. A placer application requests the booking, modification, cancellation, etc., of a scheduled activity for a service or resource. Because it cannot exert any control over the schedule for that resource, it must send its requests to modify the schedule to the filler application. In requesting that these appointments be booked or modified in some way, the placer application is asking the filler application to exert its control over the schedule on the placer application's behalf.

The analog of a placer application in a non-automated environment might be any person needing a particular resource or appointment for a service. A person needing to book an appointment would contact the person in charge of the appointment book for that resource or service, and request a reservation. Often, there is negotiation between the person requesting the reservation or appointment and the person who maintains the appointment book. The requesting person will indicate requirements and preferences, and the person controlling the appointment book will indicate whether the request can be fulfilled as specified.

10.1.2.3 The querying application role

A querying application neither exerts control over, nor requests changes to a schedule. Rather than accepting unsolicited information about schedules, as does an auxiliary application, the querying application actively solicits this information using a query mechanism. It will, in general, be driven by a person wanting information about schedules, and may be part of an application filling the placer application role as defined in this chapter. The information that the querying application receives is valid only at the exact time that the query results are generated by the filler application. Changes made to the schedule after the query results have been returned are not communicated to the querying application until it issues another query transaction.

The analog of a querying application in a non-automated environment might be any person needing information about a specific portion of a schedule. For example, a facilities manager may need to know whether a specific room has been scheduled during a specific period of time. This person might ask the person controlling the appointment book about the specific room and period of time in question.

Often, a placer application will also act as a querying application. The ability to send queries and receive lists of open slots is built in to some implementations of placer applications. These placer applications use this information to select open slots for subsequent booking requests. The current specification does not imply that placer applications should or should not also be able to fulfill the role of a querying application. Instead, the model defines these roles separately. Applications that support this functionality may take advantage of this application role in the model. Applications that do not support the querying application role are not limited in their support of the placer application role.

10.1.2.4 The auxiliary application role

Like querying applications, an auxiliary application neither exerts control over, nor requests changes to a schedule. It, too, is only concerned with gathering information about a particular schedule. It is considered an "interested third-party," in that it is interested in any changes to a particular schedule, but has no interest

in changing it or controlling it in any way. An auxiliary application passively collects information by receiving unsolicited updates from a filler application.

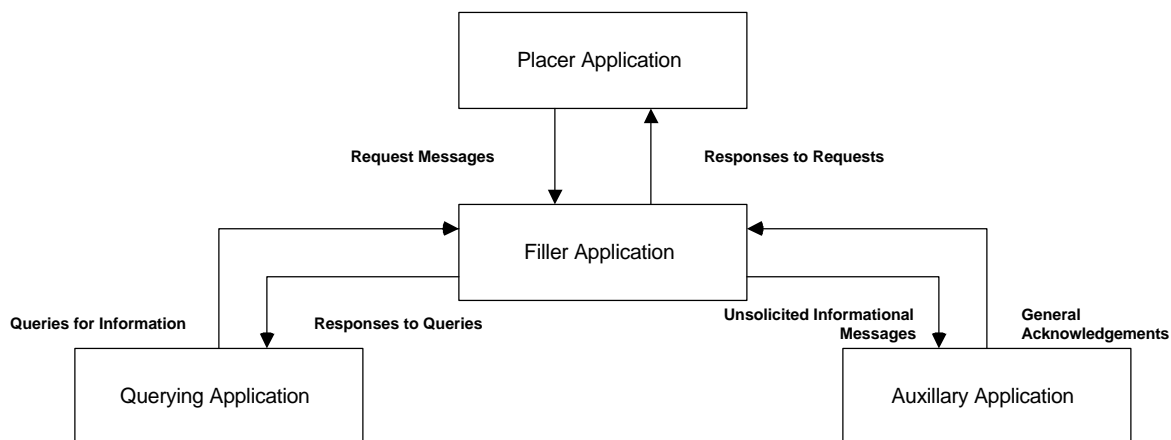
The analog of an auxiliary application in a non-automated environment might be any person receiving reports containing schedule information. For example, a facilities manager may need to know what rooms are booked for activity during specific periods of time. This person might ask the person controlling the appointment book for a periodic listing of activity, which may be something as simple as copies of pages from the appointment book.

Often, a placer application will also act as an auxiliary application. A placer application may have the capacity to store information about the scheduled activity that it requested. In such cases, the placer application is also an “interested” application in that it wishes to receive any messages describing changes to the content or status of the scheduled activity it initiated.

10.1.2.5 Application roles in a messaging environment

In a messaging environment, these four application roles communicate using specific types of messages and trigger events. The following figure illustrates the relationships between these application roles in a messaging environment:

Figure 10-2. Application role messaging relationships



The relationship between placer and filler applications revolves around request messages and response messages to those requests. Placer applications trigger request messages to filler applications, which respond to those requests with request response messages.

The relationship between querying and filler applications focuses on query messages and responses. Querying applications trigger query messages to filler applications, which respond with query response messages.

The relationship between auxiliary and filler applications centers on unsolicited informational messages. Filler applications trigger unsolicited informational messages to auxiliary applications whenever changes in the schedule occur. Auxiliary applications do not respond with any messages other than general acknowledgments. Filler applications triggering unsolicited informational messages do not expect further information from auxiliary applications.

10.1.3 Trigger events, statuses, reasons, and types

This chapter defines several trigger events used to communicate scheduling information between applications. In addition, it also defines, suggests, or allows for several statuses that scheduled activities may hold, several reasons a scheduled activity may occur, and several types of scheduled activities. The distinction between these four concepts is important for understanding the information in this chapter.

10.1.3.1 Trigger events

The trigger events for this chapter are defined in Section 10.2, “PLACER APPLICATION REQUESTS AND TRIGGER EVENTS,” 10.3, “FILLER APPLICATION MESSAGES AND TRIGGER EVENTS UNSOLICITED,” and 10.4, “QUERY TRANSACTIONS AND TRIGGER EVENTS.” Traditionally, trigger events define the transition of some entity from one state to another.¹ Typical trigger events may be listed as follows: new, cancel, modify, discontinue, reschedule, and delete.

10.1.3.2 Statuses

The status of a scheduled activity describes where that activity is in its life cycle. A status differs from a trigger event in an important way: a status describes the current condition of an entity, whereas a trigger event is generated to “move” the entity from one state to another. All status fields in this chapter are defined with respect to the application acting in the role of a filler, unless otherwise (and specifically) indicated. Therefore, a status in a scheduling interface transaction is only truly meaningful if the transaction was generated by the application assigning or maintaining that status.

Typical statuses for a schedule transaction might include the following: pending, wait-listed, confirmed, canceled, discontinued, deleted, started, completed, overbooked (booked for a resource along with another conflicting appointment), blocked, etc.

10.1.3.3 Reasons

This chapter defines two kinds of reasons used with transactions. The first is an appointment reason that indicates why the appointment is being booked – and ultimately why the activity is going to occur. The second is an event reason that describes why a particular trigger event has been generated. Reasons tend to be static, whereas statuses tend to change. In contrast, trigger events describe an action to be performed.

Appointment reasons tend to be relatively static for the life of the scheduled activity. Typical examples of appointment reasons include the following: routine, walk-in, check-up, follow-up, emergency, etc.

Event reasons are static as well, but only for the life of a particular trigger event. Typical examples of event reasons include the following: no-show (e.g., when an appointment is canceled), at patient request, at caregiver request, etc.

10.1.3.4 Types

Rather than describing why an appointment has been scheduled – as the appointment reason does – the appointment type describes the kind of appointment recorded in the schedule. This information tends to be administrative in nature. Typical appointment types might include: normal, tentative (or “penciled in”), STAT, etc.

¹ HL7 trigger events are not strictly limited to this definition; however, most trigger events do define state transitions.

10.1.4 Appointments, orders, and referrals

A schedule request or appointment should not be confused, in any way, with orders for services, or for patient referrals. The trigger events and messages defined in this chapter are meant to operate within the realm of scheduling activities, and not to imply that any other trigger event or real-world event has or should occur. It should not be construed from this chapter that any schedule request transaction can be used instead of an order transaction, in which a service or other activity must be specifically ordered. In such cases, a specific order transaction should occur (either electronically or otherwise). If subsequent scheduling transactions are then required to carry out the order, the trigger events and messages defined in this chapter may be used.

10.1.5 Glossary

10.1.5.1 Appointment:

An appointment represents a booked slot or group of slots on a schedule, relating to one or more services or resources. Two examples might include a patient visit scheduled at a clinic, and a reservation for a piece of equipment.

10.1.5.2 Auxiliary application:

An auxiliary application neither exerts control over, nor requests changes to a schedule. It is only concerned with gathering information about a particular schedule. It can be considered an “interested third-party,” in that it is interested in any changes to a particular schedule, but has no interest in changing it or controlling it in any way. It may gather information passively or actively. An auxiliary application passively collects information by receiving unsolicited updates from a filler application.

10.1.5.3 Block:

An indication that a slot or a set of slots is unavailable for reasons other than booking an appointment.

10.1.5.4 Book:

The act of reserving a slot or set of slots on a schedule for a service or resource.

10.1.5.5 Child appointment:

A child appointment is an appointment subordinate to another appointment (called a parent appointment). For example, a single instance of an appointment in a group of recurring appointments is a child to the group. Child appointments can themselves be parent appointments. For example, if a battery of appointments is scheduled, then the atomic units of the battery are children to the battery request. If the battery is scheduled as a repeating appointment, then each instance of the battery of appointments (parent to each of the atomic units) is a child to the original repeating request.

10.1.5.6 Filler application:

The filler application role in the scheduling model is very similar to the filler application concept presented in Chapter 4, Order Entry. A filler application, in the scheduling model, is one that “owns” one or more schedules for one or more services or resources. It fulfills requests to book slots for the services or resources over which it exerts control. It also notifies other applications of activity related to appointments, such as new bookings, modifications, cancellations, etc.

10.1.5.7 Parent appointment:

A parent appointment is an appointment that consists of one or more subordinate appointments (called child appointments). A parent appointment is used to relate or group multiple appointments together in various ways. Examples of kinds of parent scheduled activities include, but are not limited to, the following.

- Recurring (repeating) appointments. For example, a physical therapy appointment may be scheduled every Tuesday at 4:00 PM for three months.
- Batteries of appointments. For example, an activity consisting of an appointment with Radiology, an appointment with a specialist, and an appointment with a primary care physician might be scheduled.
- Complex appointments. For example, recurring batteries of appointments, or batteries of battery appointments.

Parent appointments can themselves be children to other appointments.

10.1.5.8 Placer application:

The role of the placer application in the scheduling model is also very similar to its counterpart in the Order Entry chapter. A placer application must request the booking, modification, cancellation, etc., of an appointment for a service or resource because it cannot exert any control over that service or resource on the schedule. In requesting that these appointments be booked or modified in some way, the placer application is asking the filler application to exert its control over the schedule on the placer application's behalf.

10.1.5.9 Querying application:

A querying application neither exerts control over nor requests changes to a schedule. Rather than accepting unsolicited information about schedules, as does an auxiliary application, the querying application actively solicits this information using a query mechanism. It will be driven by a person wanting information about schedules, and may be part of an application filling the placer application role as defined in this chapter. The information that the querying application receives is valid only at the exact time that the query results are generated by the filler application. Changes made to the schedule after the query results have been returned are not communicated to the querying application until it issues another query transaction.

10.1.5.10 Resource:

A resource is any person, place or thing that must be reserved prior to its use.

10.1.5.11 Schedule:

A schedule is the sum of all of the slots related to a service or resource.

10.1.5.12 Service:

A service is any activity that must be scheduled prior to its performance.

10.1.5.13 Slot:

A slot is one unit on a schedule. A slot represents the smallest unit of time or quantity that a service or resource may be booked. Depending on the nature of the service or resource, there may be more than one defined slot at a given instant of time. For example, if a service is an open group therapy session with twelve available seats, then there are twelve slots for the given block of time.

10.1.6 Organization of this chapter: trigger events and message definitions

This specification contains three functional groupings of trigger events and message definitions. The trigger events within each of the three functional groupings share the same or similar message definitions. For clarity, message definitions shared by multiple trigger events are presented only once.

The first functional grouping of trigger events and message definitions describes *placer request transactions*. This grouping defines the trigger events and message definitions for transactions from applications

acting in a placer application role, and also defines the related filler application response messages. These messages are described in Section 10.2, “PLACER APPLICATION REQUESTS AND TRIGGER EVENTS.”

The second functional grouping describes trigger events and message definitions for *unsolicited transactions* from applications acting in the filler application role. This grouping describes the unsolicited messages originating from an application fulfilling the filler role, and the response messages sent back by applications fulfilling the auxiliary role. These messages are described in Section 10.3, “FILLER APPLICATION MESSAGES AND TRIGGER EVENTS UNSOLICITED.”

The final grouping describes *query transactions* from applications acting in the querying application role, and also defines the *related filler application messages* used to respond to these queries. These messages are described in section 10.4, “QUERY TRANSACTIONS AND TRIGGER EVENTS.”

The notation used to describe the sequence, optionality, and repetition of segments is described in Chapter 2, “Format for defining abstract messages.”

10.1.6.1 Update mode

This chapter uses the “Action code/unique identifier” mode for updating via repeating segments. For more information on updating via repeating segments, please see Section 2.23.4, “Modes for updating via repeating segments,” in Chapter 2. The definition of the “Action code/unique identifier” update mode can be found in Chapter 2, Section 2.23.4.2, “Action code/unique identifier mode update definition.”

10.2 PLACER APPLICATION REQUESTS AND TRIGGER EVENTS

Placer request and filler response transactions are the messages and trigger events used between placer applications and filler applications. The placer application initiates transactions using the **SRM** message, requesting that the filler application modify its schedule(s) with the given trigger event and information. The filler application responds to these requests, using the **SRR** message, to either grant or deny the requests from the placer application.

When initiating a request, the placer application will generate and send an **SRM** message containing all of the information necessary to communicate the desired action to the filler application. All required segments and fields (both explicitly required and conditionally required) should be provided to the filler application, as defined in this chapter. When the filler application receives the transaction, it acknowledges it with the appropriate accept acknowledgment using an **ACK** message (assuming that the enhanced acknowledgment mode is in use). After processing the request at the application level, the filler acknowledges the transaction with the appropriate application acknowledgment in an **SRM** message (again assuming that an application acknowledgment was requested under the enhanced acknowledgment mode, or that the original acknowledgment mode is in use). Applying the explanations of the various application acknowledgment codes in the context of this chapter, an application accept from the filler means that the request was processed and accepted by the filler. An application error from the filler means that the request was processed and denied. An application reject from the filler means that the request was not, and could not, be processed due to one or more reasons unrelated to its content (for example: it fails the basic application protocol validation, the filler system is down, or there was an internal error). When appropriate, an **SRM** message with an application accept acknowledgment will contain further information on the request that was processed.

There are no unsolicited messages initiated from a filler application defined in this set of trigger events. Those messages and trigger events are defined below, in Section 10.3, “FILLER APPLICATION MESSAGES AND TRIGGER EVENTS UNSOLICITED.”

All of the trigger events associated with placer request and filler response transactions use a common message definition, that follows:

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<u>SRM^S01-S11</u>	<u>Schedule Request Message</u>	<u>Chapter</u>
MSH	Message Header	2
ARQ	Appointment Request Information	10
[APR]	Appointment Preferences	10
[{ NTE }]	Notes and Comments	2
[{ PID	Patient Identification	3
[PV1]	Patient Visit	3
[PV2]	Patient Visit - Additional Info	3
[{ OBX }]	Observation/Result	4
[{ DG1 }]	Diagnosis	6
}		
]		
{ RGS	Resource Group Segment	10
[{ AIS	Appointment Information - Service	10
[APR]	Appointment Preferences	10
[{ NTE }]	Notes and Comments	2
}		
]		
[{ AIG	Appointment Information - General Resource	10
[APR]	Appointment Preferences	10
[{ NTE }]	Notes and Comments	2
}		
]		
[{ AIL	Appointment Information - Location Resource	10
[APR]	Appointment Preferences	10
[{ NTE }]	Notes and Comments	2
}		
]		
[{ AIP	Appointment Information - Personnel Resource	10
[APR]	Appointment Preferences	10
[{ NTE }]	Notes and Comments	2
}		
]		
]		
}		

<u>SRR^S01-S11</u>	<u>Scheduled Request Response</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error Information	2
[SCH	Schedule Activity Information	10
[{ NTE }]	Notes and Comments	2
[{ PID	Patient Identification	3
[PV1]	Patient Visit	3
[PV2]	Patient Visit - Additional Info	3
[{ DG1 }]	Diagnosis	6
}		
]		
{ RGS	Resource Group Segment	10
[{ AIS	Appointment Information - Service	10
[{ NTE }]	Notes and Comments	2
}		
]		
[{ AIG	Appointment Information - General Resource	10
[{ NTE }]	Notes and Comments	2
}		
]		
[{ AIL	Appointment Information - Location Resource	10
[{ NTE }]	Notes and Comments	2
}		
]		
[{ AIP	Appointment Information - Personnel Resource	10
[{ NTE }]	Notes and Comments	2
}		
]		
]		
]		
}		

Note that in the abstract message definitions for both the SRM and SRR, the patient information segments (segments PID through DG1) are both optional as a group, and repeating as a group. The optionality allows for transactions that relate to a patient, and for those that do not. The ability to repeat the patient information allows for those transactions in which one activity must be scheduled for multiple patients (e.g., for family or group therapy).

In contrast, a transaction may specify no more than (and no less than) one activity. Note that neither the ARQ segment (in the SRM message) nor the SCH segment (in the SRR message) are allowed to repeat, and that they are required. Neither the optionality nor the ability to repeat patient information allows a transaction to specify more than one activity.

The trigger events that use this message definition are listed below.

10.2.1 Request new appointment booking (event S01)

A placer application sends a transaction with this trigger event to a filler application to request that a new appointment be booked. If it is successful, the filler application returns an application acknowledgment (if requested under the enhanced acknowledgment mode, or if the original acknowledgment mode is in use). The acknowledgment may optionally contain an SCH segment and related detail segments describing the actual appointment that was booked.

10.2.2 Request appointment rescheduling (event S02)

A placer application uses this trigger event to request that an existing appointment be rescheduled. The new Requested Start Date and Time, Appointment Duration, Repeating Interval, Repeating Interval Duration, and/or Priority are provided in the ARQ segment, along with the existing placer and filler identification numbers. If it is successful, an application acknowledgment is returned, optionally containing an SCH segment and related detail segments describing the new information for the rescheduled appointment.

This transaction should not be used to reschedule an appointment that has begun but has not been completed. In such cases, and only if it is logical to do so, the appointment should be discontinued and a new schedule request should be submitted. Likewise, this transaction should not be used to reschedule a parent appointment, in which one or more children have begun or have already occurred. Again, the parent appointment should be discontinued, and a new schedule request should be made. This procedure removes any ambiguity between applications that may arise with an attempt to modify an appointment that is in progress.

10.2.3 Request appointment modification (event S03)

This message transmits a request for modification of an existing appointment to a filler application. This trigger event is used to request the modification of information on an existing appointment, outside of the need to reschedule, cancel, discontinue or delete the appointment, or to add, modify, cancel, discontinue, or delete services and/or resources on the appointment. This trigger event should only be used for appointments that have not been completed, or for parent appointments whose children have not been completed. If it is successful, an application acknowledgment is returned, optionally containing an SCH segment and related detail segments describing the new information for the modified appointment.

10.2.4 Request appointment cancellation (event S04)

The request appointment cancellation trigger event is sent by the placer application to the filler application to request that an existing appointment be canceled. A cancel event is used to stop a valid appointment from occurring. For example, if a patient scheduled for an exam cancels his/her appointment, then a request to cancel the appointment is sent. If it is successful, an application acknowledgment is returned, optionally containing an SCH segment and related detail segments describing the canceled appointment.

This trigger event can be used to cancel a parent appointment, in which none of the children of the appointment have either begun or have been completed. Any child appointments that exist on the filler and placer applications should be considered canceled. If one or more child appointments have begun or have been completed, then this trigger event should not be used. Instead, the S05 (request appointment discontinuation) event should be used.

10.2.5 Request appointment discontinuation (event S05)

The request appointment discontinuation is sent by the placer application to the filler application to request that an appointment in progress be stopped, or that the remaining occurrences of a parent appointment not occur as scheduled. If none of the child appointments of a parent appointment have occurred, then a cancel trigger event should be sent instead. If it is successful, an application acknowledgment is returned, optionally containing an SCH segment and related detail segments describing the discontinued appointment.

10.2.6 Request appointment deletion (event S06)

A request appointment deletion is sent by the placer application to the filler application to request that an appointment that had been entered in error be removed from the system. A delete trigger event should only be used when an appointment has been erroneously requested, and must be removed from the schedule so that it does not affect any statistical processing. A delete trigger event differs from a cancel trigger event in that a delete acts to remove an error, whereas a cancel acts to prevent a valid request from occurring. This trigger event should not be used for any appointment that has already begun, or has already been completed. Likewise, it should not be used on any parent appointment if any child appointments have either begun or been completed. If it is successful, an application acknowledgment is returned, optionally containing an SCH segment and related detail segments describing the deleted appointment.

The delete trigger event should be implemented with careful forethought, as it typically has different effects and repercussions in various applications. In some applications, a delete event cannot be undone. This means that if a delete transaction was sent erroneously, recovery will be difficult or impossible. In other applications, a delete transaction will not result in the physical deletion of the record(s), but will set a status or a flag. In these cases, the filler and/or placer appointment identifiers (the numbers or codes that uniquely identify the scheduled appointment or request to the placer and filler applications) probably cannot be reused. Since these applications maintain a record of deleted appointments, the reuse of an identifier will likely cause a conflict in the applications' processing of transactions.

10.2.7 Request addition of service/resource on appointment (event S07)

The request addition of service/resource is triggered by the placer application to request that a new service or resource be added to an existing appointment. Services and resources are represented by the AIS, AIG, AIL, and AIP segments on an HL7 scheduling interface transaction. This trigger event should only be used for appointments that have not been completed, or for parent appointments whose children have not been completed. If it is successful, an application acknowledgment is returned, optionally containing an SCH segment and related detail segments describing the modified appointment.

10.2.8 Request modification of service/resource on appointment (event S08)

The request modification of service/resource is triggered on the placer application to request that information pertaining to an existing service or resource be changed for an existing appointment. Services and resources are represented by the AIS, AIG, AIL, and AIP segments on an HL7 scheduling interface transaction. This trigger event should only be used for appointments that have not been completed, or for parent appointments whose children have not been completed. If it is successful, an application acknowledgment is returned, optionally containing an SCH segment and related detail segments describing the modified appointment.

This trigger event should not be used when an existing resource or service must be replaced or rescheduled for an existing appointment. The following fields on the indicated segments should not be changed by this trigger event: the first three fields of the AIS, the first four fields of the AIG, the first four fields of the AIL, and the first four fields of the AIP. Instead, use two trigger events to accomplish the replacement or re-scheduling of a service or resource: S09 (request cancellation of service/resource on appointment), as well as S07 (request addition of service/resource on appointment).

10.2.9 Request cancellation of service/resource on appointment (event S09)

This trigger event requests that a service or resource be removed from an existing scheduled appointment that has not yet begun. A cancel event is used to stop a valid service or resource from participating in the appointment. For example, if a portable X-ray machine scheduled for an exam is no longer needed, then the placer application requests that the resource be canceled on the filler application. This trigger event should only be used for appointments that have not been completed, or for parent appointments whose children have not been completed. If it is successful, an application acknowledgment is returned, optionally containing an SCH segment and related detail segments describing the modified appointment.

10.2.10 Request discontinuation of service/resource on appointment (event S10)

A request discontinuation of service/resource is sent by the placer application to the filler application when the remaining occurrences of a recurring appointment no longer require a particular service or resource. In other words, this trigger event is sent to request that the performance of a service or resource in a recurring appointment that has already begun be stopped. If the first appointment in a set of recurring appointments has not yet occurred, then a cancel trigger event should be sent instead. This trigger event should only be used on appointments that have not been completed, or on parent appointments whose children have not been completed. If it is successful, an application acknowledgment is returned, optionally containing an SCH segment and related detail segments describing the modified appointment.

10.2.11 Request deletion of service/resource on appointment (event S11)

A request deletion of service/resource is sent by the placer application to the filler application to request that a scheduled appointment requiring a service or resource entered in error be removed from the system. A delete trigger event should only be used when a service or resource has been erroneously attached to an appointment, and must be removed from the schedule so that it does not affect any statistical processing. A delete trigger event differs from a cancel trigger event in that a delete acts to remove an error, whereas a cancel acts to prevent a valid request from occurring. This trigger event should only be used on appointments that have not been completed, or on parent appointments whose children have not been completed. If it is successful, an application acknowledgment is returned, optionally containing an SCH segment and related detail segments describing the modified appointment.

10.3 FILLER APPLICATION MESSAGES AND TRIGGER EVENTS UNSOLICITED

Unsolicited transactions from filler applications are the messages and trigger events used between filler applications and auxiliary applications. Transactions are initiated by the filler application, using the **SIU** message to notify auxiliary applications of modifications in a filler application's schedule(s). The auxiliary application responds to these notifications, using the **ACK** message, either to acknowledge receipt of the transaction, or to signal that an interfacing error of some kind has occurred.

This set of trigger events is also used to notify applications fulfilling the placer application role of changes in the filler application's schedule(s), if the application is configured to accept these messages and trigger events as an auxiliary application would. As the discussion of application roles has indicated above, any one application can have more than one application role. If it is important that the application acting in the placer application role in

<u>SIU^S12-S24, S26</u>	<u>Schedule Information Unsolicited</u>	<u>Chapter</u>
MSH	Message Header	2
SCH	Schedule Activity Information	10
[{ NTE }]	Notes and Comments	2
[{ PID	Patient Identification	3
[PD1]	Additional Demographics	3
[PV1]	Patient Visit	3
[PV2]	Patient Visit - Additional Info	3
[{ OBX }]	Observation/Result	4
[{ DGI }]	Diagnosis	6
]		
{ RGS	Resource Group Segment	10
[{ AIS	Appointment Information - Service	10
[{ NTE }]	Notes and Comments	2
}		
]		
[{ AIG	Appointment Information - General Resource	10
[{ NTE }]	Notes and Comments	2
}		
]		
[{ AIL	Appointment Information - Location Resource	10
[{ NTE }]	Notes and Comments	2
}		
]		
[{ AIP	Appointment Information - Personnel Resource	10
[{ NTE }]	Notes and Comments	2
}		
]		
}		
<u>ACK^S12-S24, S26</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error Information	2

10.3.1 Notification of new appointment booking (event S12)

This message is sent from a filler application to notify other applications that a new appointment has been booked. The information provided in the SCH segment and the other detail segments as appropriate describe the appointment that has been booked by the filler application.

10.3.2 Notification of appointment rescheduling (event S13)

This message is sent from a filler application to notify other applications that an existing appointment has been rescheduled. The information in the SCH segment and the other detail segments as appropriate describe the new date(s) and time(s) to which the previously booked appointment has been moved. Additionally, it describes the unchanged information in the previously booked appointment.

This transaction should not be used to reschedule an appointment that has begun but has not been completed. In such cases, and only if it logical to do so, the appointment should be discontinued and a new schedule request should be submitted. Likewise, this transaction should not be used to reschedule a parent appointment, in which one or more children have begun or have already taken place. Again, the parent appointment should be discontinued, and a new schedule request should be made. This procedure removes any ambiguity between applications that may arise with an attempt to modify an appointment that is in progress.

10.3.3 Notification of appointment modification (event S14)

This message notifies other applications that an existing appointment has been modified on the filler application. This trigger event should only be used for appointments that have not been completed, or for parent appointments whose children have not been completed.

10.3.4 Notification of appointment cancellation (event S15)

A notification of appointment cancellation is sent by the filler application to other applications when an existing appointment has been canceled. A cancel event is used to stop a valid appointment from taking place. For example, if a patient scheduled for an exam cancels his/her appointment, then the appointment is canceled on the filler application.

This trigger event can be used to cancel a parent appointment, in which none of the children of the appointment have either begun or been completed. Any child appointments that exist on the filler and placer applications should be considered canceled. If one or more child appointments have begun or have been completed, then this trigger event should not be used. Instead, the S16 (notification of appointment discontinuation) event should be used.

10.3.5 Notification of appointment discontinuation (event S16)

A notification of appointment discontinuation is sent by the filler application to notify other applications that an appointment in progress has been stopped, or that the remaining occurrences of a parent appointment will not occur. If none of the child appointments of a parent appointment have taken place, then a cancel trigger event should be sent instead.

10.3.6 Notification of appointment deletion (event S17)

A notification of appointment deletion is sent by the filler application to other applications when an appointment that had been entered in error has been removed from the system. A delete trigger event should only be used when an appointment has been erroneously scheduled. It must be removed from the schedule so that it does not affect any statistical processing. A delete trigger event differs from a cancel trigger event

in that a delete acts to remove an error, whereas a cancel acts to prevent a valid request from occurring. This trigger event should not be used for any appointment that has already begun, or that has already been completed. Likewise, it should not be used for any parent appointment if any child appointments have either begun or been completed.

The delete trigger event should be implemented with careful forethought, as it typically has different effects and repercussions in various applications. In some applications, a delete event cannot be undone. This means that if a delete transaction was sent erroneously, recovery will be difficult or impossible. In other applications, a delete transaction will not result in the physical deletion of the record(s), but will set a status or a flag. In these cases, the filler and/or placer appointment identifiers (the numbers or codes that uniquely identify the scheduled appointment or request to the placer and filler applications) probably cannot be re-used. Since these applications maintain a record of deleted appointments, the reuse of an identifier will likely cause a conflict in the applications' processing of transactions.

10.3.7 Notification of addition of service/resource on appointment (event S18)

The notification of addition of service/resource is triggered on the filler application when a new service or resource has been added to an existing appointment. Services and resources are represented by the AIS, AIG, AIL, and AIP segments on an HL7 scheduling interface transaction. This trigger event should only be used for appointments that have not been completed, or for parent appointments whose children have not been completed.

10.3.8 Notification of modification of service/resource on appointment (event S19)

The notification of modification of service/resource is triggered on the filler application when the information pertaining to an existing service or resource has been changed for an existing appointment. Services and resources are represented by the AIS, AIG, AIL, and AIP segments on an HL7 scheduling interface transaction. This trigger event should only be used for appointments that have not been completed, or for parent appointments whose children have not been completed.

This trigger event should not be used when an existing resource or service has been replaced in relation to an existing appointment. Instead, use two other trigger events: S20 (notification of cancellation of service/resource on appointment), as well as S18 (notification of addition of service/resource on appointment).

10.3.9 Notification of cancellation of service/resource on appointment (event S20)

This trigger event notifies other applications that a service or resource has been removed from an existing scheduled appointment that has not yet begun. A cancel event is used to stop a valid service or resource from participating in the appointment. For example, if a portable X-ray machine scheduled for an exam is no longer needed, then the resource is canceled on the filler application. This trigger event should only be used for appointments that have not been completed, or for parent appointments whose children have not been completed.

10.3.10 Notification of discontinuation of service/resource on appointment (event S21)

A notification of discontinuation of service/resource is sent by the filler application to other applications when the remaining children of a parent appointment no longer require a particular service or resource. In other words, this trigger event is sent to discontinue the performance of a service or resource in a parent appointment that has already begun. If the first appointment in a set of recurring appointments has not yet taken place, then a cancel trigger event should be sent instead. This trigger event should only be used for

appointments that have not been completed, or for parent appointments whose children have not been completed.

10.3.11 Notification of deletion of service/resource on appointment (event S22)

A notification of deletion of service/resource is sent by the filler application to other applications when a scheduled appointment requiring a service or resource entered in error has been removed from the system. A delete trigger event should only be used in those circumstances when a service or resource has been erroneously attached to an appointment, and must be removed from the schedule so that it does not affect any statistical processing. A delete trigger event differs from a cancel trigger event in that a delete acts to remove an error, whereas a cancel acts to prevent a valid request from taking place.

10.3.12 Notification of blocked schedule time slot(s) (event S23)

A notification of blocked schedule time slots is sent by the filler application to other applications when a schedule has had one or more time slots blocked and made unavailable for reasons other than the scheduling of an appointment. For example, if an exam room is unavailable for several hours because of maintenance needs or contamination, a user may block off those several hours on the exam room's schedule. Similarly, if a physician is unavailable because he or she has taken vacation time, his or her schedule may be blocked off for the duration of the vacation. When these types of conditions exist, the filler application may use this transaction to notify other applications that the resources controlled by schedules are unavailable.

10.3.13 Notification of opened ("un-blocked") schedule time slot(s) (event S24)

A notification of blocked schedule time slots is sent by the filler application to other applications when a schedule has one or more time slots open up ("un-blocked") and become available for use. Typically, the blocked period of time on a schedule is simply allowed to expire, because the blocked amount of time is generally used for non-appointment activities. This transaction can be used either to discontinue the blocked status on the schedule, or to reverse a previous block made in error. For the purposes of this transaction, discontinuing a block currently in progress (the blocked period has started, but not yet completed) and canceling a blocked period in the future are not significantly different. Therefore, a separate discontinue block transaction is not necessary. If this transaction is received prior to the inception of a blocked period, then the entire block period is simply canceled according to the data provided in the transaction. If the transaction is received after the blocked period has begun, but prior to the end of the blocked period, then the blocked period is discontinued according to the data provided in the transactions. Applications may decide how to handle transactions that attempt to open a blocked period that has both started and ended in the past; however, these transactions can generally be ignored.

For example, if an exam room has been blocked for several hours because of maintenance activities or contamination, and if the work has been completed ahead of schedule, a user may open those several hours on the exam room's schedule. When such a situation occurs, the filler application may use this transaction to notify other applications that the room is available.

10.3.14 Notification that patient did not show up for scheduled appointment (event S26)

A notification that a patient did not show up for an appointment. For example, if a patient was scheduled for a clinic visit, and never arrived for that appointment, this trigger event can be used to set a status on the appointment record for statistical purposes, as well as to free resources assigned to the appointment (or any other application level actions that must be taken in the event a patient does not appear for an appointment).

Patient Administration events defined in Chapter 3 can be used to indicate that a patient has arrived for an appointment, e.g., A01 (admit/visit notification), A04 (register a patient), A05 (pre-admit a patient), or A10

(patient arriving - tracking) as possible examples. Similarly, Patient Administration transactions can be used to identify the end of an appointment, e.g., A03 (discharge/end visit) or A09 (patient departing - tracking) as possible examples.

10.4 QUERY TRANSACTIONS AND TRIGGER EVENTS

Query transactions are the messages and trigger events used between querying applications and filler applications. In Version 2.3 of the Standard, there are several types of queries available. Original mode display-oriented and record-oriented queries are compatible with the queries defined in previous versions of the Standard. New enhanced mode queries include an Embedded Query Language (EQQ), a Virtual Table Query (VQQ), a Stored Procedure Request (SPQ), and an Event Replay Query. Original mode display-oriented queries now have an Enhanced Display Response (EDR) available in Version 2.3. Descriptions and definitions of these query types are found in Chapter 2, Section 2.16, "Query Trigger Events and Message Definitions."

As the discussion of application roles has indicated above, any one application can have more than one application role. If it is important that applications in your messaging environment that fulfill either the placer or auxiliary application roles be able to query information actively from a filler application's schedule(s), then they must also support the role of a querying application.

10.4.1 Original mode queries - display oriented

Original mode display-oriented queries are defined in Chapter 2, Sections 2.17, "Original Mode Queries," and 2.18, "Original Mode Deferred Access." Querying applications use the **QRY** message to initiate a query. Specifying a trigger event of Q01 (query sent for immediate response) in the query transaction yields a request for an immediate response, whereas the use of trigger event Q02 (query sent for deferred response) requests a deferred response. In the immediate mode, the responding application initiates a message using the **DSR** message type. In the deferred response mode, the responding application first acknowledges the query with a general acknowledgment, and then later fulfills the query request with a DSR message, using trigger event Q03 (deferred response to a query). Refer to Chapter 2, Section 2.16, "Query Trigger Events and Message Definitions," for a full discussion of query messages, types, definitions, triggers, and variants.

As indicated in item (a) under Section 2.16.1 in Chapter 2, the allowable values for the filters in the QRD and QRF segments are determined among the coordinating applications during implementation. In general, applications responding to query transactions should define the valid filter codes for the queries they are able to support. Applications initiating query transactions should coordinate with these values at the time of implementation. Section 10.4.3, "SQM/SQR - schedule query message and response (event S25)," suggests a representative set of values that might be used in querying applications for schedule information.

Likewise, information contained in the DSP segment(s) is formatted according to the standards and requirements laid out at the time of implementation. Data contained in these lines of displayable information should be understood to have lost their semantic value, and should be treated only as text.

If both the querying and responding applications support the QAK segment introduced in Version 2.3, then the Enhanced Display Response message (message type EDR) may be used to respond to the QRY message.

10.4.2 Original mode queries - record oriented

As stated in Chapter 2, Section 2.16, "Query Trigger Events and Message Definitions," original mode record-oriented query and response messages are defined in the individual chapters. This section defines the messages used in Original Mode record-oriented queries and responses for schedule information. Refer to

1 2 3 4

[illegible]

... $\mathcal{G} = \mathcal{G}_1 \cup \mathcal{G}_2$...

[DSC]	CONSIDERATION POINTS	2
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```

[ { AIG          Appointment Information - General Resource      10
  [ {NTE} ]      Notes and Comments                          2
  }
]
[ { AIP          Appointment Information - Personnel Resource    10
  [ {NTE} ]      Notes and Comments                          2
  }
]
[ { AIL          Appointment Information - Location Resource     10
  [ {NTE} ]      Notes and Comments                          2
  }
]
]
}
]
[ DSC ]          Continuation Pointer                        2

```

If the deferred response mode (as defined in Chapter 2, Section 2.18, “Original Mode Deferred Access”) is required, then modify the above message definition as follows:

- A code of **D** for “deferred” appears in the third field of the QRD segment, “Query Priority.”
- The acknowledgment of the initial SQM message is a general acknowledgment (ACK).
- The SQR message is sent as if it were an unsolicited message. The original querying application responds with a general acknowledgment message (ACK).

There is only one trigger event defined for schedule information queries. This trigger event is used for all original mode record-oriented schedule information queries. The specification of information to return in the query response is defined by the values provided in certain fields of the QRD and QRF segments.

QRD-2-query format code is assumed to hold the value **R**, indicating that the response should be in a record-oriented format. A value of **D** is invalid in *QRD-2-query format code*, in conjunction with this trigger event, and should generate an error.

QRD-9-what subject filter defines the kind of information that the query is requesting. The following codes are suggested as possible candidates for this field, defining the different kinds of scheduling information requests that might be required by querying applications. Refer to *HL7 table 0048 - What subject filter* for valid values.

Scheduling additions to HL7 Table 0048 - What subject filter

Value	Description
SAL	All schedule related information, including open slots, booked slots, blocked slots
SOP	Open slots on the identified schedule
SBK	Booked slots on the identified schedule
SBL	Blocked slots on the identified schedule
SSA	Time slots available for a single appointment
SSR	Time slots available for a recurring appointment

QRF-1-where subject filter allows the query to specify the department, the system, or the subsystem.

Any remaining definition and filtering of the query should be achieved by supplying information in the chapter-specific segments that fall between the QRF segment and DSC segment in the message definition.

10.4.4 Enhanced mode queries

The new enhanced mode queries, introduced in Version 2.3, use the message definitions and responses defined in Chapter 2. Refer to Section 2.20, “Enhanced Query Mode Response Messages,” for more information on those query transactions.

10.5 MESSAGE SEGMENTS

10.5.1 ARQ - appointment request segment

The ARQ segment defines a request for the booking of an appointment. It is used in transactions sent from an application acting in the role of a placer.

Figure 10-3. ARQ attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	75	EI	R			00860	Placer Appointment ID
2	75	EI	C			00861	Filler Appointment ID
3	5	NM	C			00862	Occurrence Number
4	22	EI	O			00218	Placer Group Number
5	200	CE	O			00864	Schedule ID
6	200	CE	O			00865	Request Event Reason
7	200	CE	O		0276	00866	Appointment Reason
8	200	CE	O		0277	00867	Appointment Type
9	20	NM	O			00868	Appointment Duration
10	200	CE	O			00869	Appointment Duration Units
11	53	DR	O	Y		00870	Requested Start Date/Time Range
12	5	ST	O			00871	Priority-ARQ
13	100	RI	O			00872	Repeating Interval
14	5	ST	O			00873	Repeating Interval Duration
15	48	XCN	R	Y		00874	Placer Contact Person
16	40	XTN	O	Y		00875	Placer Contact Phone Number
17	106	XAD	O	Y		00876	Placer Contact Address
18	80	PL	O			00877	Placer Contact Location
19	48	XCN	R	Y		00878	Entered By Person
20	40	XTN	O	Y		00879	Entered By Phone Number
21	80	PL	O			00880	Entered By Location
22	75	EI	O			00881	Parent Placer Appointment ID
23	75	EI	O			00882	Parent Filler Appointment ID

10.5.1.0 ARQ field definitions

10.5.1.1 Placer appointment ID (EI) 00860

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field contains placer application’s permanent identifier for the appointment request (and the scheduled appointment itself, when confirmed as booked by the filler application). This is a composite field. Refer to Chapter 2, Section 2.8.15, “EI - entity identifier,” for a description of the EI data type and its components and subcomponents.

The first component is a string that identifies an individual appointment request, or booked appointment. It is assigned by the placer application, and it identifies an appointment request, and the subsequent scheduled

appointment, uniquely among all such requests and/or booked appointments from a particular requesting application. If the placer appointment ID identifies a parent of a repeating schedule request, then the individual scheduled child appointments can be uniquely identified either by a new placer appointment ID or the parent's placer appointment ID plus an occurrence number, specified in *ARQ-3-occurrence number*.

The second through fourth components contain the assigning authority identifying information. Section 2.8.15, "EI - entity identifier," in Chapter 2 describes the structure and content of these components with respect to the EI data type.

10.5.1.2 Filler appointment ID (EI) 00861

Components: <entity identifier (ST)> ^ <namespace ID (ST)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field contains the filler application's permanent identifier for the appointment request (and the scheduled appointment itself, when confirmed as a booked slot by the filler application). This is a composite field. Refer to Chapter 2, Section 2.8.15, "EI - entity identifier," for a description of the EI data type and its components and subcomponents.

The first component is a string that identifies an individual appointment request, or booked appointment. It is assigned by the filler application, and it identifies an appointment request and the subsequent scheduled appointment, uniquely among all such requests and/or booked appointments from a particular processing application. If the filler appointment ID identifies a parent of a repeating schedule request, then the individual scheduled child appointments can be uniquely identified either by a new filler appointment ID or the parent's filler appointment ID plus an occurrence number, specified in *ARQ-3-occurrence number*.

The second through fourth components contain the assigning authority identifying information. Section 2.8.15, "EI - entity identifier," in Chapter 2 describes the structure and content of these components with respect to the EI data type.

This is a conditionally required field. On initial request messages and other messages where a filler has not yet assigned a filler appointment ID, this field should not contain a value. In all other subsequent messages, where a filler application has assigned a filler appointment ID and communicated it to other applications, this field is required.

10.5.1.3 Occurrence number (NM) 00862

Definition: This field is used in conjunction with the placer appointment ID and/or the filler appointment ID to uniquely identify an individual occurrence (a child) of a parent repeating schedule appointment.

This field is conditionally required. If the transaction using this segment is meant to apply only to one occurrence of a repeating appointment, and an occurrence number is required to uniquely identify the child appointment (that is, the child does not have a separate and unique placer appointment ID or filler appointment ID), then this field is required.

10.5.1.4 Placer group number (EI) 00218

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field allows a placer application to group sets of appointment requests together, and subsequently to identify the group.

The first component is a string that identifies a group of appointment requests. It is assigned by the placer application, and it identifies an appointment group uniquely among all such groups of requests from a particular requesting application.

The second through fourth components contain the assigning authority identifying information. Section 2.8.15, “EI - entity identifier,” in Chapter 2 describes the structure and content of these components with respect to the EI data type.

10.5.1.5 Schedule ID (CE) 00864

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains an identifier code for the schedule in which this appointment should be (or is) booked. This field is provided for situations in which filler applications maintain multiple schedules, and in which a particular resource or set of resources is controlled by more than one of those schedules.

If a new appointment must be booked, it may be necessary to provide a schedule ID to uniquely identify the intended slot(s) being requested in the transaction. After the request has been assigned to one or more slots, however, the filler application should assign a unique filler appointment ID (see Sections 10.5.1.1, “Placer appointment ID (EI) 00860,” and 10.5.1.2, “Filler appointment ID (EI) 00861”). This filler appointment ID, as its definition indicates, should uniquely identify the appointment among all such requests and appointments within the filler application. This means that, once assigned, the filler appointment ID should uniquely identify the appointment (either as a request or as a booked appointment) without a need to provide the schedule ID too. As a cautionary note regarding implementation, if the filler appointment ID would not otherwise be unique, it may be necessary to include the schedule ID as part of the filler appointment ID. This can be done either by prefixing the appointment ID with the schedule ID, or by appending the schedule ID to the appointment ID.

10.5.1.6 Request event reason (CE) 00865

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the identifier code for the reason that the request event is being triggered. This field may contain a code describing the cancel reason, the delete reason, the discontinue reason, the add reason, or any other code describing the reason that a specific event is occurring.

10.5.1.7 Appointment reason (CE) 00866

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the identifier code for the reason that the appointment is to take place. This field may contain a Universal Service ID describing the observation/test/battery/procedure or other activity that is to be performed during the requested appointment, similar to the Universal Service ID defined for the OBR segment in Chapter 4 on Order Entry. It may also contain a site-specific code describing a pre-defined set of reasons that an appointment may be set to occur. This code can be based on local and/or universal codes. The use of universal codes is recommended. Refer to *user-defined table 0276 - Appointment reason codes*, below, for suggested codes.

User-defined Table 0276 - Appointment reason codes

Value	Description
ROUTINE	Routine appointment - default if not valued
WALKIN	A previously unscheduled walk-in visit
CHECKUP	A routine check-up, such as an annual physical
FOLLOWUP	A follow up visit from a previous appointment
EMERGENCY	Emergency appointment

10.5.1.8 Appointment type (CE) 00867

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains an identifier code for the type of appointment being requested. Refer to *user-defined table 0277 - Appointment type codes* for suggested codes.

User-defined Table 0277 - Appointment type codes

Value	Description
Normal	Routine schedule request type - default if not valued
Tentative	A request for a tentative (e.g., "penciled in") appointment
Complete	A request to add a completed appointment, used to maintain records of completed appointments that did not appear in the schedule (e.g., STAT, walk-in, etc.)

10.5.1.9 Appointment duration (NM) 00868

Definition: This field contains the amount of time being requested for the appointment. In cases of requests for repeating appointments, this field describes the duration of one instance of the appointment. If this field is unvalued, then the institution's standard duration for the type of appointment requested will be assumed.

The appointment duration field must contain a positive, non-zero number. A negative number or zero (0) is nonsensical in the context of a duration.

10.5.1.10 Appointment duration units (CE) 00869

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains a code describing the units of time used in expressing the *ARQ-9-appointment duration* field. This field should be valued according to the recommendations in Chapters 2 and 7. If this component is not valued, the ISO base unit of seconds (code *s*) will be assumed. Refer to Chapter 7, *Figures 7-10 through 7-13*, for a list of ISO and ANSI+ unit codes.

10.5.1.11 Requested start date/time range (DR) 00870

Components: <range start date/time (TS)> ^ <range end date/time (TS)>

Definition: This field contains the date and time that the appointment is requested to begin, in the form of a date/time range. The first component contains the earliest date and time that the appointment may be scheduled to begin. The second component contains the latest date and time that the appointment may be scheduled to begin.

The TS (time stamp) data type allows for two components: the time stamp, and a degree of precision. If used, the degree of precision should be separated from the time stamp by a subcomponent delimiter.

If only the range start date/time has been provided, then the range end date/time is assumed to be infinity. Using this scenario is equivalent to requesting the next available slot on/after a particular date and time. If only the range end date/time has been provided, then the range start date/time is assumed to be immediate. Using this scenario is equivalent to requesting the appointment start some time between the current date and time, and the specified range end date/time. Requesting an appointment when the range start and range end date/time are the same is equivalent to requesting a specific slot on a schedule. If this field is unvalued, then the filler application will assume that the next available slot should be scheduled, using the institution's processing rules for scheduling appointments.

This field may repeat. Repetitions of this field are used to construct a list of acceptable ranges. Repetitions of this field are connected with a logical OR to construct this list. This procedure allows applications to provide multiple preferences for the scheduling of appointments. Applications should take steps to ensure that nonsensical ranges are not indicated in this field (for example, redundant ranges).

Examples:

Schedule the appointment to begin at some time between 8:00AM on Tuesday, May 17th, 1994 and 12:00PM on Friday, May 20th, 1994 local time:

... |199405170800^199405201200|...

Schedule the appointment in the next available slot on/after 6:00AM on Monday, April 25th, 1994 local time:

... |199405250600^|...

Note:	The field value ... 199405250600 ... is equivalent to making the above request, according to the HL7 rules for processing fields.
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Schedule the appointment in the next available slot on before 6:00AM on Monday, April 25th, 1994 local time:

... |^199405250600|...

Schedule the appointment in the next available slot:

... ||...

Schedule the appointment to begin on any weekday during the two weeks beginning Monday, April 4th 1994. In this example, the degree of precision (sub)component of the time stamp is used to indicate that the date/time ranges refer to the institution's standard operating day:

... |199404040000&D^199404080000&D~199404110000&D^199404150000&D|...

Schedule the appointment in the next available slot that does not occur during the May, 1994 HL7 Working Group Meeting:

... |^199405161600~199405230800^|...

Schedule the appointment to begin on/before 4:00PM on Thursday, December 23rd, 1993, or any weekday between Monday, December 27th and Thursday, December 30th, or on/after 8:00AM on Monday, January 3rd, 1994:

... |^199312231600~199312270000&D^199312300000&D~199401030800^|...

10.5.1.12 Priority-ARQ (ST) 00871

Definition: This field contains the urgency of the request. The definition of this field is equivalent to the definition of the priority component of the Quantity/Timing data type given in the Order Entry chapter (Chapter 4), Section 4.4.6, "Priority component."

10.5.1.13 Repeating interval (RI) 00872

Components: <repeat pattern (IS)> ^ <explicit time interval (ST)>

Definition: This field contains the interval between repeating appointments. The default setting indicates that the appointment should occur once, if the component is not valued. The definition of this field is equivalent to the definition of the interval component of the Quantity/Timing data type given in the Order Entry chapter (Chapter 4), Section 4.4.2, "Interval component."

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If an explicit time interval is specified for the repeat pattern, then it specifies the actual time(s) at which the appointment should be scheduled. The *ARQ-11-requested start date/time range* ought to indicate the first repetition that should occur.

Note: The subcomponent delimiter defined for the Interval component of the Quantity/Timing field definition has been replaced by a component delimiter for this field.

10.5.1.14 Repeating interval duration (ST) 00873

Definition: This field indicates how long the appointment repetitions should continue, once they have begun. The default setting indicates that the appointment should occur once. If the Interval Duration is defined as indefinitely repeating, the repetition of this appointment can only be stopped by using a discontinue event. The definition of this field is equivalent to the definition of the Interval component of the Quantity/Timing field given in the Order Entry chapter (Chapter 4), Section 4.4.3, "Duration component," with the exception of the default value.

10.5.1.15 Placer contact person (XCN) 00874

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility ID (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility ID: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field identifies the person responsible for requesting the scheduling of a requested appointment. This person could be the same person responsible for executing the actual appointment, or it could be the provider requesting that an appointment be made on behalf of the patient, with another provider.

10.5.1.16 Placer contact phone number (XTN) 00875

Components: [NNN] [(999)]999-9999 [X99999] [B99999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Definition: This field contains the phone number used to contact the placer contact person.

10.5.1.17 Placer contact address (XAD) 00876

Components: <street address (ST)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code (ST)> ^ <country (ID)> ^ <address type (ID)> ^ <other geographic designation (ST)> ^ <county/parish code (IS)> ^ <census tract (IS)> ^ <address representation code (ID)>

Definition: This field contains the address used to contact the placer contact person.

10.5.1.18 Placer contact location (PL) 00877

Components: <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <person location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <location description (ST)>

Subcomponents of facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains a code that identifies the location of the placer contact person.

10.5.1.19 Entered by person (XCN) 00878

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility ID (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility ID: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field identifies the person responsible for entering the request for the scheduling of an appointment. It is included to provide an audit trail of persons responsible for the request. This person may be someone other than the placer contact person, who is responsible for entering orders and requests.

10.5.1.20 Entered by phone number (XTN) 00879

Components: [NNN] [(999)999-9999 [X99999] [B99999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Definition: This field contains the phone number used to contact the *ARQ-19-entered by person*.

10.5.1.21 Entered by location (PL) 00880

Components: <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <person location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <location description (ST)>

Subcomponents of facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains a code that identifies the location of the entered by person.

10.5.1.22 Parent placer appointment ID (EI) 00881

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field relates a child to its parent, when a parent-child relationship exists. It contains the placer application's permanent identifier for the parent of the appointment request. This is a composite field.

The first component is a string that identifies the parent appointment request. It is assigned by the placer application, and identifies an appointment request uniquely among all such requests from a particular requesting application.

The second through fourth components contain the assigning authority identifying information. Section 2.8.15, "EI - entity identifier in Chapter 2 describes the structure and content of these components with respect to the EI data type.

10.5.1.23 Parent filler appointment ID (EI) 00882

Components: <entity identifier (ST)> ^ <namespace ID (ID)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field relates a child to its parent, when a parent-child relationship exists. It contains the filler application's permanent identifier for the parent of the appointment request. This is a composite field.

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The first component is a string that identifies the parent appointment request. It is assigned by the filler application, and identifies an appointment request uniquely among all such requests on a particular processing application.

The second through fourth components contain the assigning authority identifying information. Section 2.8.15, "EI - entity identifier," in Chapter 2 describes the structure and content of these components with respect to the EI data type.

10.5.2 SCH - schedule activity information segment

The SCH segment contains general information about the scheduled appointment.

Figure 10-4. SCH attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	75	EI	C			00860	Placer Appointment ID
2	75	EI	C			00861	Filler Appointment ID
3	5	NM	C			00862	Occurrence Number
4	22	EI	O			00218	Placer Group Number
5	200	CE	O			00864	Schedule ID
6	200	CE	R			00883	Event Reason
7	200	CE	O		0276	00866	Appointment Reason
8	200	CE	O		0277	00867	Appointment Type
9	20	NM	O			00868	Appointment Duration
10	200	CE	O			00869	Appointment Duration Units
11	200	TQ	R	Y		00884	Appointment Timing Quantity
12	48	XCN	O	Y		00874	Placer Contact Person
13	40	XTN	O			00875	Placer Contact Phone Number
14	106	XAD	O	Y		00876	Placer Contact Address
15	80	PL	O			00877	Placer Contact Location
16	38	XCN	R	Y		00885	Filler Contact Person
17	40	XTN	O			00886	Filler Contact Phone Number
18	106	XAD	O	Y		00887	Filler Contact Address
19	80	PL	O			00888	Filler Contact Location
20	48	XCN	R	Y		00878	Entered by Person
21	40	XTN	O	Y		00879	Entered by Phone Number
22	80	PL	O			00880	Entered by Location
23	75	EI	O			00881	Parent Placer Appointment ID
24	75	EI	C			00882	Parent Filler Appointment ID
25	200	CE	O		0278	00889	Filler Status Code

10.5.2.0 SCH field definitions

10.5.2.1 Placer appointment ID (EI) 00860

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field contains the placer application's permanent identifier for the appointment request (and the scheduled appointment itself, when it has been confirmed as a booked slot by the filler application). This is a composite field.

The first component is a string that identifies an individual appointment request, or a booked appointment. It is assigned by the placer application, and identifies an appointment request, and the subsequent scheduled appointment, uniquely among all such requests and/or booked appointments from a particular requesting application. If SCH-1-placer appointment ID identifies a parent of a repeating schedule request, then the

individual child scheduled appointments can be uniquely identified either by a new *SCH-1-placer appointment ID* or by *SCH-23-parent placer appointment ID* plus an *SCH-3-occurrence number*.

The second component contains the assigning authority identifying information. Section 2.8.15, “EI - entity identifier,” in Chapter 2 describes the structure and content of these components with respect to the EI data type.

If a schedule request originates from a placer it **MUST** have a placer appointment ID. If the filler sends responses, it may use the placer appointment ID and/or assign a filler appointment ID (which it would echo back to the placer to enable the placer application to associate the two). If the placer appointment ID is not present, the filler appointment ID must be present and vice versa.

10.5.2.2 Filler appointment ID (EI) 00861

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field contains the filler application’s permanent identifier for the appointment request (and the scheduled appointment itself, when it has been confirmed as a booked slot by the filler application). This is a composite field.

The first component is a string of up to fifteen characters that identifies an individual appointment request, or a booked appointment. It is assigned by the filler application, and identifies an appointment request, and the subsequent scheduled appointment, uniquely among all such requests and/or booked appointments from a particular processing application. If *SCH-2-filler appointment ID* identifies a parent of a repeating schedule request, then the individual child scheduled appointments can be uniquely identified either by a new *SCH-2-filler appointment ID* or by *SCH-25-parent filler appointment ID* plus an *SCH-3-occurrence number*.

The second through fourth components contain the assigning authority identifying information. Section 2.8.15, “EI - entity identifier,” in Chapter 2 describes the structure and content of these components with respect to the EI data type.

10.5.2.3 Occurrence number (NM) 00862

Definition: This field is used in conjunction with *SCH-1-placer appointment ID* and/or *SCH-2-filler appointment ID* to uniquely identify an individual occurrence (a child) of a parent repeating schedule appointment.

This field is conditionally required. If the transaction using this segment is intended to apply only to one occurrence of a repeating appointment, and an occurrence number is required to uniquely identify the child appointment (that is, the child does not have a separate and unique *SCH-1-placer appointment ID* or *SCH-2-filler appointment ID*), then this field is required.

10.5.2.4 Placer group number (EI) 00218

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field allows a placer application to group sets of appointment requests together, and subsequently to identify the group.

The first component is a string that identifies a group of appointment requests. It is assigned by the placer application, and it identifies an appointment group uniquely among all such groups of requests from a particular requesting application.

The second through fourth components contain the assigning authority identifying information. Section 2.8.15, “EI - entity identifier,” in Chapter 2 describes the structure and content of these components with respect to the EI data.

10.5.2.5 Schedule ID (CE) 00864

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains an identifier code for the schedule in which this appointment is (or will be) booked. This field is provided for instances in which filler applications maintain multiple schedules, and when a particular resource or set of resources is controlled by more than one of those schedules.

This field is provided on the SCH segment for informational purposes to applications fulfilling the placer, querying and auxiliary roles.

10.5.2.6 Event reason (CE) 00883

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains an identifier code for the reason that the notification event was triggered. This field may contain a code describing the cancel reason, the delete reason, the discontinue reason, the add reason, the block reason or any other code describing the reason that a specific event will occur.

10.5.2.7 Appointment reason (CE) 00866

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains an identifier code for the reason that the appointment is to take place. This field may contain a Universal Service ID describing the observation/test/battery/procedure or other activity that is to take place during the requested appointment, similar to the Universal Service ID defined for the OBR segment in the Order Entry chapter (Chapter 4). It may also contain a site-specific code describing a pre-defined set of reasons that an appointment may be set to occur. This code can be based on local and/or universal codes. The use of universal codes is recommended. Refer to *user-defined table 0276 - Appointment reason codes* for suggested codes.

10.5.2.8 Appointment type (CE) 00867

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the identifier code for the type of appointment. Refer to *user-defined table 0277 - Appointment type codes* for suggested codes.

10.5.2.9 Appointment duration (NM) 00868

Definition: This field specifies the amount of time requested and allotted for the appointment. In cases of repeating appointments, this field describes the duration of one instance of the appointment. If this field is unvalued, then the institution's standard duration for the type of appointment requested will be assumed.

The appointment duration field must contain a positive, non-zero number. A negative number or zero (0) is nonsensical in the context of a duration.

10.5.2.10 Appointment duration units (CE) 00869

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains a code describing the units of time used for expressing the *ARQ-9-appointment duration* field. This field should be valued according to the recommendations in Chapters 2 and 7. If this component is not valued, the ISO base unit of seconds (code “s”) is assumed. Refer to Chapter 7, *Figures 7-10* through *7-13*, for a list of ISO and ANSI+ unit codes.

10.5.2.11 Appointment timing quantity (TQ) 00884

Components: <quantity (CQ)> ^ <interval (CM)> ^ <duration (CM)> ^ <start date/time (TS)> ^ <end date/time (TS)> ^ <priority (ST)> ^ <condition (ST)> ^ <text (TX)> ^ <conjunction (ST)> ^ <order sequencing (CM)> ^ <occurrence duration (CE)> ^ <total occurrences (NM)>

Definition: This field contains the scheduled appointment’s timing and quantity, as scheduled by the filler application. Chapter 4, Section 4.4, “Quantity/Timing (TQ) Definition,” fully describes the components and the appropriate data values for the components of this field.

10.5.2.12 Placer contact person (XCN) 00874

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility ID (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility ID: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field identifies the person responsible for requesting the scheduling of a requested appointment. Most often, this person will be the same person responsible for executing the appointment.

10.5.2.13 Placer contact phone number (XTN) 00875

Components: [NNN] [(999)999-9999 [X99999] [B99999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Definition: This field contains the phone number used to contact the *SCH-12-placer contact person*.

10.5.2.14 Placer contact address (XAD) 00876

Components: <street address (ST)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code (ST)> ^ <country (ID)> ^ <address type (ID)> ^ <other geographic designation (ST)> ^ <county/parish code (IS)> ^ <census tract (IS)> ^ <address representation code (ID)>

Definition: This field contains the address used to contact the *SCH-12-placer contact person*.

10.5.2.15 Placer contact location (PL) 00877

Components: <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <person location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <location description (ST)>

Subcomponents of facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains a code that identifies the location of the *SCH-12-placer contact person*.

10.5.2.16 Filler contact person (XCN) 00885

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR)

```
(ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^  
<name type (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit  
scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility ID (HD)> ^  
<name representation code (ID)>
```

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility ID: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field identifies the person responsible for the scheduling of the requested appointment. Most often, this person will be the same person responsible for maintaining the schedule and for reviewing appointment requests.

10.5.2.17 Filler contact phone number (XTN) 00886

Components: [NNN] [(999)]999-9999 [X999999] [B999999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Definition: This field contains the phone number used to contact the *SCH-16-filler contact person*.

10.5.2.18 Filler contact address (XAD) 00887

Components: <street address (ST)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code (ST)> ^ <country (ID)> ^ <address type (ID)> ^ <other geographic designation (ST)> ^ <county/parish code (IS)> ^ <census tract (IS)> ^ <address representation code (ID)>

Definition: This field contains the address used to contact the *SCH-16-filler contact person*.

10.5.2.19 Filler contact location (PL) 00888

Components: <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <person location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <location description (ST)>

Subcomponents of facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains a code that identifies the location of the *SCH-16-filler contact person*.

10.5.2.20 Entered by person (XCN) 00878

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility ID (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility ID: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field identifies the person responsible for entering the request for the scheduling of an appointment. It is included to provide an audit trail of persons responsible for the request. This person may be someone other than the placer contact person, who is responsible for entering orders and requests.

10.5.2.21 Entered by phone number (XTN) 00879

Components: [NNN] [(999)]999-9999 [X999999] [B999999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country

```
code (NM)> ^ <area/city code (NM)> ^ phone number (NM)> ^ <extension (NM)> ^ <any
text (ST)>
```

Definition: This field contains the phone number used to contact the *ARQ-19-entered by person*.

10.5.2.22 Entered by location (PL) 00880

```
Components: <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status
(IS)> ^ <patient location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <location de-
scription (ST)>
```

```
Subcomponents of facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>
```

Definition: This field contains a code that identifies the location of the entered by person.

10.5.2.23 Parent placer appointment ID (EI) 00881

```
Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID
type (ID)>
```

Definition: This field relates a child to its parent, when a parent-child relationship exists. It contains the placer application's permanent identifier for the parent of the appointment request. This is a composite field.

The first component is a string that identifies the parent appointment request. It is assigned by the placer application, and identifies an appointment request uniquely among all such requests from a particular requesting application.

The second through fourth components contain the assigning authority identifying information. Section 2.8.15, "EI - entity identifier," in Chapter 2 describes the structure and content of these components with respect to the EI data type.

10.5.2.24 Parent filler appointment ID (EI) 00882

```
Components: <entity identifier (ST)> ^ <namespace ID (ID)> ^ <universal ID (ST)> ^ <universal ID
type (ID)>
```

Definition: This field relates a child to its parent, when a parent-child relationship exists. It contains the filler application's permanent identifier for the parent of the appointment request. This is a composite field.

The first component is a string that identifies the parent appointment request. It is assigned by the filler application, and it identifies an appointment request uniquely among all such requests on a particular processing application.

The second through fourth components contain the assigning authority identifying information. Section 2.8.15, "EI - entity identifier," in Chapter 2 describes the structure and content of these components with respect to the EI data type.

This is a conditionally required field. On initial messages where a filler has not yet assigned a filler appointment ID, this field should not contain a value. In all other subsequent messages, where a filler application has assigned a filler appointment ID, this field is required.

10.5.2.25 Filler status code (CE) 00889

```
Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identi-
fier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>
```

Definition: This field contains a code describing the status of the appointment with respect to the filler application. Refer to *user-defined table 0278 - Filler status codes* for suggested codes.

User-defined Table 0278 - Filler status codes

Value	Description
Pending	Appointment has not yet been confirmed
Waitlist	Appointment has been placed on a waiting list for a particular slot, or set of slots
Booked	The indicated appointment is booked
Started	The indicated appointment has begun and is currently in progress
Complete	The indicated appointment has completed normally (was not discontinued, canceled, or deleted)
Cancelled	The indicated appointment was stopped from occurring (canceled prior to starting)
Dc	The indicated appointment was discontinued (DC'ed while in progress, discontinued parent appointment, or discontinued child appointment)
Deleted	The indicated appointment was deleted from the filler application
Blocked	The indicated time slot(s) is(are) blocked
Overbook	The appointment has been confirmed; however it is confirmed in an overbooked state

10.5.3 RGS - resource group segment

The RGS segment is used to identify relationships between resources identified for a scheduled event. This segment can be used, on a site specified basis, to identify groups of resources that are used together within a scheduled event, or to describe some other relationship between resources. To specify related groups of resources within a message, begin each group with an RGS segment, and then follow that RGS with one or more of the Appointment Information segments (AIG, AIL, AIS, or AIP).

If a message does not require any grouping of resources, then specify a single RGS in the message, and follow it with all of the Appointment Information segments for the scheduled event. (At least one RGS segment is required in each message – even if no grouping of resources is required – to allow parsers to properly understand the message.)

Figure 10-5. RGS attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	SI	R			01203	Set ID - RGS
2	3	ID	C		0206	00763	Segment Action Code
3	200	CE	O			01204	Resource Group ID

10.5.3.0 RGS field definitions

10.5.3.1 Set ID - RGS (SI) 01203

Definition: This field contains a number that uniquely identifies the information represented by this segment in this transaction for the purposes of addition, change or deletion.

10.5.3.2 Segment action code (ID) 00763

Definition: This field contains the action to be taken when updating or modifying information in this segment from previously sent interface transactions. Refer to *HL7 table 0206 - Segment action code* in Chapter 2, Section 2.23.4.2, “Action code/unique identifier mode update definition,” for valid values.

This field is conditionally required. It is required for all updating or modifying trigger events.

10.5.3.3 Resource group ID (CE) 01204

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains an identifier code describing the group of resources following this RGS segment.

10.5.4 AIS - appointment information - service segment

The AIS segment contains information about various kinds of services that can be scheduled. Services included in a transaction using this segment are assumed to be controlled by a schedule on a schedule filler application. Services not controlled by a schedule are not identified on a schedule request using this segment.

Figure 10-6. AIS attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	SI	R			00890	Set ID - AIS
2	3	ID	C		0206	00763	Segment Action Code
3	200	CE	R			00238	Universal Service ID
4	26	TS	C			01202	Start Date/Time
5	20	NM	C			00891	Start Date/Time Offset
6	200	CE	C			00892	Start Date/Time Offset Units
7	20	NM	O			00893	Duration
8	200	CE	O			00894	Duration Units
9	10	IS	C		0279	00895	Allow Substitution Code
10	200	CE	C		0278	00889	Filler Status Code

10.5.4.0 AIS field definitions

10.5.4.1 Set ID - AIS (SI) 00890

Definition: This field contains a number that uniquely identifies the information represented by this segment in this transaction for the purposes of addition, change or deletion.

10.5.4.2 Segment action code (ID) 00763

Definition: This field contains the action to be taken when updating or modifying information in this segment from previously sent interface transactions. Refer to *HL7 table 0206 - Segment action code* in Chapter 2, Section 2.23.4.2, "Action code/unique identifier mode update definition," for valid values.

This field is conditionally required. It is required for all updating or modifying trigger events.

10.5.4.3 Universal service ID (CE) 00238

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains an identifier code for a service to be scheduled. This field may contain a Universal Service ID describing the observation/test/battery/procedure or other activity that is to be performed during the requested appointment, similar to the Universal Service ID defined for the OBR segment in the Order Entry chapter (Chapter 4). This code can be based on local and/or universal codes. The use of universal codes is recommended.

10.5.4.4 Start date/time (TS) 01202

Definition: This field contains the date and time this service needs for the appointment. This field allows the application to identify that the service is required for the appointment at a different time than the appointment's start date/time

This field is conditionally required. If a value for *AIS-5-start date/time offset* is not provided, then a value is required for this field. To specify that there is no difference between the appointment's start date/time and the resource's start date/time either replicate the appointment's start date/time into this field, or specify an offset of zero (0) in *AIS-5-start date/time offset* and any valid time unit code in *AIS-6-start date/time offset units*.

10.5.4.5 Start date/time offset (NM) 00891

Definition: This field contains the offset this service needs for the appointment, expressed in units of time relative to the scheduled start date/time. This field allows the application to identify that the service is required for the appointment at a different time than the appointment's start date/time. The first component contains the offset amount. An offset of zero (0), or an unvalued field indicates that the service is required at the start date/time of the appointment.

A positive offset (an unsigned or positive number) indicates that the service is required after the appointment's start date/time. Specifying a negative offset indicates that the service is required prior to the specified start date/time of the appointment. Negative offsets are allowed, and sites should clearly define the effect of a negative offset on the appointment's start date/time.

This field is conditionally required. If a value for *AIS-5-start date/time offset* is not provided, then a value is required for this field. To specify that there is no difference between the appointment's start date/time and the resource's start date/time either replicate the appointment's start date/time into this field, or specify an offset of zero (0) in *AIS-5-start date/time offset* and any valid time unit code in *AIS-6-start date/time offset units*.

10.5.4.6 Start date/time offset units (CE) 00892

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains a code describing the units of time used for expressing the start date/time offset. This field should be valued according to the recommendations in Chapters 2 and 7. If this field is not valued, the ISO base unit of seconds (code s) will be assumed. Refer to Chapter 7, *Figures 7-10 through 7-13*, for a list of ISO and ANSI+ unit codes.

This field is conditionally required. If a value for *AIS-5-start date/time offset* is provided, then a value is required for this field.

10.5.4.7 Duration (NM) 00893

Definition: This field contains the duration for which the resource is requested/scheduled for this appointment, if different from the overall duration of the requested/scheduled appointment. This field indicates to the application that a resource is required for a different amount of time than the appointment's overall duration. An unvalued duration indicates that the resource is required from its start date/time offset (specified in the previous two fields) until the end of the appointment. If no start date/time offset is specified, then the resource is required for the full duration of the appointment.

This field must be a positive, non-zero number. A negative number or zero (0) is nonsensical in the context of a duration.

10.5.4.8 Duration units (CE) 00894

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains a code describing the units of time used for expressing the duration. This field should be valued according to the recommendations in Chapters 2 and 7. If this field is not valued, the ISO base unit of seconds (code *s*) will be assumed. Refer to Chapter 7, *Figures 7-10* through *7-13*, for a list of ISO and ANSI+ unit codes.

10.5.4.9 Allow substitution code (IS) 00895

Definition: This field contains a code indicating whether the identified resource can be substituted with an equivalent resource by the filler application. Refer to *user-defined table 0279 - Allow substitution codes* for suggested codes.

User-defined Table 0279 - Allow substitution codes

Value	Description
No	Substitution of this resource is not allowed
Confirm	Contact the Placer Contact Person prior to making any substitutions of this resource
Notify	Notify the Placer Contact Person, through normal institutional procedures, that a substitution of this resource has been made
Yes	Substitution of this resource is allowed

This field is conditionally required. It is required for all request messages. It is optional for all unsolicited transactions, and for all query messages.

10.5.4.10 Filler status code (CE) 00889

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains a code that describes the requested/scheduled status of the resource or activity, from the point of view of the filler application. Refer to *user-defined table 0278 - Filler status codes* for suggested codes.

This is a conditionally required field. Because the information contained in this field is only appropriate in transactions originating from a filler application, it is required for those messages. This includes all unsolicited transactions originating from a filler application, as well as all response messages originating from a filler application. This field is optional for all transactions originating from placer, querying and auxiliary applications. It is recommended that this field be left unvalued in transactions originating from applications other than the filler application.

10.5.5 AIG - appointment information - general resource segment

The AIG segment contains information about various kinds of resources (other than those with specifically defined segments in this chapter) that can be scheduled. Resources included in a transaction using this segment are assumed to be controlled by a schedule on a schedule filler application. Resources not controlled by a schedule are not identified on a schedule request using this segment. Resources described by this segment are general kinds of resources, such as equipment, that are identified with a simple identification code.

Figure 10-7. AIG attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	SI	R	Y	0206	00896	Set ID - AIG
2	3	ID	C			00763	Segment Action Code
3	200	CE	C			00897	Resource ID
4	200	CE	R			00898	Resource Type
5	200	CE	O			00899	Resource Group
6	5	NM	O			00900	Resource Quantity
7	200	CE	O			00901	Resource Quantity Units
8	26	TS	C			01202	Start Date/Time
9	20	NM	C			00891	Start Date/Time Offset
10	200	CE	C			00892	Start Date/Time Offset Units
11	20	NM	O			00893	Duration
12	200	CE	O			00894	Duration Units
13	10	IS	C		0279	00895	Allow Substitution Code
14	200	CE	C		0278	00889	Filler Status Code

10.5.5.0 AIG field definitions

10.5.5.1 Set ID - AIG (SI) 00896

Definition: This field contains a number that uniquely identifies the information represented by this segment in this transaction for the purposes of addition, change or deletion.

10.5.5.2 Segment action code (ID) 00763

Definition: This field contains the action to be taken when updating or modifying information in this segment from previously sent interface transactions. Refer to *HL7 table 0206 - Segment action code* in Chapter 2, Section 2.23.4.2, "Action code/unique identifier mode update definition," for valid values.

This field is conditionally required. It is required for all updating or modifying trigger events.

10.5.5.3 Resource ID (CE) 00897

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the ID number and name of the resource being requested or scheduled for an appointment. This field is used to identify a specific resource being requested, or a specific resource that has been scheduled for an appointment. If the specific resource is not known but the type of resource is, *AIG-4-resource type* is used to identify the type of resource required or scheduled.

At a minimum, the ID number component should be supplied to identify either the specific resource being requested or the specific resource that has been scheduled. For inter-enterprise communications, for which a shared ID number may not be available, the minimum components required to uniquely identify a resource may be defined by site-specific negotiations.

This field is conditionally required for this segment. In new schedule request messages, it is required if the request asks that a specific resource be scheduled. For all other request messages, the specific resource should be identified if the information is available (either because a specific resource was initially requested, or because the filler application returned the ID of the specific resource that has been scheduled).

This field is required for all unsolicited transactions from the filler application.

This field is optional for all query transactions.

10.5.5.4 Resource type (CE) 00898

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field identifies the role of the resource requested/scheduled for this appointment. For requests, if a specific resource is not identified in *AIG-3-resource ID*, then this field identifies the type of resource that should be scheduled by the filler application. At a minimum, the type of the identifier component should be valued.

10.5.5.5 Resource group (CE) 00899

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field identifies the requested resource as a member of the indicated group. If, in a Schedule Request Message (SRM), no specific resource is requested, but a resource type is requested, this field can be used to further qualify the type of resource being requested.

10.5.5.6 Resource quantity (NM) 00900

Definition: This field contains the quantity of the specified resource or resource type identified in either or both of the preceding two fields. If it is not valued, this field defaults to a value of one (1).

10.5.5.7 Resource quantity units (CE) 00901

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the units of the resource requested, whose quantity is given in the preceding field. This field should be valued according to the recommendations in Chapters 2 and 7. If this field is not valued, the unit of each (code “ea”) will be assumed. Refer to Chapter 7, *Figures 7-10 through 7-13*, for a list of ISO and ANSI+ unit codes.

10.5.5.8 Start date/time (TS) 01202

Definition: This field contains the date and time this service needs for the appointment. This field allows the application to identify that the service is required for the appointment at a different time than the appointment’s start date/time

This field is conditionally required. If a value for *AIG-9-start date/time offset* is not provided, then a value is required for this field. To specify that there is no difference between the appointment’s start date/time and the resource’s start date/time either replicate the appointment’s start date/time into this field, or specify an offset of zero (0) in *AIG-9-start date/time offset* and any valid time unit code in *AIG-10-start date/time offset units*.

10.5.5.9 Start date/time offset (NM) 00891

Definition: This field contains the offset that this resource needs for the appointment, expressed in units of time relative to the scheduled start date/time. This field indicates to the application that the resource is required for the appointment at a different time than the appointment’s start date/time. The first component indicates the offset amount. An offset of zero (0), or an unvalued field, indicates that the resource is required at the start date/time of the appointment.

A positive offset (an unsigned or positive number) indicates that the resource is required after the appointment’s start date/time. Specifying a negative offset indicates that the resource is required prior to the specified start date/time of the appointment. Negative offsets are allowed, and sites should clearly define the effect of a negative offset on the appointment’s start date/time.

This field is conditionally required. If a value for *AIG-8-start date/time* is not provided, then a value is required for this field. To specify that there is no difference between the appointment's start date/time and the resource's start date/time either replicate the appointment's start date/time into this field, or specify an offset of zero (0) in *AIG-9-start date/time offset* and any valid time unit code in *AIG10-start date/time offset units*.

10.5.5.10 Start date/time offset units (CE) 00892

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains a code describing the units of time used for expressing *AIG-9-start date/time offset*. This field should be valued according to the recommendations made in Chapters 2 and 7. If this field is not valued, the ISO base unit of seconds (code "s") will be assumed. Refer to Chapter 7, *Figures 7-10 through 7-13*, for a list of ISO and ANSI+ unit codes.

This field is conditionally required. If a value for *AIG-9-start date/time offset* is provided, then a value is required for this field.

10.5.5.11 Duration (NM) 00893

Definition: This field contains the duration for which the resource is requested/scheduled for this appointment, if it is different than the overall duration of the requested/scheduled appointment. This field indicates to the application that a resource is required for a different amount of time than the appointment's overall duration. An unvalued duration indicates that the resource is required from its start date/time offset (specified in the previous two fields) until the end of the appointment. If no start date/time offset is specified, then the resource is required for the full duration of the appointment.

This field must be a positive, non-zero number. A negative number or zero (0) is nonsensical in the context of a duration.

10.5.5.12 Duration units (CE) 00894

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains a code describing the units of time used for expressing the *AIG-11-duration* field. This field should be valued according to the recommendations in Chapters 2 and 7. If this field is not valued, the ISO base unit of seconds (code "s") will be assumed. Refer to Chapter 7, *Figures 7-10 through 7-13*, for a list of ISO and ANSI+ unit codes.

10.5.5.13 Allow substitution code (IS) 00895

Definition: This field contains a code indicating whether the identified resource can be substituted with an equivalent resource by the filler application. Refer to *user-defined table 0279 - Allow substitution codes* for suggested codes.

This field is conditionally required. It is required for all request messages. It is optional for all unsolicited transactions, and for all query messages.

10.5.5.14 Filler status code (CE) 00889

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains a code that describes the requested/scheduled status of scheduling resource or activity, from the point of view of the filler application. Refer to *user-defined table 0278 - Filler status codes* for suggested codes.

This is a conditionally required field. Because the information contained in this field is only appropriate in transactions originating from a filler application, it is required for those messages. This includes all unsolicited transactions originating from a filler application, as well as all response messages originating from a filler application. This field is optional for all transactions originating from placer, querying and auxiliary applications. It is recommended that this field be left unvalued in transactions originating from applications other than the filler application.

10.5.6 AIL - appointment information - location resource segment

The AIL segment contains information about location resources (meeting rooms, operating rooms, examination rooms, or other locations) that can be scheduled. Resources included in a transaction using this segment are assumed to be controlled by a schedule on a schedule filler application. Resources not controlled by a schedule are not identified on a schedule request using this segment. Location resources are identified with this specific segment because of the specific encoding of locations used by the HL7 specification.

Figure 10-8. AIL attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	SI	R			00902	Set ID - AIL
2	3	ID	C		0206	00763	Segment Action Code
3	80	PL	C			00903	Location Resource ID
4	200	CE	R			00904	Location Type-AIL
5	200	CE	O			00905	Location Group
6	26	TS	C			01202	Start Date/Time
7	20	NM	C			00891	Start Date/Time Offset
8	200	CE	C			00892	Start Date/Time Offset Units
9	20	NM	O			00893	Duration
10	200	CE	O			00894	Duration Units
11	10	IS	C		0279	00895	Allow Substitution Code
12	200	CE	C		0278	00889	Filler Status Code

10.5.6.0 AIL field definitions

10.5.6.1 Set ID - AIL (SI) 00902

Definition: This field contains a number that uniquely identifies the information represented by this segment in this transaction for the purposes of addition, change or deletion.

10.5.6.2 Segment action code (ID) 00763

Definition: This field contains the action to be taken when updating or modifying information in this segment from previously sent interface transactions. Refer to *HL7 table 0206 - Segment action code* in Chapter 2, Section 2.23.4.2, “Action code/unique identifier mode update definition,” for valid values

This field is conditionally required. It is required for all updating or modifying trigger events.

10.5.6.3 Location resource ID (PL) 00903

Components: <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <person location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <location description (ST)>

Subcomponents of facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains a coded identification of the location being requested or scheduled for an appointment. This field is used to identify a specific location being requested, or a specific location which

has been scheduled for an appointment. If the specific location is not known but the type of location is, *AIL-4-location type-AIL* is used to identify the type of location required or scheduled. Please see Section 2.8.28, “PL - person location,” in Chapter 2 for a description of each component.

This field is conditionally required for this segment. In new schedule request messages, it is required if the request asks that a specific location be scheduled. For all other request messages, the specific location should be identified if the information is available (either because a specific location was initially requested, or because the filler application returned the coded identification of the specific location that has been scheduled).

This field is required for all unsolicited transactions from the filler application. It is optional for all query transactions.

10.5.6.4 Location type-AIL (CE) 00904

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field identifies the role of the location requested/scheduled for this appointment. For requests, if a specific location is not identified in *AIL-3-location resource ID*, then this field identifies the type of location that should be scheduled by the filler application. At a minimum, the type identifier component should be valued.

10.5.6.5 Location group (CE) 00905

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field identifies the requested resource as a member of the indicated group. If, in a Schedule Request Message (SRM), no specific location is requested, but a location type is requested, *AIL-5-location group* can be used to further qualify the type of resource being requested.

10.5.6.6 Start date/time (TS) 01202

Definition: This field contains the date and time this service needs for the appointment. This field allows the application to identify that the service is required for the appointment at a different time than the appointment's start date/time

This field is conditionally required. If a value for *AIL-7-start date/time offset* is not provided, then a value is required for this field. To specify that there is no difference between the appointment's start date/time and the resource's start date/time either replicate the appointment's start date/time into this field, or specify an offset of zero (0) in *AIL-7-start date/time offset* and any valid time unit code in *AIL-8-start date/time offset units*.

10.5.6.7 Start date/time offset (NM) 00891

Definition: This field contains the offset this resource needs for the appointment, expressed in units of time relative to the scheduled start date/time. This field indicates to the application that the resource is required for the appointment at a different time than the appointment's start date/time. The first component contains the offset amount. An offset of zero (0), or an unvalued field, indicates that the resource is required at the start date/time of the appointment.

A positive offset (an unsigned or positive number) indicates that the resource is required after the appointment's start date/time. Specifying a negative offset indicates that the resource is required prior to the specified start date/time of the appointment. Negative offsets are allowed, and sites should clearly define the effect of a negative offset on the appointment's start date/time.

This field is conditionally required. If a value for *AIL-6-start date/time* is not provided, then a value is required for this field. To specify that there is no difference between the appointment's start date/time and the resource's start date/time either replicate the appointment's start date/time into this field, or specify an offset of zero (0) in *AIL-7-start date/time offset* and any valid time unit code in *AIL-8-start date/time offset units*.

10.5.6.8 Start date/time offset units (CE) 00892

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains a code describing the units of time used for expressing the *AIL-7-start date/time offset* field. This field should be valued according to the recommendations made in Chapters 2 and 7. If this field is not valued, the ISO base unit of seconds (code "s") will be assumed. Refer to Chapter 7, *Figures 7-10* through *7-13*, for a list of ISO and ANSI+ unit codes.

This field is conditionally required. If a value for *AIL-7-start date/time offset* is provided, then a value is required for this field.

10.5.6.9 Duration (NM) 00893

Definition: This field contains the duration for which the resource is requested/scheduled for this appointment, if it is different than the overall duration of the requested/scheduled appointment. This field indicates to the application that a resource is required for a different amount of time than the appointment's overall duration. An unvalued duration indicates that the resource is required from its start date/time offset (specified in the previous two fields) until the end of the appointment. If no start date/time offset is specified, then the resource is required for the full duration of the appointment.

This field must be a positive, non-zero number. A negative number or zero (0) is nonsensical in the context of a duration.

10.5.6.10 Duration units (CE) 00894

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains a code describing the units of time used associated with *AIL-9-duration*. This field should be valued according to the recommendations made in Chapters 2 and 7. If this field is not valued, the ISO base unit of seconds (code "s") will be assumed. Refer to Chapter 7, *Figures 7-10* through *7-13*, for a list of ISO and ANSI+ unit codes.

10.5.6.11 Allow substitution code (IS) 00895

Definition: This field contains a code indicating whether the identified location can be replace with an equivalent substitute location by the filler application. Refer to *user-defined table 0279 - Allow substitution codes* for suggested codes.

This field is conditionally required. It is required for all request messages. It is optional for all unsolicited transactions, and for all query messages.

10.5.6.12 Filler status code (CE) 00889

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains a code that describes the requested/scheduled status of the location, from the point of view of the filler application. Refer to *user-defined table 0278 - Filler status codes* for suggested codes.

This is a conditionally required field. Because the information contained in this field is only appropriate in transactions originating from a filler application, it is required for those messages. This includes all unsolicited transactions originating from a filler application, as well as all response messages originating from a filler application. This field is optional for all transactions originating from placer, querying and auxiliary applications. It is recommended that this field be left unvalued in transactions originating from applications other than the filler application.

10.5.7 AIP - appointment information - personnel resource segment

The AIP segment contains information about the personnel types that can be scheduled. Personnel included in a transaction using this segment are assumed to be controlled by a schedule on a schedule filler application. Personnel not controlled by a schedule are not identified on a schedule request using this segment. The kinds of personnel described on this segment include any healthcare provider in the institution controlled by a schedule (for example: technicians, physicians, nurses, surgeons, anesthesiologists, or CRNAs).

Figure 10-9. AIP attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	SI	R	Y	0206	00906	Set ID - AIP
2	3	ID	C			00763	Segment Action code
3	80	XCN	C			00913	Personnel Resource ID
4	200	CE	R			00907	Resource Role
5	200	CE	O			00899	Resource Group
6	26	TS	C			01202	Start Date/Time
7	20	NM	C			00891	Start Date/Time Offset
8	200	CE	C			00892	Start Date/Time Offset Units
9	20	NM	O			00893	Duration
10	200	CE	O			00894	Duration Units
11	10	IS	C		0279	00895	Allow Substitution Code
12	200	CE	C		0278	00889	Filler Status Code

10.5.7.0 AIP field definitions

10.5.7.1 Set ID - AIP (SI) 00906

Definition: This field contains a number that uniquely identifies the information represented by this segment in this transaction for the purposes of addition, change or deletion.

10.5.7.2 Segment action code (ID) 00763

Definition: This field contains the action to be taken when updating or modifying information in this segment from previously sent interface transactions. Refer to *HL7 table 0206 - Segment action code* in Chapter 2, Section 2.23.4.2, “Action code/unique identifier mode update definition,” for valid values.

This field is conditionally required. It is required for all updating or modifying trigger events.

10.5.7.3 Personnel resource ID (XCN) 00913

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility ID (HD)> ^ <name representation code (ID)>

Subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Subcomponents of assigning facility ID: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the ID number and name of the person being requested or scheduled for an appointment. This field is used to identify a specific person being requested, or a specific person who has been scheduled as a resource for an appointment. If the specific person is not known, but the type of resource is, *AIP-4-resource role* is used to identify the type of personnel resource required or scheduled. Refer to Chapter 2, Section 2.8.46, “XCN - extended composite ID number and name for persons,” for a description of the components contained in the XCN data type.

At a minimum, the ID number component should be supplied to identify either the specific person being requested or the specific person who has been scheduled. For inter-enterprise communications, for which a shared ID number may not be available, the minimum components needed to uniquely identify a person may be defined by site-specific negotiations.

This field is conditionally required for this segment. In new schedule request messages, it is required if the request asks that a specific person be scheduled. For all other request messages, the specific person should be identified if the information is available (either because a specific person was initially requested, or because the filler application returned the ID of the specific person who has been scheduled).

This field is required for all unsolicited transactions from the filler application. This field is optional for all query transactions.

10.5.7.4 Resource role (CE) 00907

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field identifies the role of the personnel requested/scheduled for an appointment. For requests, if a specific person is not identified in the *AIP-3-personnel resource ID* field, then this field identifies the type of person that should be scheduled by the filler application. At a minimum, the *AIP-4-resource role* component should be valued.

10.5.7.5 Resource group (CE) 00899

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field identifies the requested resource as a member of the indicated group. If, in a Schedule Request Message (SRM), no specific resource is requested, but an *AIP-4-resource role* is requested, the *AIP-5-resource group* field can be used to further qualify the type of resource being requested.

10.5.7.6 Start date/time (TS) 01202

Definition: This field contains the date and time this service needs for the appointment. This field allows the application to identify that the service is required for the appointment at a different time than the appointment's start date/time.

This field is conditionally required. If a value for *AIP-7-start date/time offset* is not provided, then a value is required for this field. To specify that there is no difference between the appointment's start date/time and the resource's start date/time either replicate the appointment's start date/time into this field, or specify an offset of zero (0) in *AIP-7-start date/time offset* and any valid time unit code in *AIP-8-start date/time offset units*.

10.5.7.7 Start date/time offset (NM) 00891

Definition: This field contains the offset this resource needs for the appointment, expressed in units of time relative to the scheduled start date/time. This field indicates to the application that the resource is required for the appointment at a different time than the appointment's start date/time. The first component contains

the offset amount. An offset of zero (0), or an unvalued field, indicates that the resource is required at the start date/time of the appointment.

A positive offset (an unsigned or positive number) indicates that the resource is required after the appointment's start date/time. Specifying a negative offset indicates that the resource is required prior to the specified start date/time of the appointment. Negative offsets are allowed, and sites should clearly define the effect of a negative offset on the appointment's start date/time.

This field is conditionally required. If a value for *AIP-6-start date/time* is not provided, then a value is required for this field. To specify that there is no difference between the appointment's start date/time and the resource's start date/time either replicate the appointment's start date/time into this field, or specify an offset of zero (0) in *AIP-7-start date/time offset* and any valid time unit code in *AIP-8-start date/time offset units*.

10.5.7.8 Start date/time offset units (CE) 00892

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains a code describing the units of time used for expressing *AIP-7-start date/time offset*. This field should be valued according to the recommendations made in Chapters 2 and 7. If this field is not valued, the ISO base unit of seconds (code "s") is assumed. Refer to Chapter 7, *Figures 7-10 through 7-13*, for a list of ISO and ANSI+ unit codes.

This field is conditionally required. If a value for *AIP-7-start date/time offset* is provided, then a value is required for this field.

10.5.7.9 Duration (NM) 00893

Definition: This field contains the duration for which the resource is requested/scheduled for an appointment, if different from the overall duration of the requested/scheduled appointment. This field indicates to the application that a resource is required for a different amount of time than the appointment's overall duration. An unvalued duration indicates that the resource is required from its start date/time offset (specified in the previous two fields) until the end of the appointment. If no start date/time offset is specified, then the resource is required for the full duration of the appointment.

This field must be a positive, non-zero number. A negative number or zero (0) is nonsensical in the context of a duration.

10.5.7.10 Duration units (CE) 00894

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains a code describing the units of time used associated with *AIP-9-duration*. This field should be valued according to the recommendations made in Chapters 2 and 7. If this field is not valued, the ISO base unit of seconds (code "s") will be assumed. Refer to Chapter 7, *Figures 7-10 through 7-13*, for a list of ISO and ANSI+ unit codes.

10.5.7.11 Allow substitution code (IS) 00895

Definition: This field contains a code indicating whether the identified personnel resource can be replaced with an equivalent substitute personnel resource by the filler application. Refer to *user-defined table 0279 - Allow substitution codes* for suggested codes.

This field is conditionally required. It is required for all request messages. It is optional for all unsolicited transactions, and for all query messages.

10.5.7.12 Filler status code (CE) 00889

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains a code that describes the requested/scheduled status of the personnel resource, from the point of view of the filler application. Refer to *user-defined table 0278 - Filler status codes* for suggested codes.

This field is conditionally required. It should not be valued in any request transactions from the placer application to the filler application. It is required for all transactions from the filler application. It is optional for query transactions.

This is a conditionally required field. Because the information contained in this field is only appropriate in transactions originating from a filler application, it is required for those messages. This includes all unsolicited transactions originating from a filler application, as well as all response messages originating from a filler application. This field is optional for all transactions originating from placer, querying and auxiliary applications. It is recommended that this field be left unvalued in transactions originating from applications other than the filler application.

10.5.8 APR - appointment preferences segment

The APR segment contains parameters and preference specifications used for requesting appointments in the SRM message. It allows placer applications to provide coded parameters and preference indicators to the filler application, to help determine when a requested appointment should be scheduled. An APR segment can be provided in conjunction with either the ARQ segment or any of the service and resource segments (AIG, AIS, AIP, and AIL). If an APR segment appears in conjunction with an ARQ segment, its parameters and preference indicators pertain to the schedule request as a whole. If the APR segment appears with any of the service and resource segments, then its parameters and preferences apply only to the immediately preceding service or resource.

Figure 10-10. APR attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	80	SCV	O	Y	0294	00908	Time Selection Criteria
2	80	SCV	O	Y	0294	00909	Resource Selection Criteria
3	80	SCV	O	Y	0294	00910	Location Selection Criteria
4	5	NM	O			00911	Slot Spacing Criteria
5	80	SCV	O	Y		00912	Filler Override Criteria

10.5.8.0 APR field definitions

10.5.8.1 Time selection criteria (SCV) 00908

Components: <parameter class (IS)> ^ <parameter value (ST)>

Definition: This field is used to communicate parameters and preferences to the filler application regarding the selection of an appropriate time slot for an appointment. The first component of this field is a code identifying the parameter or preference being passed to the filler application. The second component is the actual data value for that parameter.

For example, if a filler application allows preference parameters to be passed to specify a preferred start time, a preferred end time, and preferred days of the week for the appointment, it may define the following parameter class codes and valid data sets.

User-defined Table 0294 - Time selection criteria parameter class codes

Parameter Class	Description: Valid Values
Prefstart	The preferred start time for the appointment request, service or resource. Any legal time specification in the format HHMM, using 24-hour clock notation
Prefend	The preferred end time for the appointment request, service or resource. Any legal time specification in the format HHMM, using 24-hour clock notation
Mon	An indicator that Monday is or is not preferred for the day on which the appointment will occur. OK = Preferred appointment day NO = Day is not preferred
Tue	An indicator that Tuesday is or is not preferred for the day on which the appointment will occur. OK = Preferred appointment day NO = Day is not preferred
Wed	An indicator that Wednesday is or is not preferred for the day on which the appointment will occur. OK = Preferred appointment day NO = Day is not preferred
Thu	An indicator that Thursday is or is not preferred for the day on which the appointment will occur. OK = Preferred appointment day NO = Day is not preferred
Fri	An indicator that Friday is or is not preferred for the day on which the appointment will occur. OK = Preferred appointment day NO = Day is not preferred
Sat	An indicator that Saturday is or is not preferred for the day on which the appointment will occur. OK = Preferred appointment day NO = Day is not preferred
Sun	An indicator that Sunday is or is not preferred for the day on which the appointment will occur. OK = Preferred appointment day NO = Day is not preferred

Given this set of parameter class codes and valid value sets, a placer may indicate a preferred start time of 8:00 AM on Monday, Wednesday or Friday by specifying the following in *APR-I-time selection criteria*:

`... |PREFSTART^0800~MDN^OK~WED^OK~FRI^OK~TUE^NO~THU^NO~SAT^NO~SUN^NO|...`

The valid set of preferences should be determined by the placer and filler applications during implementation of the interface.

10.5.8.2 Resource selection criteria (SCV) 00909

Components: <parameter class (IS)> ^ <parameter value (ST)>

Definition: This field is used to communicate parameters and preferences to the filler application regarding the selection of an appropriate resource for an appointment. The first component of this field is a code identifying the parameter or preference being passed to the filler application. The second component is the actual data value for that parameter.

Refer to Section 10.5.8.1, “Time selection criteria (SCV) 00908,” for an example illustrating how this mechanism works within an interface.

The valid set of preferences should be determined by the placer and filler applications during implementation of the interface. Refer to *user-defined table 0294 - Time selection criteria parameter class codes* for suggested examples.

10.5.8.3 Location selection criteria (SCV) 00910

Components: <parameter class (IS)> ^ <parameter value (ST)>

Definition: This field is used to communicate parameters and preferences to the filler application regarding the selection of an appropriate location for the appointment. The first component of this field is a code identifying the parameter or preference being passed to the filler application. The second component is the actual data value for that parameter.

Refer to Section 10.5.8.1, “Time selection criteria (SCV) 00908,” for an example of how this mechanism works within an interface.

The valid set of preferences should be determined by the placer and filler applications during implementation of the interface. Refer to *user-defined table 0294 - Time selection criteria parameter class codes* for suggested examples.

10.5.8.4 Slot spacing criteria (NM) 00911

Definition: This field is used in queries returning lists of possible appointment slots, or other lists of slots. If the filler application allows it, the querying application may indicate the spacing of the slots returned to the querying application, in relation to the requested start date/time in the ARQ segment. The value in this field should be a positive integer, representing the number of minutes between slot starting times that is returned in the query.

For example, if there is a request that an appointment with a duration of 1.5 hours be scheduled some time between 9:00 AM and 11:30 AM, and the *APR-4-slot spacing criteria* field contains a value of 15, then the list of slots returned should read as follows:

9:00 - 10:30
9:15 - 10:45
9:30 - 11:00
9:45 - 11:15
10:00 - 11:30

10.5.8.5 Filler override criteria (SCV) 00912

Components: <parameter class (IS)> ^ <parameter value (ST)>

Definition: This field is used to communicate override parameters to the filler application. These override parameters allow placer applications to override specific features of filler applications such as conflict checking. It is assumed that the placer and filler applications will pass enough information to determine whether the requestor is allowed to override such features. This chapter does not provide any security or permission information.

The first component of this field is a code identifying the parameter being passed to the filler application. The second component is the actual data value for that parameter.

Refer to Section 10.5.8.1, “Time selection criteria (SCV) 00908,” for an example illustrating how this mechanism works within an interface.

The valid set of parameters should be determined by the placer and filler applications during implementation of the interface.

10.6 EXAMPLE TRANSACTIONS

10.6.1 Request and receive new appointment - event S01

The patient has been seen by his primary care physician, Dr. Jones, and requires treatment by a cardiologist. The PCP requests a new appointment with Dr. Jensen at the North Office. The patient has requested that

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the appointment be scheduled for a time between January 2nd and January 10th, 1994, and between 8:00 AM and 5:00 PM. Dr. Jensen's office responds to the request with an appointment at the North Office at 9:30 AM on January 6, 1994.

```
MSH|^~\&|JONES|EWHIN|SPOCARD|EWHIN|199401010800||SRM^S01|090849JONES|P|2.3.1||AL|AL|
|<cr>
ARQ|19940047^SCH001|||047^Referral|NORMAL||199401020800^199401101700||0045^Jone
s^Harold^S^^MD||3372^Effenbach^Thomas|||<cr>
PID|4875439|484848|Peterson^Joseph^^Jerome^SR|Brown|19401121|M|Jayjay|N 1234
Newport Highway^Mead^WA^99021||555-4685||M||999-99-4413|||<cr>
DG1|001|I9|786.5|CHEST PAINS|199401010730|W|||<cr>
DG1|002|I9|412|OLD MYOCARDIAL INFARCTION|199401010730|W|||<cr>
RGS|001|<cr>
AIP|001|032^JENSEN^HELEN|002^CARDIOLOGIST|||NO|<cr>
AIL|001|^NORTH OFFICE|002^CLINIC|||YES|<cr>

MSH|^~\&|SPOCARD|EWHIN|JONES|EWHIN|199401010802||ACK|021244SPOCARD|P|2.3.1|||<cr>
MSA|CA|090849JONES|||<cr>

MSH|^~\&|SPOCARD|EWHIN|JONES|EWHIN|199401010810||SRR^S01|0934849SPOCARD|P|2.3.1|||<cr>
MSA|AA|090849JONES|||<cr>
SCH|1994047^SCH001|1994567^SCH100|||047^Referral|NORMAL|30|mi n|^199401060930^1994
01061000^0045^Jones^Harold^S^^MD|555-4685||087^Jensen^Helen^M^^MD|555-
9255|||BOOKED<cr>
PID|4875439|484848|Peterson^Joseph^^Jerome^SR|Brown|19401121|M|Jayjay|N 1234
Newport Highway^Mead^WA^99021||555-4685||M||999-99-4413|||<cr>
RGS|001|<cr>
AIP|001|032^JENSEN^HELEN|002^CARDIOLOGIST|||NO|BOOKED<cr>
AIL|001|103^NORTH OFFICE|002^CLINIC|||NO|BOOKED<cr>

MSH|^~\&|JONES|EWHIN|SPOCARD|EWHIN|199401010812||ACK|434532JONES|P|2.3.1|||<cr>
MSA|CA|0934849SPOCARD|||<cr>
```

10.6.2 Unsolicited notification of rescheduled appointment - event S13

The patient has asked Dr. Jensen to reschedule his January 6th appointment. Dr. Jensen's scheduling application (the filler application) sends the PCP, Dr. Jones, a notification that the original appointment has been rescheduled, followed by a notification of the new appointment on January 9th at 1:00 PM.

```
MSH|^~\&|SPOCARD|EWHIN|JONES|EWHIN|199401040800||SIU^S13|021244SPOCARD|P|2.3.1||AL|E
R||<cr>
SCH|1994047^SCH001|1994567^SCH100|||047^Referral|NORMAL|30|mi n|^199401091300^1994
01091330^0045^Jones^Harold^S^^MD|555-4685||087^Jensen^Helen^M^^MD|555-
9255|||BOOKED<cr>
NTE||The patient is going to be on vacation so cannot make previous
appointmentscheduled on January 6.<cr>
PID|4875439|484848|Peterson^Joseph^^Jerome^SR|Brown|19401121|M|Jayjay|N 1234
Newport Highway^Mead^WA^99021||555-4685||M||999-99-4413|||<cr>
RGS|001|<cr>
AIP|001|032^JENSEN^HELEN|002^CARDIOLOGIST|||NO|BOOKED<cr>
AIL|001|103^NORTH OFFICE|002^CLINIC|||NO|BOOKED<cr>

MSH|^~\&|JONES|EWHIN|SPOCARD|EWHIN|199401010802||ACK|035324JONES|P|2.3.1|||<cr>
```

MSA|CA|021244SPOCARD|||<cr>

10.6.3 Request and receive new appointment with repeating interval - event S01

The patient has been seen by his specialist, Dr. Smith, and requires treatment by a physical therapist, Helen Morgan. Dr. Smith's office requests a one-hour appointment each day for the next five days. Ms. Morgan's office responds to the request with an appointment at 9:30 AM on June 20th through June 24th, 1994.

The patient has been seen by his specialist, Dr. Smith, and requires treatment by a physical therapist, Helen Morgan. Dr. Smith's office requests a one-hour appointment each day for the next five days. Ms. Morgan's office responds to the request with an appointment at 9:30 AM on June 20th through June 24th, 1994.

MSH|^~\&|SMITH|EWHIN|MORGAN|EWHIN|199406190800||SRM^S01|03432SMITH|P|2.3.1|||AL|AL|<cr>

ARQ|19940347^SCH001|||047^Referral|NORMAL|060|mi n|199406200930|Q1D|D5|00335^Smi th
^Harry^A^^MD|||A3423^Jones^Fred|||<cr>

PID|4875439|484848|Peterson^Joseph^^Jerome^SR|Brown|19401121|M|Jayj ay|N 1234
Newport Hi ghway^Mead^WA^99021|555-4685||M|999-99-4413|||<cr>

DG1|001|I9|833.00|Closed dislocation wrist|199406190700|||<cr>

RGS|001|<cr>

AIP|001|064^MORGAN^HELEN|097^PHYSICAL THERAPIST|||NO|<cr>

AIL|001|103^NORTH OFFICE|002^CLINIC|||NO|<cr>

MSH|^~\&|MORGAN|EWHIN|SMITH|EWHIN|199406190802||ACK|546644MORGAN|P|2.3.1|||<cr>

MSA|CA|03432SMITH|||<cr>

MSH|^~\&|MORGAN|EWHIN|SMITH|EWHIN|199406190810||SRR^S01|0654544JONES|P|2.3.1|||<cr>

MSA|AA|03432SMITH|||<cr>

SCH|1994037^SCH001|1994297^SCH100|||047^Referral|NORMAL|60|mi n|^Q1D^D5^199406200930
^199406240930^^^|0335^Smi th^Harry^A^^MD|||064^Morgan^Hel en|||BOOKED<cr>

PID|4875439|484848|Peterson^Joseph^^Jerome^SR|Brown|19401121|M|Jayj ay|N 1234
Newport Hi ghway^Mead^WA^99021|555-4685||M|999-99-4413|||<cr>

RGS|001|<cr>

AIP|001|064^MORGAN^HELEN|097^PHYSICAL THERAPIST|||NO|BOOKED<cr>

AIL|001|103^NORTH OFFICE|002^CLINIC|||NO|BOOKED<cr>

MSH|^~\&|SMITH|EWHIN|MORGAN|EWHIN|199406190800||ACK|045742SMITH|P|2.3.1|||<cr>

MSA|CA|0654544JONES|||<cr>

10.7 IMPLEMENTATION CONSIDERATIONS

10.7.1 Logical relationship of resource and service segments

This chapter implies that the relationship of the repeating resource and service specific segments has a logical “and” relationship. In other words, if more than one AIP segment is sent in a transaction, it is logical to assume that both specified personnel resources are required for the appointment. Currently, there is no way to specify an “or” relationship between the resource and service segments. It is possible to specify a resource type and achieve a similar (but not equivalent) effect. See Section 10.8.1, “Logical relationship of resource and service segments” for a further discussion.

10.7.2 Multiple placer applications

When implementing the transactions defined in this chapter with multiple placer applications, one must consider the implications of a situation when more than one placer application asks to book, hold, lock, or otherwise reserve the same slot or set of slots on a particular schedule.

This chapter makes no attempt to define attribute ownership (e.g., based on application roles). Ownership is the right to create or update attribute content. If two or more applications attempt simultaneously to update the same attribute(s), deadly update collisions may occur, causing data corruption, unless robust mechanisms for bidding and locking such attributes are in place between applications. This chapter makes no attempt to address data ownership issues or to define attribute bidding and locking mechanisms.

This chapter assumes that the placer and filler applications have put such mechanisms into place, therefore resolving any contention or collision issues at the application level. Further, if such mechanisms have not been implemented by the applications, then this chapter assumes that procedural solutions have been implemented by the healthcare provider organization to resolve contention and collision issues.

10.8 ISSUES

10.8.1 Logical relationship of resource and service segments

An implementor of a ballot draft specification of this chapter realized the need to logically AND and OR multiple resources for a single appointment. For example, they wished to specify the following condition:

((Resource-1 and Resource-2) or (Resource-3 and (Resource-4 or Resource-5)))

The current message structure for any kind of transaction does not address the need for any of the service or resource detail segments (AIS, AIG, AIL, or AIP).

They have proposed an extension to the Standard that would allow Lisp-like logical syntax within messages such as the Schedule Request message. This syntax makes use of a BEGIN and an END segment to logically group segments, and an AND and an OR segment to logically connect segments. To achieve a request as in the example above, the implementation of these logical grouping and connecting segments would read as follows:

```
BEGIN|<cr>
BEGIN|<cr>
AIG|Resource- 1. . . <cr>
AIG|Resource- 2. . . <cr>
AND|<cr>
END|<cr>
BEGIN|<cr>
AIG|Resource- 3. . . <cr>
BEGIN|<cr>
AIG|Resource- 4. . . <cr>
AIG|Resource- 5. . . <cr>
OR|<cr>
END|<cr>
AND|<cr>
END|<cr>
OR|<cr>
```


END|<cr>

This would translate to:

((Resource-1 Resource-2 AND) (Resource-3 (Resource-4 Resource-5 OR) AND) OR)

This is the RPN or Lisp-like logical notation for the example in the first paragraph. This syntax could encompass and support groupings of several different resource and service types.

This proposal was presented to the Control/Query Technical Committee. Their initial response was that this proposal is outside of the scope of Control/Query for the current Standard 2.3 ballot and response cycle. If necessary, this proposal will be resubmitted to the Control/Query Technical Committee by the implementing organization for future versions of the Standard.

11.

Patient Referral

Chapter Chair/Editor: John Lynch, CHREF
David C. Means, Oacis Healthcare Systems, Inc.

Editor: David C. Means
Oacis Healthcare Systems, Inc.

11.1 PURPOSE

The Patient Referral chapter defines the message set used in patient referral communications between mutually exclusive healthcare entities. These referral transactions frequently occur between entities with different methods and systems of capturing and storing data. Such transactions frequently traverse a path connecting primary care providers, specialists, payors, government agencies, hospitals, labs, and other healthcare entities. The availability, completeness, and currency of information for a given patient will vary greatly across such a spectrum.

The referral in this specification is viewed from the perspective of the provider as an individual, irrespective of his/her affiliation with a specific institution or campus. Events triggering this kind of message are not restricted to a hospital environment, but have a community-wide area of impact in which more extensive identification of patients and healthcare providers is needed. Therefore, a referral must contain adequate identification information to meet the broadly varying requirements of the dissimilar systems within the community.

This chapter describes the various events and resulting transactions that make up the referral message set. Examples have been provided to demonstrate the use of this specification within the events described. Each event example centers on a primary care provider's encounter with a patient. All of the examples in this chapter have been constructed using the HL7 Encoding Rules.

11.1.1 Patient referral and responses

When a patient is referred by one healthcare entity (e.g., a primary care provider) to another (e.g., a specialist or lab) or when a patient inquiry is made between two separate entities, little is known about the information each party requires to identify or codify the patient. The receiving entity may have no knowledge of the patient and may require a full set of demographics, subscriber and billing information, eligibility/coverage information, pre-authorization information, and/or clinical data to process the referral. If the receiving entity already has a record of the patient, the precise requirements for identifying that patient record will vary greatly from one entity to another. The existing record of a patient residing in the database of a specialist, a lab, or a hospital may require updating with more current information. In addition, providers receiving a referral often require detailed information about the provider making the referral, such as a physician's name and address.

For example, a primary care provider making a referral may need to obtain insurance information or pre-authorization from a payor prior to making a referral. Getting this information requires an inquiry and a response between the primary care provider and the payor. In addition, the primary care provider may request results from a lab to accompany the referral. Getting these results may require an inquiry and a response between the primary care provider and the lab. The information could then be incorporated into a referral sent from the primary care provider to the specialist. As the referral is processed, requested procedures are performed, the results are observed, and the relevant data must be returned to the primary care provider. Such a response may frequently take the form of multiple responses as results become available.

The message set that encompasses these transactions includes the referral (REF), requests for information (RQA, RQC, RQP, RQI) and the returned patient information (RCI, RCL, RPA, RPI, RPL, RRI). The referral message originates a transaction and a return patient information message concludes the transaction. At least one RPA/RPI is required to complete a patient referral or a patient request transaction, although multiple RPI messages may be returned in response to a single REF message. The segments used in the REF, RQA, RQI, RQP, RRI, RPH, RCI, RCL, RPA and RPI messages encompass information about patient, guarantor and next of kin demographics, eligibility/coverage information, accident, diagnosis, requested procedures, payor pre-authorization, notes, and referring and consulting provider data.

11.1.1.1 Patient referral

There are clear distinctions between a referral and an order. An order is almost always an intra-enterprise transaction and represents a request from a patient's active provider to supporting providers for clearly defined services and/or results. While the supporting provider may exercise great discretion in the performance of an order, overall responsibility for the patient's plan of treatment remains with the ordering provider. As such, the ordering provider retains significant control authority for the order and can, after the fact, cause the order to be canceled, reinstated, etc. Additionally, detailed results produced by the supporting provider are always reported back to the ordering provider, who remains ultimately responsible for evaluating their value and relevance. A referral, on the other hand, can be either an intra- or an inter-enterprise transaction and represents not only a request for additional provider support but also a transfer of a portion or all of the responsibility for the patient's plan of treatment. Once the referral is made, the referring provider, during the transfer period, retains almost no control of any resulting actions. The referred-to provider becomes responsible for placing any additional orders and for evaluating the value and relevance of any results, which may or may not be automatically passed back to the referring provider. A referred-to provider may, in turn, also become a referring provider.

A referral message is used to support transactions related to the referral of a patient from one healthcare provider to another. This kind of message will be particularly useful from the perspective of a primary care provider referring a patient to a specialist. However, the application of the message should not be limited to this model. For example, a referral may be as simple as a physician sending a patient to another physician for a consultation or it may be as complex as a primary care provider sending a patient to a specialist for specific medical procedures to be performed and attaching the payor authorizations for those requested procedures as well as the relevant clinical information on the patient's case.

In a community model, stringent security requirements will need to be met when dealing with the release of clinical information. This message set facilitates the proper qualification of requests because the message packet will contain all the data required by any application in the community, including the necessary patient demographic information and the proper identification of the party requesting the information.

11.1.1.2 Responding to a patient referral

When a patient is referred by one provider to another or is pre-admitted, there is a great likelihood that subsequent transactions will take place between the initiating entity (the referring or admitting physician) and the responding entity (the specialist or hospital). The subsequent transactions might include a variety of queries, orders, etc. Within those subsequent transactions, there must be a way for the initiating system to refer to the patient. The "generic" patient information included in the original referral or the pre-admit Patient Identification (PID) segment may not be detailed enough to locate the patient in the responding facility's database, unless the responding facility has assigned a unique identifier to the new patient. Similarly, the responding system may not have record retrieval capabilities based on any of the unambiguous, facility-neutral data elements (like the Social Security Number) included in the original referral or pre-admit PID segment. This problem could result in the responding system associating subsequent orders or requests with the wrong patient. One solution to this potential problem is for the responding system to utilize the RRI message and return to the initiating system the unique internal identifier it assigns to the patient, and with which it will primarily (or even exclusively) refer to that patient in all subsequent update operations.

However, the intent of the RRI message is that it will supply the originator of the referral type message with sufficient patient demographic and/or clinical information to properly process continued transactions.

11.1.2 Application roles and data process

11.1.2.1 Application roles

This Standard assumes that there are four roles that an application can take on: a referring or referred-by provider application role, a referred-to provider application role, a querying application role, and an auxiliary application role. These application roles define the interactions an application will have with other applications in the messaging environment. In many environments, any single application may take on more than one application role.

This Standard's definition of application roles does not intend to define or limit the functionality of specific products developed by vendors of such applications. Instead, this information is provided to help define the model used to develop this Standard, and to provide an unambiguous way for applications to communicate with each other.

11.1.2.2 The referring provider application role

A referring provider application requests the services of another healthcare provider (a referred-to provider) application. There may or may not be any association between the referring provider application and the receiving entity. Although in most cases a referral environment will be inter-enterprise in nature, it is not limited to that model and applies to intra-enterprise situations also. Because the referring provider application cannot exert any control over the referred-to provider application, it must send requests to modify the status of the referred-to provider application. The referring provider application will often assume an auxiliary application role once a patient has been accepted by another application. Once this happens, the referring provider application may receive unsolicited status updates from the referred-to provider application concerning the care of a patient.

The analog of a referring provider application in a non-automated environment might be a primary care provider diagnosing a patient with a problem that must in turn be referred to a specialist for a service. The primary care provider would contact the specialist and refer the patient into his care. Often, the specialist may not receive the patient into his care, preferring instead to refer the patient to another healthcare provider. The referring provider will indicate the diagnosis and any requested services, and the specialist to whom the patient is referred will indicate whether the referral will be accepted as specified. Once a patient referral has been accepted by the specialist, the specialist may send out updates to the primary care provider concerning the status of the patient as regards any tests performed, their outcomes, etc.

11.1.2.3 The referred-to provider application role

A referred-to provider application, in the referral model, is one that performs one or more services requested by another healthcare provider (referring provider). In other words, a referred-to provider application exerts control over a certain set of services and defines the availability of those services. Because of this control, no other application has the ability to accept, reject, or otherwise modify a referral accepted by a particular referred-to provider application.

Other applications can, on the other hand, make requests to modify the status of an accepted referral "owned by" the referred-to provider application. The referred-to provider application either grants or denies requests for information, or otherwise modifies the referrals for the services over which it exerts control.

Finally, the referred-to provider application also provides information about the referral encounter to other applications. The reasons that an application may be interested in receiving such information are varied. An application may have previously requested the status of the referral encounter, or it may simply be interested in the information for its own clinical reporting or statistical purposes. There are two methods whereby the referred-to provider applications disseminate this information: by issuing unsolicited information messages to auxiliary applications, or by responding to queries made by querying applications.

The analog of a referred-to provider application in a non-automated environment might be a specialist such as a cardiologist. A patient does not generally go to a cardiologist for routine health care. Instead, a patient generally goes to a primary care provider, who may diagnose the patient with a heart ailment and refer that patient to a cardiologist. The cardiologist would review the information provided with the referral request and determine whether or not to accept the patient into his care. Once the cardiologist accepts the patient, anyone needing information on the status of the patient must then make requests to the cardiologist. In addition, the cardiologist may forward unsolicited information regarding the treatment of the patient back to the primary care provider. Once the cardiologist accepts the referred patient, he/she may determine that additional information regarding the patient is needed. It will often take the role of a querying application by sending a query message to the patient's primary care provider and requesting additional information on demographics, insurance information, laboratory test results, etc.

11.1.2.4 The querying application role

A querying application neither exerts control over, nor requests changes to a referral. Rather than accepting unsolicited information about referrals, as does an auxiliary application, the querying application actively solicits this information using a query mechanism. It will, in general, be driven by an entity seeking information about a referral such as a referring provider application or an entity seeking information about a referred patient such as a referred-to provider application. The information that the querying application receives is valid only at the exact time that the query results are generated by the provider applications. Changes made to the referral or the referred patient's status after the query results have been returned are not communicated to the querying application until it issues another query transaction.

The analog of a querying application in a non-automated environment might be a primary care provider seeking information about a specific patient who has been referred to a specialist. For example, a patient may have been referred to a specialist in order that a specific test be performed, following which, the patient would return to the primary care provider. If the specialist has not forwarded information regarding the testing procedures for the patient to the primary care provider, the primary care provider would then query the specialist for the outcome of those procedures. Likewise, if a specialist received a referred patient without the preliminary diagnoses of test results, he/she might in turn query the primary care provider for the information leading to the diagnoses and subsequent referral.

11.1.2.5 The auxiliary application role

Like querying applications, an auxiliary application neither exerts control over nor requests changes to a referral or a referred patient. They, too, are only concerned with gathering information about a particular referral. An auxiliary application is considered an "interested third-party," in that it is interested in any changes to a particular referral or referred patient, but has no interest in changing it or controlling it in any way. An auxiliary application passively collects information by receiving unsolicited updates from a provider application.

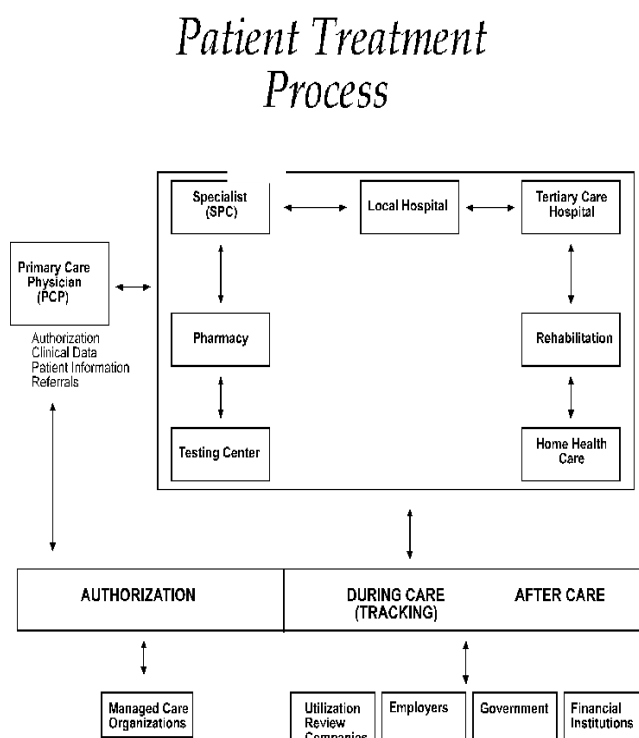
The analog of an auxiliary application in a non-automated environment might be any person receiving reports containing referral information. For example, an insurance company may need information about the activities a patient experiences during specific referral encounters. Primary care providers may need to forward information regarding all referred patients to a payor organization.

In turn, a primary care provider may have the ability to track electronically a patient's medical record. She or he would then be very interested in receiving any information regarding the patient (s)he has referred to a specialist.

11.1.2.6 Application roles in a messaging environment

In a messaging environment, these four application roles communicate using specific kinds of messages and trigger events. The following figure illustrates the relationships between these application roles in a messaging environment:

Figure 11-1. Application role messaging relationships



11.1.3 Glossary

11.1.3.1 Benefits:

The services payable under a specific payor plan. They are also referred to as an insurance product, such as professional services, prescription drugs, etc.

11.1.3.2 Clinical information:

Refers to the data contained in the patient record. The data may include such things as problem lists, lab results, current medications, family history, etc. For the purposes of this chapter, clinical information is limited to diagnoses (DG1& DRG), results reported (OBX/OBR), and allergies (AL1).

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11.1.3.3 Dependent:

Refers to a person who is affiliated with a subscriber, such as spouse or child.

11.1.3.4 Eligibility/coverage:

Refers to the period of time a subscriber or dependent is entitled to benefits.

11.1.3.5 Encounter:

Refers to a meeting between a covered person and a healthcare provider whose services are provided.

11.1.3.6 Guarantor:

Refers to a person who has financial responsibility for the payment of a patient account.

11.1.3.7 Healthcare provider:

Refers to a person licensed, certified or otherwise authorized or permitted by law to administer health care in the ordinary course of business or practice of a profession, including a healthcare facility.

11.1.3.8 Payor:

Indicates a third-party entity who pays for or underwrites coverage for healthcare expenses. A payor may be an insurance company, a health maintenance organization (HMO), a preferred provider organization (PPO), a government agency or an agency such as a third-party administrator (TPA).

11.1.3.9 Pre-authorization:

Refers to the process of obtaining prior approval as to the appropriateness of a service. Pre-authorization does not guarantee coverage.

11.1.3.10 Primary care provider:

Indicates the provider responsible for delivering care as well as authorizing and channeling care to specialists and other providers in a gatekeeper system. The provider is also referred to as a case manager or a gatekeeper.

11.1.3.11 Referral:

Means a provider's recommendation that a covered person receive care from a different provider.

11.1.3.12 Referring provider:

Indicates the provider who requests services from a specialist or another primary care provider. A referring provider may, in fact, be a specialist who is referring a patient to another specialist.

11.1.3.13 Referred-to-provider:

Typically indicates a specialty care provider who provides services at the request of a primary care provider or another specialty care provider.

11.1.3.14 Specialist:

Means a provider of services which are beyond the capabilities or resources of the primary care provider. A specialist is also known as a specialty care provider who provides services at the request of a primary care provider or another specialty care provider.

11.1.3.15 Subscriber:

Refers to a person who elects benefits and is affiliated with an employer or insurer.

11.2 PATIENT INFORMATION REQUEST MESSAGES AND TRIGGER EVENTS

Patient information may need to be retrieved from various enterprises. The definition of these enterprises often varies greatly. Some enterprises may be providers or reference laboratories, while others may be payors providing insurance information. In the first case, the message definitions will focus on patient and provider information, while in the latter case, the message definition will deal primarily with patient and subscriber identification.

11.2.1 RQI/RPI - request for insurance information (event I01)

This event triggers a message to be sent from one healthcare provider to another to request insurance information for a specified patient.

<u>RQI^I01</u>	<u>Request Patient Information</u>	<u>Chapter</u>
MSH	Message Header	2
{		
PRD	Provider Data	11
[{CTD}]	Contact Data	11
}		
PID	Patient Identification	3
[{NK1}]	Next of Kin/Associated Parties	6
[[{GT1}]]	Guarantor	6
{		
IN1	Insurance	6
[IN2]	Insurance Additional Info	6
[IN3]	Insurance Add'l Info - Cert	6
}		
]		
[{NTE}]	Notes and Comments	2
<u>RPI^I01</u>	<u>Return Patient Information</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	3
{		
PRD	Provider Data	11
[{CTD}]	Contact Data	11
}		
PID	Patient Identification	3
[{NK1}]	Next of Kin/Associated Parties	6
[[{GT1}]]	Guarantor	6

{		
IN1	Insurance	6
[IN2]	Insurance Additional Info	6
[IN3]	Insurance Add'l Info - Cert	6
}		
}		
[{NTE}]	Notes and Comments	2

11.2.2 RQI/RPL - request/receipt of patient selection display list (event I02)

This trigger event occurs when the inquirer specifies a request for a name lookup listing. Generally, this request is used by the responder when insufficient data is on hand for a positive match. In this case, the requester may ask for a list of possible candidates from which to make a selection. This event code is also used by the responder to signify that the return information contains a list of information rather than information specific to a single patient.

<u>RQI^I02</u>	<u>Request Patient Information</u>	<u>Chapter</u>
MSH	Message Header	2
{		
PRD	Provider Data	11
[{CTD}]	Contact Data	11
}		
PID	Patient Identification	3
[{NK1}]	Next of Kin/Associated Parties	6
[{GT1}]	Guarantor	6
{		
IN1	Insurance	6
[IN2]	Insurance Additional Info	6
[IN3]	Insurance Add'l Info - Cert	6
}		
}		
[{NTE}]	Notes and Comments	2

<u>RPL^I02</u>	<u>Return Patient Display List</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	3
{		
PRD	Provider Data	11
[{CTD}]	Contact Data	11
}		
[{NTE}]	Notes and Comments	2
[{DSP}]	Display Data	2
[DSC]	Continuation Pointer	2

11.2.3 RQI/RPR - request/receipt of patient selection list (event I03)

This trigger event occurs when the inquirer specifies a request for a listing of patient names. This event differs from event I02 (request/receipts of patient selection display list) in that it returns the patient list in repeating PID segments instead of repeating DSP segments.

<u>RQI^I03</u>	<u>Request Patient Information</u>	<u>Chapter</u>
MSH	Message Header	2
{		
PRD	Provider Data	11
[{CTD}]	Contact Data	11
}		
PID	Patient Identification	3
[{NK1}]	Next of Kin/Associated Parties	6
[{GT1}]	Guarantor	6
{		
IN1	Insurance	6
[IN2]	Insurance Additional Info	6
[IN3]	Insurance Add'l Info - Cert	6
}		

}		
]		
[{NTE}]	Notes and Comments	2
<u>RPR^I03</u>	<u>Return Patient List</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	3
{		
PRD	Provider Data	11
[{CTD}]	Contact Data	11
}		
[{PID}]	Patient Identification	3
[{NTE}]	Notes and Comments	2

11.2.4 RQP/RPI - request for patient demographic data (event I04)

This event triggers a request from one healthcare provider to another for patient demographic information, including insurance and billing information. Typically, this transaction would occur between one provider to another, but it could also be directed to a payor.

<u>RQP^I04</u>	<u>Request Patient Demographics</u>	<u>Chapter</u>
MSH	Message Header	2
{		
PRD	Provider Data	11
[{CTD}]	Contact Data	11
}		
PID	Patient Identification	3
[{NK1}]	Next of Kin/Associated Parties	6
[{GT1}]	Guarantor	6
[{NTE}]	Notes and Comments	2

<u>RPI^I04</u>	<u>Return Patient Information</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	3
{		
PRD	Provider Data	11
[{CTD}]	Contact Data	11
}		
PID	Patient Identification	3
[{NK1}]	Next of Kin/Associated Parties	6
[{GT1}]	Guarantor	6
{		
IN1	Insurance	6
[IN2]	Insurance Additional Info	6
[IN3]	Insurance Add'l Info - Cert	6
}		
]		
[{NTE}]	Notes and Comments	2

11.2.5 RQC/RCI - request for patient clinical information (event I05)

This event is used to request clinical information for a specific patient. Generally, this transaction occurs between one provider and another (typically a laboratory or radiology, etc.). However, it may also be very useful for a payor-to-provider request for clinical observation information to be used in considering a request for treatment authorization.

<u>RQC^I05</u>	<u>Request Clinical Information</u>	<u>Chapter</u>
MSH	Message Header	2
QRD	Query Definition	5
[QRF]	Query Filter	5
{		

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PRD	Provider Data	11
[{CTD}]	Contact Data	11
}		
PID	Patient Identification	3
[{NK1}]	Next of Kin/Associated Parties	6
[{GT1}]	Guarantor	6
[{NTE}]	Notes and Comments	2

<u>RCI^I05</u>	<u>Return Clinical Information</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	3
QRD	Query Definition	5
[QRF]	Query Filter	5
{		
PRD	Provider Data	11
[{CTD}]	Contact Data	11
}		
PID	Patient Identification	3
[{DG1}]	Diagnosis	6
[{DRG}]	Diagnosis Related Group	6
[{AL1}]	Allergy Information	3
[
{		
OBR	Observation Request	4
[{NTE}]	Notes and Comments	2
[
{		
OBX	Observation/Result	7
[{NTE}]	Notes and Comments	2
}		
]		
}		
]		
[{NTE}]	Notes and Comments	2

11.2.6 RQC/RCL - request/receipt of clinical data listing (event I06)

This event code is sent from one healthcare provider to another (typically a laboratory or radiology, etc.) to request a list of available clinical observation information. When the provider is dealing with a community model in which remote requests make transmission of large amounts of data impractical, this event code will provide for interactive lists of transactions from which more specific selections can be made.

<u>RQC^I06</u>	<u>Request Clinical Information</u>	<u>Chapter</u>
MSH	Message Header	2
QRD	Query Definition	5
[QRF]	Query Filter	5
{		
PRD	Provider Data	11
[{CTD}]	Contact Data	11
}		
PID	Patient Identification3	
[{NK1}]	Next of Kin/Associated parties	6
[GT1]	Guarantor	6
[{NTE}]	Notes and Comments	2

<u>RCL^I06</u>	<u>Return Clinical List</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
QRD	Query Definition	5
[QRF]	Query Filter	5
{		
PRD	Provider Data	11
[{CTD}]	Contact Data	11
}		

PID	Patient Identification	3
[{DG1}]	Diagnosis	6
[{DRG}]	Diagnosis Related Group	6
[{AL1}]	Allergy Information	3
[{NTE}]	Notes and Comments	2
[{DSP}]	Display Data	2
[DSC]	Continuation Pointer	2

11.2.7 PIN/ACK - unsolicited insurance information (event I07)

This trigger event is used by an entity or organization to transmit to a healthcare provider the insurance information on a specific patient. Typically, the healthcare provider will be a primary care provider.

<u>PIN^I07</u>	<u>Patient Insurance Information</u>	<u>Chapter</u>
MSH	Message Header	2
{		
PRD	Provider Data	11
[{CTD}]	Contact Data	11
}		
PID	Patient Identification	3
[{NK1}]	Next of Kin/Associated Parties	6
[[{GT1}]]	Guarantor	6
{		
IN1	Insurance	6
[IN2]	Insurance Additional Info	6
[IN3]	Insurance Add'l Info -Cert	6
}		
}		
[{NTE}]	Notes and Comments	2

<u>ACK^I07</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error Information	2

11.3 PATIENT TREATMENT AUTHORIZATION REQUESTS

This functional definition applies to a request for treatment authorization. Although this message also pertains to the payor, it differs greatly from that of an insurance information request. This message is used to request an authorization for specific procedures. Just as patient identification was important in an insurance information request, the focus of this functional area is provider identification, requested treatments/procedures and, in many cases, clinical information on a patient needed to fulfill review or certification requirements.

11.3.1 RQA/RPA - request patient authorization message

All trigger events in this group use the following message definition.

<u>RQA^I08,I09,I10,I11</u>	<u>Request Patient Authorization</u>	<u>Chapter</u>
MSH	Message Header	2
[RF1]	Referral Information	11
{		
AUT	Authorization Information	11
[{CTD}]	Contact Data	11
}		
{		
PRD	Provider Data	11
[{CTD}]	Contact Data	11
}		
PID	Patient Identification	3
[{NK1}]	Next of Kin/Associated Parties	6

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[[{GT1}]]	Guarantor	6
{		
IN1	Insurance	6
[IN2]	Insurance Additional Info	6
[IN3]	Insurance Add'l Info - Cert	6
}		
]		
[ACC]	Accident Information	6
[{DG1}]]	Diagnosis	6
[{DRG}]]	Diagnosis Related Group	6
[{AL1}]]	Allergy Information	3
[
{		
PR1	Procedure	6
[
AUT	Authorization Information	11
[CTD]	Contact Data	11
]		
}		
]		
[
{		
OBR	Observation Request	4
[{NTE}]]	Notes and Comments	2
[
{		
OBX	Observation/Result	7
[{NTE}]]	Notes and Comments	2
}		
]		
}		
]		
[
PV1	Patient Visit	3
[PV2]	Patient Visit Additional Info	3
]		
[[{NTE}]]	Notes and Comments	2

<u>RPA^I08,I09,I10,I11</u>	<u>Return Patient Authorization</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	3
[RF1]	Referral Information	11
[
AUT	Authorization Information	11
[CTD]	Contact Data	11
]		
{		
PRD	Provider Data	11
[{CTD}]]	Contact Data	11
}		
PID	Patient Identification	3
[{NK1}]]	Next of Kin/Associated Parties	6
[{GT1}]]	Guarantor	6
[
{		
IN1	Insurance	6
[IN2]	Insurance Additional Info	6
[IN3]	Insurance Add'l Info - Cert	6
}		
]		
[ACC]	Accident Information	6
[{DG1}]]	Diagnosis	6
[{DRG}]]	Diagnosis Related Group	6
[{AL1}]]	Allergy Information	3
{		
PR1	Procedure	6
[
AUT	Authorization Information	11
[CTD]	Contact Data	11

]		
}		
[
{		
OBR	Observation Request	4
[{NTE}]		
[
{		
OBX	Observation/Result	7
[{NTE}]		
}		
]		
}		
]		
[
PV1	Patient Visit	3
[PV2]		
Patient Visit Additional Info		
]		
[{NTE}]		
Notes and Comments		
]		
2		

Note: The abstract message definitions for both the RPA and RQA include the patient visit segments (PV1 and PV2). The PV1 and PV2 segments appear in the RPA and RQA as an optional grouping to specify the visit or encounter that **generated** the referral authorization request. The PV1 and PV2 **should not** be used to provide suggested information for a future encounter or visit generated by the referral authorization request.

The trigger events that use this message definition are described in Sections 11.3.2, “RQA/RPA - request for treatment authorization information (event I08),” through 11.3.5, “RQA/RPA - request for cancellation of an authorization (event I11).”

11.3.2 RQA/RPA - request for treatment authorization information (event I08)

This event triggers a message to be sent from a healthcare provider to a payor requesting authorization to perform specific medical procedures or tests on a given patient. The specific medical procedures must be filled out in the PR1 segments. Each repeating PR1 segment may be paired with an AUT segment so that authorization information can be given regarding dollar amounts, number of treatments, and perhaps the estimated length of stay for treatment. The OBR and OBX segments should be used to include any relevant clinical information that may be required to support or process the authorization.

11.3.3 RQA/RPA - request for modification to an authorization (event I09)

This event triggers a message sent from a healthcare provider to a payor requesting changes to a previously referenced authorization. For example, a provider may determine that a substitute testing or surgical procedure should be performed on a specified patient.

11.3.4 RQA/RPA - request for resubmission of an authorization (event I10)

If a previously submitted request for treatment authorization is rejected or canceled, this event could trigger a resubmission message for a referenced authorization. For example, the payor may have rejected a request until additional clinical information is sent to support the authorization request.

11.3.5 RQA/RPA - request for cancellation of an authorization (event I11)

This event may trigger the cancellation of an authorization. It may be used by the provider to indicate that an authorized service was not performed, or perhaps that the patient changed to another provider. A payor may use this request to reject a submitted authorization request from a provider.

11.4 PATIENT REFERRAL MESSAGES AND TRIGGER EVENTS

These message definitions and event codes define the patient referral. Although only three trigger events are defined, the abstract message is very versatile and can provide for a wide variety of inter-enterprise transactions.

11.4.1 REF/RRI - patient referral message

The trigger events that use this message definition are described in Sections 11.4.2, “REF/RRI - patient referral (event I12),” through 11.4.5, “REF/RRI - request patient referral status (event I15).”

<u>REF^I12,I13,I14,I15</u>	<u>Patient Referral</u>	<u>Chapter</u>
MSH	Message Header	2
[RF1]	Referral Information	11
[
AUT	Authorization Information	11
[CTD]	Contact Data	11
]		
{		
PRD	Provider Data	11
[{CTD}]	Contact Data	11
}		
PID	Patient Identification	3
[{NK1}]	Next of Kin/Associated Parties	6
[{GT1}]	Guarantor	6
[
{		
IN1	Insurance	6
[IN2]	Insurance Additional Info	6
[IN3]	Insurance Add'l Info -Cert	6
}		
]		
[ACC]	Accident Information	6
[{DG1}]	Diagnosis	6
[{DRG}]	Diagnosis Related Group	6
[{AL1}]	Allergy Information	3
[
{		
PR1	Procedure	6
[
AUT	Authorization Information	11
[CTD]	Contact Data	11
]		
}		
]		
[
{		
OBR	Observation Request	4
[{NTE}]	Notes and Comments	2
[
{		
OBX	Observation/Result	7
[{NTE}]	Notes and Comments	2
}		
]		
}		
]		
[
PV1	Patient Visit	3
[PV2]	Patient Visit Additional Info	3
]		
[
PV1	Patient Visit	3
[PV2]	Patient Visit Additional Info	3
]		
[{NTE}]	Notes and Comments	2

<u>RRI^I12,I13,I14,I15</u>	<u>Return Referral Information</u>	<u>Chapter</u>
MSH	Message Header	2
[MSA]	Message Acknowledgment	3
[RF1]	Referral Information	11
[
AUT	Authorization Information	11
[CTD]	Contact Data	11
]		
{		
PRD	Provider Data	11
[{CTD}]	Contact Data	11
}		
PID	Patient Identification	3
[ACC]	Accident Information	6
[{DG1}]	Diagnosis	6
[{DRG}]	Diagnosis Related Group	6
[{AL1}]	Allergy Information	3
[
{		
PR1	Procedure	6
[
AUT	Authorization Information	11
[CTD]	Contact Data	11
]		
}		
]		
[
{		
OBR	Observation Request	4
[{NTE}]	Notes and Comments	2
[
{		
OBX	Observation/Result	7
[{NTE}]	Notes and Comments	2
}		
]		
}		
]		
[
PV1	Patient Visit	3
[PV2]	Patient Visit Additional Info	3
]		
[{NTE}]	Notes and Comments	2

Note: The abstract message definitions for both the REF and RRI include the patient visit segments (PV1 and PV2). The PV1 and PV2 segments appear in the REF as an optional grouping to specify the visit or encounter that **generated** the referral. The PV1 and PV2 **should not** be used to provide suggested information for a future encounter or visit generated by the referral.

The PV1 and PV2 are also included in the RRI message definition. It should be noted that these segments do not merely mirror the segments in the originating REF message. Rather, they may contain information regarding the visit or encounter that **resulted** from the referral.

11.4.2 REF/RRI - patient referral (event I12)

This event triggers a message to be sent from one healthcare provider to another regarding a specific patient. The referral message may contain patient demographic information, specific medical procedures to be performed (accompanied by previously obtained authorizations) and relevant clinical information pertinent to the patient's case.

11.4.3 REF/RRI - modify patient referral (event I13)

This event triggers a message to be sent from one healthcare provider to another regarding changes to an existing referral. Changes in a referral may include additional instructions from the referring provider, additional clinical information, and even additional information on patient demographics.

11.4.4 REF/RRI - cancel patient referral (event I14)

This event triggers a message to be sent from one healthcare provider to another canceling a referral. A previous referral may have been made in error, or perhaps the cancellation has come from the patient.

11.4.5 REF/RRI - request patient referral status (event I15)

This event triggers a message to be sent between healthcare providers regarding the status of a patient referral request. A previous referral has been made and acknowledged; however, no response has been received to indicate results and/or procedures performed.

11.5 SEGMENTS

11.5.1 RF1 - referral information segment

This segment represents information that may be useful when sending referrals from the referring provider to the referred-to provider.

Figure 11-2. RF1 attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	200	CE	O		0283	01137	Referral Status
2	200	CE	O		0280	01138	Referral Priority
3	200	CE	O		0281	01139	Referral Type
4	200	CE	O	Y	0282	01140	Referral Disposition
5	200	CE	O		0284	01141	Referral Category
6	30	EI	R			01142	Originating Referral Identifier
7	26	TS	O			01143	Effective Date
8	26	TS	O			01144	Expiration Date
9	26	TS	O			01145	Process Date
10	200	CE	O	Y	0336	01228	Referral Reason
11	30	EI	O	Y		01300	External Referral Identifier

11.5.1.0 RF1 - field definitions

11.5.1.1 Referral status (CE) 01137

Components: <identifier (ID)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ID)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the status of the referral as defined by either the referred-to or the referred-by provider. Refer to *user-defined table 0283 - Referral status* for suggested values.

User-defined Table 0283 - Referral status

Value	Description
A	Accepted
P	Pending
R	Rejected
E	Expired

11.5.1.2 Referral priority (CE) 01138

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the urgency of the referral. Refer to *user-defined table 0280 - Referral priority* for suggested values.

User-defined Table 0280 - Referral priority

Value	Description
S	STAT
A	ASAP
R	Routine

11.5.1.3 Referral type (CE) 01139

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the type of referral. It is loosely associated with a clinical specialty or type of resource. Refer to *user-defined table 0281 - Referral type* for suggested values.

User-defined Table 0281 - Referral type

Value	Description
Lab	Laboratory
Rad	Radiology
Med	Medical
Skn	Skilled Nursing
Psy	Psychiatric
Hom	Home Care

11.5.1.4 Referral disposition (CE) 01140

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the type of response or action that the referring provider would like from the referred-to provider. Refer to *user-defined table 0282 - Referral disposition* for suggested values.

User-defined Table 0282 - Referral disposition

Value	Description
WR	Send Written Report
RP	Return Patient After Evaluation
AM	Assume Management
SO	Second Opinion

11.5.1.5 Referral category (CE) 01141

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the location at which the referral will take place. Refer to *user-defined table 0284 - Referral category* for suggested values.

User-defined Table 0284 - Referral category

Value	Description
I	Inpatient
O	Outpatient
A	Ambulatory
E	Emergency

11.5.1.6 Originating referral identifier (EI) 01142

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field contains the originating application's permanent identifier for the referral. This is a composite field.

The first component is a string of up to 15 characters that identifies an individual referral. It is assigned by the originating application, and it identifies a referral, and the subsequent referral transactions, uniquely among all such referrals from a particular processing application.

The second component is optional because this field, itself, is already defined as a *referral identifier*.

The third component is optional. If used, it should contain the application identifier for the referred-to or external applications (i.e., *not* the originating application). The application identifier is a string of up to 15 characters that is uniquely associated with an application. A given healthcare provider facility, or group of intercommunicating healthcare provider facilities, should establish a unique list of applications that may be potential originators and recipients, and then assign unique application identifiers to each of those applications. This list of application identifiers becomes one of the healthcare provider facility's master dictionary lists. Since applications fulfilling different application roles can send and receive referral messages, the assigning authority application identifier may not identify the application sending or receiving a particular message. Data elements on the Message Header (MSH) segment are available to identify the actual sending and receiving applications.

11.5.1.7 Effective date (TS) 01143

Definition: This field contains the date on which the referral is effective.

11.5.1.8 Expiration date (TS) 01144

Definition: This field contains the date on which the referral expires.

11.5.1.9 Process date (TS) 01145

Definition: This field contains the date on which the referral originated. It is used in cases of retroactive approval.

11.5.1.10 Referral reason (CE) 01228

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the reason for which the referral will take place. Refer to *user-defined table 0336 - Referral reason* for suggested values.

User-defined Table 0336 - Referral reason

Value	Description
S	Second Opinion
P	Patient Preference
O	Provider Ordered
W	Work Load

11.5.1.11 External referral identifier (EI) 01300

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field contains an external application's permanent identifier for the referral. That is, this referral identifier does not belong to the application which originated the referral and assigned the originating referral identifier.

The first component is a string of up to 15 characters that identifies an individual referral. It is typically assigned by the referred-to provider application responding to a referral originating from a referring provider application, and it identifies a referral, and the subsequent referral transactions, uniquely among all such referrals for a particular referred-to provider processing application. For example, when a primary care provider (referring provider) sends a referral to a specialist (referred-to provider), the specialist's application system may accept the referral and assign it a new referral identifier which uniquely identifies that particular referral within the specialist's application system. This new referral identifier would be placed in the external referral identifier field when the specialist responds to the primary care physician.

The second component is optional because this field, itself, is already defined as a *referral identifier*.

The third component is optional. If used, it should contain the application identifier for the referred-to or external application (i.e., not the originating application). The application identifier is a string of up to 15 characters that is uniquely associated with an application. A given healthcare provider facility, or group of intercommunicating healthcare provider facilities, should establish a unique list of applications that may be potential originators and recipients, and then assign unique application identifiers to each of those applications. This list of application identifiers becomes one of the healthcare provider facility's master dictionary lists. Since applications fulfilling different application roles can send and receive referral messages, the assigning authority application identifier may not identify the application sending or receiving a particular

message. Data elements on the Message Header (MSH) segment are available to identify the actual sending and receiving applications.

11.5.2 AUT - authorization information segment

This segment represents an authorization or a pre-authorization for a referred procedure or requested service by the payor covering the patient's health care.

Figure 11-3. AUT attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	200	CE	O		0072	01146	Authorizing Payor, Plan ID
2	200	CE	R		0285	01147	Authorizing Payor, Company ID
3	45	ST	O			01148	Authorizing Payor, Company Name
4	26	TS	O			01149	Authorization Effective Date
5	26	TS	O			01150	Authorization Expiration Date
6	30	EI	C			01151	Authorization Identifier
7	25	CP	O			01152	Reimbursement Limit
8	2	NM	O			01153	Requested Number of Treatments
9	2	NM	O			01154	Authorized Number of Treatments
10	26	TS	O			01145	Process Date

11.5.2.0 AUT - field definitions

11.5.2.1 Authorizing payor, plan ID (CE) 01146

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the ID of the coverage plan authorizing treatment. Values should be entries in a locally-defined table of plan codes. *User defined table 0072- Insurance Plan ID is used as the HL7 identifier for the user-defined table of values for this field.*

11.5.2.2 Authorizing payor, company ID (CE) 01147

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the ID of the insurance company or other entity that administers the authorizing coverage plan. Values may be entries in a locally-defined table of payor codes. *User defined Table 0285 - Insurance company ID codes*, is used as the HL7 identifier for the user-defined table of values for this field.

11.5.2.3 Authorizing payor, company name (ST) 01148

Definition: This field contains the name of the insurance company or other entity that administers the authorizing coverage plan.

11.5.2.4 Authorization effective date (TS) 01149

Definition: This field contains the effective date of the authorization.

11.5.2.5 Authorization expiration date (TS) 01150

Definition: This field contains the expiration date after which the authorization to treat will no longer be in effect from the perspective of the coverage plan.

11.5.2.6 Authorization identifier (EI) 01151

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (ST)> ^ <universal ID type (ID)>

Definition: This field contains the coverage application's permanent identifier assigned to track the authorization and all related billing documents. This field is conditionally required. It is not required when authorization information is being requested. However, it is required when this segment is contained in a message which is responding to a request and contains the authorization information. This is a composite field.

The first component of this field is a string of up to 15 characters that identifies an individual authorization. It is assigned by the coverage application, and it identifies an authorization, and the subsequent billing transactions resulting from the given authorization, uniquely among all such authorizations granted from a particular processing application.

The second component is optional because this field, itself, is already defined as an *authorization identifier*.

The third component is optional. If used it should contain the application identifier for the coverage application. The application identifier is a string of up to six characters that is uniquely associated with an application. A given healthcare provider facility, or group of intercommunicating healthcare provider facilities, should establish a unique list of applications that may be potential originators and recipients, and then assign unique application identifiers to each of those applications. This list of application identifiers becomes one of the healthcare provider facility's master dictionary lists. Since applications fulfilling different application roles can send and receive referral messages containing authorizations, the coverage application identifier may not identify the application sending or receiving a particular message. Data elements on the Message Header (MSH) segment are available to identify the actual sending and receiving applications.

11.5.2.7 Reimbursement limit (CP) 01152

Components: <price (CP)> ^ <price type (ID)> ^ <from value (NM)> ^ <to value (NM)> ^ <range units (CE)> ^ <range type (ID)>

Definition: This field contains the dollar limit for reimbursement specified by the coverage plan for the authorized treatment.

11.5.2.8 Requested number of treatments (NM) 01153

Definition: This field contains the *requested* number of times that the treatment may be administered to the patient without obtaining additional authorization.

11.5.2.9 Authorized number of treatments (NM) 01154

Definition: This field contains the number of times that the authorized treatment may be administered to the patient without obtaining additional authorization.

11.5.2.10 Process date (TS) 01145

Definition: This field contains the date that the authorization originated with the authorizing party.

11.5.3 PRD - provider data segment

This segment will be employed as part of a patient referral message and its related transactions. The PRD segment contains data specifically focused on a referral, and it is inter-enterprise in nature. The justification for this new segment comes from the fact that we are dealing with referrals that are external to the facilities that received them. Therefore, using a segment such as the current PV1 would be inadequate for all the return information that may be required by the receiving facility or application. In addition, the PV1 does not always provide information sufficient to enable the external facility to make a complete identification of the referring entity. The information contained in the PRD segment will include the referring provider, the referred-to provider, the referred-to location or service, and the referring provider clinic address.

Figure 11-4. PRD attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	200	CE	R	Y	0286	01155	Provider Role
2	106	XPN	O	Y		01156	Provider Name
3	60	XAD	O	Y		01157	Provider Address
4	60	PL	O			01158	Provider Location
5	100	XTN	O	Y		01159	Provider Communication Information
6	200	CE	O		0185	00684	Preferred Method of Contact
7	100	CM	O	Y		01162	Provider Identifiers
8	26	TS	O			01163	Effective Start Date of Provider Role
9	26	TS	O			01164	Effective End Date of Provider Role

11.5.3.0 PRD field definitions

11.5.3.1 Provider Role (CE) 01155

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the contact role that defines the relationship of the person described in this segment to the patient being referred. When a referral is inter-enterprise in nature, there are several important relationships that must be identified. For example, the proper identification of both the referring and the referred-to provider is critical for proper processing of a referral. In addition, some enterprises may want information regarding a consulting provider or the identity of the person who actually prepared the referral. This contact role may also expand to represent affiliated persons to whom information regarding this referral must be forwarded or copied. Refer to *user-defined table 0286 - Provider role* for suggested values.

User-defined Table 0286 - Provider role

Value	Description
RP	Referring Provider
PP	Primary Care Provider
CP	Consulting Provider
RT	Referred to Provider

11.5.3.2 Provider name (XPN) 01156

Components: <family name (IS)> ^ <given name (IS)> & <last name prefix (IS)> ^ <middle initial or name (IS)> ^ <suffix (e.g., JR or III) (IS)> ^ <prefix (e.g., DR) (IS)> ^ <degree (e.g., MD) (IS)> ^ <name type code (ID)> ^ <name representation code (ID)>

Definition: This field contains the name of the provider identified in this segment. Generally, this field will describe a physician associated with the referral. However, it is not limited to physicians. This field may contain the name of any valid healthcare provider associated with this referral. If this Provider Name is a physician's name, you may refer to *PRD-7-provider identifiers* for the physician identifier.

11.5.3.3 Provider address (XAD) 01157

Components: <street address (ST)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code(ST)> ^ <country (ID)> ^ < address type (ID)> ^ <other geographic designation (ST)> ^ <county/parish code (IS)> ^ <census tract (IS)> ^ <address representation code (ID)>

Definition: This field contains the mailing address of the provider identified in this segment. One of the key components to completing the "circle of care" and provider/institution bonding is the issuance of follow-up correspondence to the referring provider.

11.5.3.4 Provider location (PL) 01158

Components: <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <person location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <location description (ST)>

Subcomponents of facility: <namespace ID (IS) & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the location of the provider as needed when a provider that may be external to a given enterprise must be referenced. For example, if this provider represented the referred-to physician, the *PRD-4-provider location* should identify the clinic of the physician or provider to whom this referral has been sent. The identification of the provider's location is specified by an application and facility identifier carried in the facility field. The application ID and facility ID would be used in the same manner as their corresponding fields in the MSH segment (*MSH-3-sending application, MSH-5-receiving application MSH-4-sending facility, MSH-6-receiving facility*). That is, the facility field will contain an application identifier and facility identifier which describe the location of this provider. However, it should be noted that they may describe a different location because the provider location being referenced in this field *may not be* the location from which the message originated, which is being described by the MSH.

11.5.3.5 Provider communication information (XTN) 01159

Components: [NNN] [(999)]999-9999 [X999999] [B999999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Definition: This field contains information, such as the phone number or electronic mail address, used to communicate with the provider or organization.

11.5.3.6 Preferred method of contact (CE) 01161

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the preferred method to use when communicating with the provider. Refer to *user-defined table 0185 - Preferred method of contact* for suggested values.

11.5.3.7 Provider identifiers (CM) 01162

Components: <ID number (ST)> ^ <type of ID number (IS)> ^ <other qualifying info (ST)>

Definition: This repeating field contains the provider's unique identifiers such as UPIN, Medicare and Medicaid numbers. Refer to *PRA-6-practitioner ID numbers* in Chapter 8 (Section 8.6.3.6, "Practitioner ID numbers") for suggested values.

11.5.3.8 Effective start date of provider role (TS) 01163

Definition: This field contains the date that the role of the provider effectively began. For example, this date may represent the date on which a physician was assigned as a patient's primary care provider.

11.5.3.9 Effective end date of provider role (TS) 01164

Definition: This field contains the date that the role of the provider effectively ended. For example, this date may represent the date that a physician was removed as a patient's primary care provider.

Note: The *PRD-8-effective start date of role* and *PRD-9-effective end date of role* fields should *not* be used as trigger events. For example, they should not be used to trigger a change in role. These two dates are for informational purposes only.

11.5.4 CTD - contact data segment

The CTD segment may identify any contact personnel associated with a patient referral message and its related transactions. The CTD segment will be paired with a PRD segment. The PRD segment contains data specifically focused on provider information in a referral. While it is important in an inter-enterprise transaction to transmit specific information regarding the providers involved (referring and referred-to), it may also be important to identify the contact personnel associated with the given provider. For example, a provider receiving a referral may need to know the office manager or the billing person at the institution of the provider who sent the referral. This segment allows for multiple contact personnel to be associated with a single provider.

Figure 11-5. CTD attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	200	CE	R	Y	0131	00196	Contact Role
2	106	XPN	O	Y		01165	Contact Name
3	200	XAD	O	Y		01166	Contact Address
4	60	PL	O			01167	Contact Location
5	100	XTN	O	Y		01168	Contact Communication Information
6	200	CE	O		0185	00684	Preferred Method of Contact
7	100	CM	O	Y		01171	Contact Identifiers

11.5.4.0 CTD field definitions

11.5.4.1 Contact role (CE) 00196

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the contact role that defines the relationship of the person described in this segment to the patient being referred. When a referral is inter-enterprise in nature, there are some important relationships that must be identified. For example, it may be necessary to identify the contact representative at the clinic that sent the referral. *User defined table 0131 - Contact role* is used as the HL7 identifier for the user-defined table of values for this field.

11.5.4.2 Contact name (XPN) 01165

Components: <family name (IS)> ^ <given name (IS)> & <last name prefix (IS)> ^ <middle initial or name (IS)> ^ <suffix (e.g., JR or III) (IS)> ^ <prefix (e.g., DR) (IS)> ^ <degree (e.g., MD) (IS)> ^ <name type code (ID)> ^ <name representation code (ID)>

Definition: This field contains the name of the contact person identified in this segment. Generally, this field will describe a person or provider associated with the referral. If this contact name is a physician, you may refer to the *CTD-7-contact identifiers* (Section 11.5.4.7) for the physician identifier.

11.5.4.3 Contact address (XAD) 01166

Components: <street address (ST)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code (ST)> ^ <country (ID)> ^ <address type (ID)> ^ <other geographic designation (ST)> ^ <county/parish code (IS)> ^ <census tract (IS)> ^ <address representation code (ID)>

Definition: This field contains the mailing address of the contact person identified in this segment. One of the key components for completing the “circle of care” and provider/institution bonding is the issuance of follow-up correspondence to the referring provider.

11.5.4.4 Contact location (PL) 01167

Components: <point of care (IS)> ^ <room (IS)> ^ <bed (IS)> ^ <facility (HD)> ^ <location status (IS)> ^ <person location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ <location description (ST)>

Subcomponents of facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the location of the contact, which is required when a contact that may be external to a given enterprise must be referenced. For example, if this contact represents the office manager of the referred-to physician, then the contact location should identify the clinic of the physician or provider to whom this referral has been sent. The identification of the contact’s location is specified by an application and facility identifier carried in the facility field. The application identifier and the facility identifier would be used in the same manner as their corresponding fields in the MSH segment (*MSH-3-sending application*, *MSH-5-receiving application*, *MSH-4-sending facility*, *MSH-6-receiving facility*). That is, the facility field will contain an application identifier and facility identifier which describe the location of this contact. However, it should be noted that they may describe a different location because the contact location being referenced in this field *may not be* the location from which the message originated, which is being described by the MSH.

11.5.4.5 Contact communication information (XTN) 01168

Components: [NNN] [(999)]999-9999 [X999999] [B999999] [C any text] ^ <telecommunication use code (ID)> ^ <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^ <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>

Definition: This field contains the information, such as the phone number or electronic mail address, used to communicate with the contact person or organization.

11.5.4.6 Preferred method of contact (CE) 00684

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the preferred method to use when communicating with the contact person. Refer to *user-defined table 0185 - Preferred method of contact* for suggested values.

11.5.4.7 Contact identifiers (CM) 01171

Components: <ID number (ST)> ^ <type of ID number (IS)> ^ <other qualifying info (ST)>

Definition: This repeating field contains the contact's unique identifiers such as UPIN, Medicare and Medicaid numbers. Refer to Chapter 8 (Section 8.6.3.6, "Practitioner ID numbers") for suggested values.

11.6 EXAMPLES

The following examples will demonstrate the proposed way in which the RQI, RQA and REF messages can be used with the I01 (request for insurance information), I08 (request for treatment authorization information), I15 (request patient referral status) and I06 (request/receipt of clinical data listing) event codes. The events are presented in the order in which they would occur in a typical patient encounter. The first event to occur when the patient visits the medical practice is the verification of eligibility/coverage information. Next, the patient will be diagnosed and may be referred to a specialist for further treatment. This procedure may require a request for pre-authorization from the payor, which will be forwarded to the referral provider. Once the referral provider begins treatment, messages regarding the status or outcome of the treatment will be sent to the referring provider. Queries may also be sent to the specialist and reference laboratories.

11.6.1 RQI message using an I01 event with an immediate response

When a patient arrives for an appointment, the office staff will frequently need to verify the patient's insurance information. In the following RQI message example, Dr. Blake is sending an insurance information request to the Washington State Insurance Company for her patient, Cary Joe Brown. The response from the payor is shown in a more complete IN1 segment. However, it should be noted that in addition to the IN1 segment, this return information could have been placed in the NTE segment to serve as display data. This strategy would serve a broader community of diverse application systems that might have different levels of ability to process the record-formatted data.

```
MSH|^~\&|BLAKEMD|EWHIN|MSC|EWHIN|19940107155043||RQI^I01|BLAKEM/888|P|2.3.1|||NE|AL<cr>
PRD|RP|BLAKE^BEVERLY^^^DR^MD|N. 12828 NEWPORT HIGHWAY^^MEAD^WA^99021|
    ^^BLAKEMD&EWHIN^^^^^BLAKE MEDICAL CENTER|BLAKEM/899<cr>
PRD|RT|WSIC||^MSC&EWHIN^^^^^WASHINGTON STATE INSURANCE COMPANY<cr>
PID|||402941703^9^M10||BROWN^CARY^JOE||19600309|||402941703<cr>
IN1|1|PP0|WA02|WSIC (WA State Code)|<cr>
```

```
MSH|^~\&|MSC|EWHIN|BLAKEMD|EWHIN|19940107155212||RPI^I01|MSC2112|P|2.3.1|||ER|ER<cr>
MSA|AA|BLAKEM/888|ELIGIBILITY INFORMATION FOUND<cr>
PRD|RP|BLAKE^BEVERLY^^^DR^MD|N. 12828 NEWPORT HIGHWAY^^MEAD^WA^99021|
    ^^BLAKEMD&EWHIN^^^^^BLAKE MEDICAL CENTER|BLAKEM/899<cr>
PRD|RT|WSIC||^MSC&EWHIN^^^^^WASHINGTON STATE INSURANCE COMPANY<cr>
PID|||402941703^9^M10||BROWN^CARY^JOE||19600301|||402941703, CR>
IN1|1|PP0|WA02|WSIC (WA State Code)|11223 FOURTH STREET^^MEAD^WA^99021^USA|ANN
    MILLER|509|333-1234|987654321||19901101||BROWN^CARY^JOE|1|19600309|N. 12345
    SOME STREET^^MEAD^WA^99021^USA|||402941703|||01|M<cr>
```

11.6.2 RQA message using an I08 event with an immediate response

When the attending physician decides to refer the patient for treatment to another healthcare provider, pre-authorization may be required by the payor. In the following RQA example, Dr. Blake is requesting the appropriate pre-authorization from Washington State Insurance Company for a colonoscopy on Cary Joe Brown. The request includes the diagnosis, in case it is a factor in the approval decision. As shown below.

the immediate response indicates approval of the request that was made on 01/10/94 and that expires on 05/10/94. In actuality, most payors require some human intervention in the pre-authorization process and would probably not respond immediately.

```
MSH|^~\&|BLAKEMD|EWHIN|MSC|EWHIN|19940110105307||RQA^I08|BLAKEM7898|P|2.3.1||NE|AL<cr>
PRD|RP|BLAKE^BEVERLY^^^DR^MD|N. 12828 NEWPORT HIGHWAY^^MEAD^WA^99021|
^^^BLAKEMD&EWHIN^^^^^BLAKE MEDICAL CENTER|BLAKEM7899<cr>
PRD|RT|WSIC|^^^^MSC&EWHIN^^^^^WASHINGTON STATE INSURANCE COMPANY<cr>
PID|||402941703^9^MI0|BROWN^CARY^JOE|19600309|||402941703<cr>
IN1|1|PP0|WA02|WSIC (WA State Code)|11223 FOURTH STREET^^MEAD^WA^99021^USA|ANN
MILLER|509|333-1234|987654321|||19901101|||BROWN^CARY^JOE|1|19600309|N. 12345
SOME STREET^^MEAD^WA^99021^USA|||402941703|||01|M<cr>
DG1|1|I9|569.0|RECTAL POLYP|19940106103500|0<cr>
PR1|1|C4|45378|Col onoscopy|19940110105309|00<cr>
```

```
MSH|^~\&|MSC|EWHIN|BLAKEMD|EWHIN|19940110154812||RPA^I08|MSC2112|P|2.3.1||ER|ER<cr>
MSA|AA|BLAKEM7888<cr>
PRD|RP|BLAKE^BEVERLY^^^DR^MD|N. 12828 NEWPORT HIGHWAY^^MEAD^WA^99021|
^^^BLAKEMD&EWHIN^^^^^BLAKE MEDICAL CENTER|BLAKEM7899<cr>
PRD|RT|WSIC|^^^^MSC&EWHIN^^^^^WASHINGTON STATE INSURANCE COMPANY<cr>
PID|||402941703^9^MI0|BROWN^CARY^JOE|19600301|||402941703<cr>
IN1|1|PP0|WA02|WSIC (WA State Code)|11223 FOURTH STREET^^MEAD^WA^99021^USA|ANN
MILLER|(509)333-1234|987654321|||19901101|||BROWN^CARY^JOE|1|19600309|N. 12345
SOME STREET^^MEAD^WA^99021^USA|||402941703|||01|M<cr>
DG1|1|I9|569.0|RECTAL POLYP|19940106103500|0<cr>
PR1|1|C4|45378|Col onoscopy|19940110105309|00<cr>
AUT|PP0|WA02|WSIC (WA State Code)|19940110|19940510|123456789|175|1<cr>
```

11.6.3 RQA message using an I08 event with a deferred response

In the following example of a pre-authorization request, the payor indicates his receipt of the request (a standard acknowledgment message), but defers issuing a pre-authorization to a later time. This response represents a more typical payor transaction sequence. Note the use of the “Accept Acknowledgment Type,” requiring the receiving system to respond in all cases to receipt of the message.

```
MSH|^~\&|BLAKEMD|EWHIN|MSC|EWHIN|19940110105307||RQA^I08|BLAKEM7898|P|2.3.1||AL|AL<cr>
PRD|RP|BLAKE^BEVERLY^^^DR^MD|N. 12828 NEWPORT HIGHWAY^^MEAD^WA^99021|
^^^BLAKEMD&EWHIN^^^^^BLAKE MEDICAL CENTER|BLAKEM7899<cr>
PRD|RT|WSIC|^^^^MSC&EWHIN^^^^^WASHINGTON STATE INSURANCE COMPANY<cr>
PID|||402941703^9^MI0|BROWN^CARY^JOE|19600301|||402941703<cr>
IN1|1|PP0|WA02|WSIC (WA State Code)|11223 FOURTH STREET^^MEAD^WA^99021^USA|ANN
MILLER|(509)333-1234|987654321|||19901101|||BROWN^CARY^JOE|1|19600309|N. 12345
SOME STREET^^MEAD^WA^99021^USA|||402941703|||01|M<cr>
PR1|1|C4|45378|Col onoscopy|19940110105309|00<cr>

MSH|^~\&|MSC|EWHIN|BLAKEMD|EWHIN|1994011015315||MCF|MSC2112|P|2.3.1||ER|ER<cr>
MSA|AA|BLAKEM7888<cr>

MSH|^~\&|MSC|EWHIN|BLAKEMD|EWHIN|19940111102304||RPA^I08|MSC2113|P|2.3.1||ER|ER<cr>
MSA|AA|BLAKEM7888<cr>
```

```

PRD|RP|BLAKE^BEVERLY^^^DR^MD|N. 12828 NEWPORT HIGHWAY^^MEAD^WA^99021|
^^^BLAKEMD&EWHIN^^^^^BLAKE MEDICAL CENTER|BLAKEM7899<cr>

PRD|RT|WSIC|^^^MSC&EWHIN^^^^^WASHINGTON STATE INSURANCE COMPANY<cr>

PID|||402941703^9^MI0||BROWN^CARY^JOE||19600301|||402941703<cr>

IN1|1|PP0|WA02|WSIC (WA State Code)|11223 FOURTH STREET^^MEAD^WA^99021^USA|ANN
MILLER|509|333-1234|987654321||19901101||BROWN^CARY^JOE|1|19600309|N. 12345
SOME STREET^^MEAD^WA^99021^USA|||402941703|||01|M<cr>

PR1|1|C4|45378|Colonoscopy|19940110105309|00<cr>

AUT|PP0|WA02|WSIC (WA State Code)|19940110|19940510|123456789|175|1<cr>

```

11.6.4 REF message using an I11 event with an immediate response

Once pre-authorization has been received, the patient is referred to the referral provider. In the following example, Dr. Blake is referring Cary Joe Brown to Dr. Jose Jimenez for a colonoscopy. The referral message includes the patient's demographic information, diagnosis and the pre-authorization information retrieved during the previous transaction. The dates contained in the pre-authorization segment (e.g., authorization date and authorization expiration date) pertain to the authorization, given by a payor, for a specified procedure. They are not intended to imply any kind of schedule request. Scheduling will be handled by the referral provider and the patient in a separate transaction. Not all referrals will require a detailed chain of response messages, so in this case, a simple acknowledgment in the form of an RPI is returned with a note from the referred-to provider.

```

MSH|^~\&|BLAKEMD|EWHIN|JIME|EWHIN|19940111113142||REF^I11|BLAKEM7899|P|2.3.1||NE|AL<
cr>

RF1|R|MED|RP|0|REF4502|19940111|19940510|19940111<cr>

PRD|RP|BLAKE^BEVERLY^^^DR^MD|N. 12828 NEWPORT HIGHWAY^^MEAD^WA^99021|
^^^BLAKEMD&EWHIN^^^^^BLAKE MEDICAL CENTER|BLAKEM7899<cr>

CTD|PR|JONES^BUCK|N. 12828 NEWPORT HIGHWAY^^MEAD^WA^99021|^^^BLAKEMD&EWHIN^^^^^BLAKE
MEDICAL CENTER<cr>

PRD|RT|JIMENEZ^JOSE^^^DR||^JIME&EWHIN^^^^^JIMENEZ AND SMITH|||531886<cr>

PID|||1234567891^1^MI0||BROWN^CARY^JOE||19600309|M|C|N. 12345 SOME
STREET^^MEAD^WA^99021^USA|SP0|(509)466-6801|(509)466-0396|ENGL|M|M|402941703|
BROWN*CJ4298^WA<cr>

NK1|1|BROWN^KATHARINA^LOU|2|N. 12345 SOME STREET^^MEAD^WA^99021^USA|(509)466-6801<cr>

GT1|1|BROWN^CARY^JOE|N. 12345 SOME
STREET^^MEAD^WA^99021^USA|(509)466-6801|(509)466-0396|19600309|M|1|402941703|||
WISMER*MARTIN||456789|01<cr>

IN1|1|PP0|WA02|WSIC (WA State Code)|11223 FOURTH STREET^^MEAD^WA^99021^USA|ANN
MILLER|509|333-1234|987654321||19901101||BROWN^CARY^JOE|1|19600309|N. 12345
SOME STREET^^MEAD^WA^99021^USA|||402941703|||01|M<cr>

ACC|19940105125700|WR|WISMER*MARTIN<cr>

DG1|1|I9|569.0|RECTAL POLYP|19940106103500|0<cr>

PR1|1|C4|45378|Colonoscopy|19940110105309|00<cr>

AUT|PP0|WA02|WSIC (WA State Code)|19940110|19940510|123456789|175|1<cr>

MSH|^~\&|JIME|EWHIN|BLAKEMD|EWHIN|199401111152401||RRI^I11|JIME1123|P|2.3.1||ER|ER<cr>
>

MSA|AA|BLAKEM7899<cr>

RF1|A|R|MED|RP|0|REF4502|19940111|19940510|19940111<cr>

PRD|RP|BLAKE^BEVERLY^^^DR^MD|N. 12828 NEWPORT HIGHWAY^^MEAD^WA^99021|
^^^BLAKEMD&EWHIN^^^^^BLAKE MEDICAL CENTER|BLAKEM7899<cr>

CTD|PR|JONES^BUCK|N. 12828 NEWPORT HIGHWAY^^MEAD^WA^99021|^^^BLAKEMD&EWHIN^^^^^BLAKE
MEDICAL CENTER<cr>

```

```

PRD|RT|JIMENEZ^JOSE^^^DR||^JIME&EWHIN^^^^JIMENEZ AND SMITH|||531886<cr>
PID||1234567891^1^MI0||BROWN^CARY^JOE||19600309|M||C|N. 12345 SOME
STREET^^MEAD^WA^99021^USA|SP0|(509) 466- 6801|(509) 466- 0396|ENGL|M|M|402941703|
BROWN*CJ4298^WA<cr>
DG1|1|I9|569.0|RECTAL POLYP|19940106103500|0<cr>

PR1|1|C4|45378|Colonoscopy|19940111141509|00<cr>
NTE|||Patient is doing well.~Full recovery expected.<cr>

```

11.6.5 REF message using an I11 event with a deferred response

The following example demonstrates the ability of the referral provider to return a series of responses. For most referrals, multiple responses will be returned because referrals may contain multiple requested procedures that may be performed over a period of time. The referral provider determines the completion of this chain of messages and indicates that designation in the following example by setting the “Processed” flag in the MSA segment. This procedure will probably vary from network to network.

```

MSH|^~\&|BLAKEMD|EWHIN|JIME|EWHIN|19940111113142||REF^I11|BLAKEM7899|P|2.3.1||AL|AL<
cr>
RF1|R|MED|RP|0|REF4502|19940111|19940510|19940111<cr>
PRD|RP|BLAKE^BEVERLY^^^DR^MD|N. 12828 NEWPORT HIGHWAY^^MEAD^WA^99021|
^^BLAKEMD&EWHIN^^^^BLAKE MEDICAL CENTER|BLAKEM7899<cr>
CTD|PR|JONES^BUCK|N. 12828 NEWPORT HIGHWAY^^MEAD^WA^99021|^^BLAKEMD&EWHIN^^^^BLAKE
MEDICAL CENTER<cr>
PRD|RT|JIMENEZ^JOSE^^^DR||^JIME&EWHIN^^^^JIMENEZ AND SMITH|||531886<cr>
PID||1234567891^1^MI0||BROWN^CARY^JOE||19600309|M||C|N. 12345 SOME STREET^^MEAD^WA
^99021^USA|SP0|(509) 466- 6801|(509) 466- 0396|ENGL|M|M|402941703|BROWN*CJ4298^WA<cr>
NK1|1|BROWN^KATHARINA^LOU|2|N. 12345 SOME STREET^^MEAD^WA^99021^USA|(509) 466- 6801<cr>
GT1|1|BROWN^CARY^JOE|N. 12345 SOME STREET^^MEAD^WA^99021^USA|(509) 466- 6801
|(509) 466- 0396|19600309|M|1|402941703|||WISMER*MARTIN||456789|01<cr>
IN1|1|PP0|WA02|WSIC (WA State Code)|11223 FOURTH STREET^^MEAD^WA^99021^USA|ANN
MILLER|(509) 333- 1234|987654321||19901101||BROWN^CARY^JOE|1|19600309|N. 12345
SOME STREET^^MEAD^WA^99021^USA|||402941703|||01|M<cr>
ACC|19940105125700|WR|WISMER*MARTIN<cr>
DG1|1|I9|569.0|RECTAL POLYP|19940106103500|0<cr>
PR1|1|C4|45378|Colonoscopy|19940110105309|00<cr>
AUT|PP0|WA02|WSIC (WA State Code)|19940110|19940510|123456789|175|1<cr>

MSH|^~\&|JIME|EWHIN|BLAKEMD|EWHIN|19940111154812||MCF|JIME1123|P|2.3.1||ER|ER<cr>
MSA|AA|BLAKEM7899<cr>

MSH|^~\&|JIME|EWHIN|BLAKEMD|EWHIN|19940112152401||RRI^I11|JIME1124|P|2.3.1||ER|ER<cr>
MSA|AA|BLAKEM7899<cr>
RF1|A|R|MED|RP|0|REF4502|19940111|19940510|19940111<cr>
PRD|RP|BLAKE^BEVERLY^^^DR^MD|N. 12828 NEWPORT
HIGHWAY^^MEAD^WA^99021|^^BLAKEMD&EWHIN^^^^BLAKE MEDICAL CENTER|BLAKEM7899<cr>
CTD|PR|JONES^BUCK|N. 12828 NEWPORT HIGHWAY^^MEAD^WA^99021|^^BLAKEMD&EWHIN^^^^BLAKE
MEDICAL CENTER<cr>
PRD|RT|JIMENEZ^JOSE^^^DR||^JIME&EWHIN^^^^JIMENEZ AND SMITH|||531886<cr>
PID||1234567891^1^MI0||BROWN^CARY^JOE||19600309|M||C|N. 12345 SOME STREET^^MEAD^WA
^99021^USA|SP0|(509) 466- 6801|(509) 466- 0396|ENGL|M|M|402941703|BROWN*CJ4298^WA<cr>

```

DG1|1|I9|569.0|RECTAL POLYP|19940106103500|0<cr>

PR1|1|C4|45378|Colonoscopy|19940111141509|00<cr>

NTE|||Patient is doing well. ~Full recovery expected.<cr>

11.6.6 RQC inquiry message using an I05 event with an immediate response

In this example, Dr. Blake is querying a reference laboratory for the results of all lab work performed on Cary Joe Brown between the dates of 03/20/94 and 03/22/94 and requests that the data be returned in a record or data elemented format. The message request contains all of the patient identification, as well as the provider identification necessary for the responding facility to qualify the request.

MSH|^~\&|BLAKEMD|EWHIN|EHS_LAB|EWHIN|19940410113142||RQC^I05|BLAKEM7899|P|2.3.1||NE|AL<cr>

QRD|19940504144501|R|I|BLAKEM7899|||5^RD|PATIENT|RES|ALL<cr>

QRF|EHS_LAB^EWHIN|19940320000000|19940322235959<cr>

PRD|RP|BLAKE^BEVERLY^^^DR^MD|N. 12828NEWPORT
HIGHWAY^^MEAD^WA^99021|^^^BLAKEMD&EWHIN^^^^^BLAKE MEDICAL CENTER|BLAKEM7899<cr>

CTD|PR|JONES^BUCK|N. 12828 NEWPORT HIGHWAY^^MEAD^WA^99021|^^^BLAKEMD&EWHIN^^^^^BLAKE
MEDICAL CENTER<cr>

PRD|RT|EMPLAB^EMPIRE LAB|||^EHS_LAB&EWHIN^^^^^EIMPIRE LABORATORIES<cr>

PID|||1234567891^1^MI0||BROWN^CARY^JOE||19600309|M||C|N. 12345SOME STREET^^MEAD^WA^
99021^USA|SP0|(509)466-6801|(509)466-0396|ENGL|M|M|402941703|BROWN*CJ4298^WA<cr>

MSH|^~\&|EHS_LAB|EWHIN|BLAKEMD|EWHIN|19940411152401||RPI^I05|EHS LAB4250|P|2.3.1||ER|ER<cr>

MSA|AA|BLAKEM7899<cr>

QRD|19940504144501|R|I|BLAKEM7899|||5^RD|PATIENT|RES|ALL<cr>

QRF|EHS_LAB^EWHIN|19940320000000|19940322235959<cr>

PRD|RP|BLAKE^BEVERLY^^^DR^MD|N. 12828 NEWPORT
HIGHWAY^^MEAD^WA^99021|^^^BLAKEMD&EWHIN^^^^^BLAKE MEDICAL CENTER|BLAKEM7899<cr>

CTD|PR|JONES^BUCK|N. 12828 NEWPORT HIGHWAY^^MEAD^WA^99021|^^^BLAKEMD&EWHIN^^^^^BLAKE
MEDICAL CENTER<cr>

PRD|RT|EMPLAB^EMPIRE LAB|||^EHS_LAB&EWHIN^^^^^EIMPIRE LABORATORIES<cr>

PID|||1234567891^1^MI0||BROWN^CARY^JOE||19600309|M||C|N. 12345 SOME STREET^^MEAD^WA^
99021^USA|SP0|(509)466-6801|(509)466-0396|ENGL|M|M|402941703|BROWN*CJ4298^WA<cr>

OBR|1||1045813^LAB|L1505.003^COMPLETE BLOOD COUNT (D)|||19940320104700|""|1^EA|||
|19940320112400||CARM|||19940320104955||F<cr>

OBX|1|ST|L1550.000^HEMOGLOBIN, AUTO HEME||11.6|g/dl|12.0-16.0|L|||F<cr>

OBX|2|ST|L1551.003^HEMATOCRIT (D)||36.4|%|36-45|||F<cr>

OBX|3|ST|L1552.000^RBC, AUTO HEME||3.94|ml l/ul|4.1-5.1|L|||F<cr>

OBX|4|ST|L1553.000^MCV, AUTO HEME||92.3.1|fl|80-100|||F<cr>

OBX|5|ST|L1554.000^MCH, AUTO HEME||29.3|pg|26-34|||F<cr>

OBX|6|ST|L1555.000^MCHC, AUTO HEME||31.8|g/dl|31-37|||F<cr>

OBX|7|ST|L1557.000^RBC DISTRIBUTION WIDTH||15.3|%|0-14.8|H|||F<cr>

OBX|8|ST|L1558.003^PLATELET COUNT (D)||279|th/ul|140-440|||F<cr>

OBX|9|ST|L1559.000^WBC, AUTO HEME||7.9|th/ul|4.5-11.0|||F<cr>

OBX|10|ST|L1561.100^NEUTROPHILS, % AUTO||73.8|%|||F<cr>

OBX|11|ST|L1561.510^LYMPHOCYTES, % AUTO||16.6|%|||F<cr>

OBX|12|ST|L1562.010^MONOCYTES, % AUTO||7.3|%|||F<cr>

OBX|13|ST|L1563.010^EOSINOPHILS, % AUTO||1.7|%|||F<cr>

OBX|14|ST|L1564.010^BASOPHILS, % AUTO||0.7|%|||F<cr>

OBX|15|ST|L1565.010^NEUTROPHILS, ABS AUTO||5.8|th/ul|1.8-7.7|||F<cr>

OBX|16|ST|L1566.010^LYMPHOCYTES, ABS AUTO||1.3|th/ul|1.0-4.8|||F<cr>

OBX|17|ST|L1567.010^MONOCYTES, ABS AUTO||0.6|th/ul|0.1-0.8|||F<cr>

OBX|18|ST|L1568.010^EOSINOPHILS, ABS AUTO||0.1|th/ul|0-0.7|||F<cr>

OBX|19|ST|L1569.000^BASOPHILS, ABS AUTO||0.1|th/ul|0-0.2|||F<cr>

OBX|20|ST|L2110.003^PROTHROMBIN TIME (D)||30.7|sec|11.1-14.0|HH|||F<cr>

NTE|1|L|COAGULATION CRITICAL VALUES CALLED TO VICKIE QUASCHNICK-AT 1130 BY
VON-Therapeutic Ranges(oral anticoagulant):~Most clinical situations: 16.1 -
21.1 sec -- (1.3 - 1.7 times the mean of the normal range)~Mech heart valve,
recurrent embolism 18.6 - 23.6 sec -- (1.5 - 1.9 times the mean of the normal
range)<cr>

OBX|21|ST|L2110.500^INR||5.95|||F<cr>

NTE|1|L|Therapeutic Range (oral anticoagulant):~ Most clinical situations: 2.0 -
3.0~ Mech heart valve, recurrent embolism 3.0 - 4.0<cr>

OBX|22|ST|L3110.003^SODIUM (D)||141|mmol/l|135-146|||F<cr>

OBX|23|ST|L3111.003^POTASSIUM (D)||3.8|mmol/l|3.5-5.1|||F<cr>

OBX|24|ST|L3112.003^CHLORIDE (D)||111|mmol/l|98-108|H||F<cr>

OBX|25|ST|L3113.003^CO2 (TOTAL) (D)||23.7|mmol/l|23-30|||F<cr>

OBX|26|ST|L3114.000^ANION GAP||6||7-17|L|||F<cr>

OBX|27|ST|L3120.003^CREATININE (D)||1.4|mg/dl|0.5-1.2|H||F<cr>

OBX|28|ST|L3121.003^UREA NITROGEN (D)||24|mg/dl|7-25|||F<cr>

OBX|29|ST|L3123.003^GLUCOSE (D)||123|mg/dl|65-115|H||F<cr>

OBX|30|ST|L3126.003^CALCIUM (D)||8.7|mg/dl|8.4-10.2|||F<cr>

OBX|2||1045825^LAB|L2560.000^BLOOD GAS, ARTERIAL (R)||19940320105800|""|
1^EA|||19940320105800|CARM|||19940320105844||F<cr>

OBX|1|ST|L2565.000^PH, ARTERIAL BLD GAS (R)||7.46||7.35-7.45|H||F<cr>

OBX|2|ST|L2566.000^PCO2, ARTERIAL BLOOD GAS||28|mm/Hg|35-45|LL||F<cr>

NTE|1|L|BLOOD GAS ANALYSIS CRITICAL VALUE(S) CALLED TO~DR. CARLSON.<cr>

OBX|3|ST|L2567.000^PO2, ARTERIAL BLOOD GAS||83|mm/Hg|80-100|||F<cr>

OBX|4|ST|L2568.000^O2 SAT, ART BLD GAS (R)||96%|95-99|||F<cr>

OBX|5|ST|L2569.000^BASE EX, ARTERIAL BLD GAS||-2.1|mEq/l|-2.0-2.0|L||F<cr>

OBX|6|ST|L2570.000^HCO3, ARTERIAL BLD GAS||19.4|mEq/l|22-26|L||F<cr>

OBX|7|ST|L2571.000^PATIENT TEMP, ABG||96.2|deg F|||F<cr>

OBX|8|ST|L2572.000^MODE, ABG||ROOM AIR|||F<cr>

OBX|3||1045812^LAB|L2310.003^URINALYSISD)||19940320121800|""|1^EA|||19940320121800
|CARM|||19940320104953||F<cr>

OBX|1|ST|L2320.303^SPECIFIC GRAVITY, UR (D)||1.015||1.002-1.030|||F<cr>

OBX|2|ST|L2320.403^PH, UR (D)||7.0||5.0-7.5|||F<cr>

OBX|3|ST|L2320.503^PROTEIN, QUAL, UR (D)||NEG|mg/dl|||F<cr>

OBX|4|ST|L2320.703^GLUCOSE, QUAL, UR (D)||0|mg/dl|0-30|||F<cr>

OBX|5|ST|L2320.803^KETONES, UR (D)||NEG|mg/dl|||F<cr>

OBX|6|ST|L2320.903^OCCULT BLOOD, UR (D)||SMALL|||A||F<cr>

OBX|7|ST|L2321.003^BILIRUBIN, UR (D)||NEG|||F<cr>

OBX|8|ST|L2321.100^LEUKOCYTES, UR||MD|||A||F<cr>

OBX|9|ST|L2321.200^NITRITES, UR||NEG|||F<cr>

OBX|10|ST|L2321.300^UROBILINOGEN, UR||NEG|||F<cr>

OBX|11|ST|L2342.000^MICRO SPUN VOLUME, UR||8|ml|8-8|||F<cr>

OBX|12|ST|L2350.003^RBC, UR (D)||5-10|/hpf|||F<cr>

OBX|13|ST|L2350.100^WBC, UR||>100|/hpf|||F<cr>


```
OBX|14|ST|L2350.200^EPITHELIAL CELLS, UR||2+|||||F<cr>  
OBX|15|ST|L2350.300^BACTERIA, UR||2+|||A|||F<cr>
```

11.7 ISSUES

11.7.1 HL7 overlapping with ASC X12N

There have been discussions regarding overlap of the proposed Patient Referral Chapter with recent development efforts by a committee within the ASC X12N organization. In the Healthcare Task Group (Task Group 2) of the ASC X12N Insurance Subcommittee, the Services Review Working Group (Working Group 10) has been working on a referral transaction (Transaction 278). This transaction has been designed from a payor perspective by focusing on *certification* of a referral or *notification* that a referral took place. This focus deals primarily with the financial or reimbursement side of a referral. There are some similarities between the two messages. However, there are also some clear differences. For example, the ASC X12 transaction does not provide for provider-to-provider referrals containing clinical data. Referrals containing a patient's clinical record along with diagnoses and requested procedures are the major focus of the work being done by HL7. In an effort to alleviate some of the controversy that this issue has caused, sections of this HL7 Patient Referral chapter have been removed. These sections dealt primarily with eligibility and plan coverage information. That information will be specifically handled by ASC X12N transactions 271 and 272, and the new interactive transactions.

There are some convergence activities currently in progress. The HL7 - X12 Joint Coordinating Committee has been formed to facilitate efforts to unify these two standard development organizations as well as others. Work is in progress to harmonize HL7 trigger events within X12N transactions, as well as in joint data modeling. There has also been some work done at the working group level to harmonize the common data segments of the two respective referral messages. There is ongoing participation by both HL7 committees and X12N work groups to achieve a certain level of data compatibility.

The HL7 Board of Directors has directed HL7 to continue development of the Patient Referral Chapter for the following reasons:

The HL7 - X12 coordination is ongoing, but will not be complete in time for Standard Version 2.3.

The HL7 Patient Referral Chapter addresses business needs that the X12 transaction does not (e.g., transmission of codified clinical data).

12.

Patient Care

Editor: Karen Keeter
IBM Healthcare Solutions Unit

Chapter Chair/Editor: Charles Mead, MD
CareCentric Solutions

Chapter Chair/Editor: Daniel Russler, MD
McKesson HBOC

12.1 INTRODUCTION AND OVERVIEW

The Patient Care¹ Technical Committee has designed the following messages to support the communication of problem-oriented records, including clinical problems, goals, and pathway information between computer systems. The purpose of this chapter is to describe healthcare messages that need to be communicated between clinical applications for a given individual. These message transactions can be sent in either batch or online mode. As described in Chapter 2, multiple communication transactions may be grouped and sent between applications using a file transfer media or direct networked connection.

This chapter defines the transactions that occur at the seventh OSI level, that is, abstract messages. The examples of messages included in this chapter were constructed using the HL7 Encoding Rules.

12.1.1 Glossary

The following definitions of key terms are used throughout this chapter:

12.1.1.1 Goal:

A **goal** refers to an objective to be achieved as a consequence of healthcare interventions applied to an individual. Goals are set in many areas of the healthcare system, and include educational, behavior modification, and clinical goals such as reduced discomfort, improved circulation. Goals are documented by a variety of healthcare professionals including physicians, nurses, and respiratory and other therapists. Goals are defined during patient visits and they may span one or multiple visits, encounters, or episodes of care.

12.1.1.2 Problem:

A **problem** of a given individual can be described by formal diagnosis coding systems (such as DRG's, NANDA Nursing Diagnosis, ICD9, DSM, etc.) or by other professional descriptions of healthcare issues affecting an individual. Problems can be short- or long-term in nature, chronic or acute, and have a status. In a longitudinal record, all problems may be of importance in the overall long-term care of an individual, and may undergo changes in status repeatedly. Problems are identified during patient visits, and may span multiple visits, encounters, or episodes of care.

¹ While not an ideal term, the word "patient" is used here to represent the entire spectrum of individuals who receive healthcare in a variety of settings including, but not limited to, acute care, clinic care, long-term care, residential care, home health care, office practices, school-based care and community settings.

12.1.1.3 Role:

A **role** refers to the function or responsibility assumed by a person in the context of a healthcare event. Role information documents a person's association with an identified healthcare activity. Examples include primary care provider, transcriptionist, reviewer, and consulting physician.

12.1.1.4 Clinical pathway:

A **clinical pathway** is a standardized plan of care against which progress towards health is measured. A clinical pathway is applied based upon the results of a patient assessment. A clinical pathway shows exact timing of all key patient care activities intended to achieve expected standard outcomes within designated time frames. A clinical pathway includes documentation of problems, expected outcomes/goals, and clinical interventions/orders.

12.1.1.5 Variance:

Variances are documented deviations, either positive or negative, from a pre-defined standard. Variances are documented against expected outcomes, orders, or the patient's progress in general.

12.1.2 Scenario descriptions

12.1.2.1 Patient pre-admission or patient admission

A physician's office is scheduling a patient for admission to the hospital. The admitting diagnosis/problem list and admission information is sent by the physician's electronic information system to the hospital's Patient Administration system and longitudinal medical record. The trigger event identifies the message as an "add problem" to the Patient Administration and medical record system.

12.1.2.2 Consultation

A consultation is requested for an individual. The information system generating the consultation triggers an unsolicited message containing the problem/diagnosis list that is transmitted to the consulting organization. Goals and various kinds of role information are included with the transmission. The trigger event identifies the message as an unchanged record.

12.1.2.3 Loading a clinical repository

Information from point of care, clinical practice management or ancillary systems regarding the creation or update of pathways, problems, diagnoses, or goals are communicated to the clinical repository. Message triggers from the departmental systems may indicate adding, correcting, deleting, or updating records maintained in the clinical data repository.

12.1.2.4 Communicating clinical pathways and multidisciplinary plans of care

The pathway is communicated between Quality Assurance, Point of Care Systems, Research Databases, and Clinical Order Entry Systems. A point of care information system triggers a linkage between a problem and a set of ordered interventions initiated by the clinical order entry system.

12.1.3 Trigger events

The trigger events originate goal, problem and pathway messages. Each trigger event is documented below, along with the appropriate form of the message exchange. These are message-level event triggers, which are augmented by the action code fields contained in the pathway, problem and goal segments described below. Action codes are required fields in patient care message segments (see Chapter 2 for further information regarding implementation issues). Implementors need to apply the appropriate logic as part of their message construction (for example, logic would state that an "add" trigger event should not include segments with a "delete" action code).

In order to accommodate these high-level events, the following patient care events are included in *HL7 table 0003 - Event type*. The added events are instantiated in *MSH-9-message type* and are used by the pathway, problem, and goal messages. *MSH-9-message type* contains the message type and trigger event for the message.

Patient Care Trigger Events:

Table 0003 - Event type (patient care events only)

Value	Description
PC1	PPR - PC/ Problem Add
PC2	PPR - PC/ Problem Update
PC3	PPR - PC/ Problem Delete
PC4	QRY - PC/ Problem Query
PC5	PRR - PC/ Problem Response
PC6	PGL - PC/ Goal Add
PC7	PGL - PC/ Goal Update
PC8	PGL - PC/ Goal Delete
PC9	QRY - PC/ Goal Query
PCA	PPV - PC/ Goal Response
PCB	PPP - PC/ Pathway (Problem-Oriented) Add
PCC	PPP - PC/ Pathway (Problem-Oriented) Update
PCD	PPP - PC/ Pathway (Problem-Oriented) Delete
PCE	QRY - PC/ Pathway (Problem-Oriented) Query
PCF	PTR - PC/ Pathway (Problem-Oriented) Query Response
PCG	PPG - PC/ Pathway (Goal-Oriented) Add
PCH	PPG - PC/ Pathway (Goal-Oriented) Update
PCJ	PPG - PC/ Pathway (Goal-Oriented) Delete
PCK	QRY - PC/ Pathway (Goal-Oriented) Query
PCL	PPT - PC/ Pathway (Goal-Oriented) Query Response

12.1.4 Use of action codes

Prior to Version 2.3 of the Standard, all repeating segments had to be sent in an update message, because there was no way to indicate which ones changed and which ones did not. In this **snapshot** mode, all repeating segments must be sent with every subsequent message in the series of messages.

To reduce the number of repeating segments, action codes may be employed. Action codes (e.g., order control codes and result status codes) may be embedded within repeating segments and used by sophisticated application parsers to reduce the number of repetitions required for a complete record.

In either event, for systems implementing Version 2.3 or higher, if a particular repeating segment can be updated by either of these two modes, the parties concerned determine by agreement on a site-specific basis whether an interface uses the **snapshot** mode or the **action code/unique identifier** mode.

A description of valid action codes used in message segments originating in this chapter is given immediately below:

- a. **AD (ADD)** - The object defined within the segment should be added to the set of objects that is linked to the previous object in the hierarchical structure of the message. (i.e., a goal under a problem is implicitly linked to the problem. If the goals already exist, the segment placement indicates the addition of a new linkage between the goal and that problem.)
- b. **CO (CORRECT)** - The object attributes contained within the segment have been corrected. This is not updated information, but information originally sent and later found to be in error. The previous attributes should be replaced.
- c. **UP (UPDATE)** - The object attributes contained within the segment are an update of previously sent information. The previous information was correct for the period of time in which it was sent.
- d. **DE (DELETE)** - This object should be deleted from the set of objects which are linked to the previous object in the message hierarchy. An example might be a role deleted from the set of roles contained by the Goal object. Delete presumes the original linkage was in error.
- e. **LI (LINK)** - This action code denotes that the object contained in the segment should be linked in a dependency relationship to the previous object in the hierarchy. It is used to denote relationships and should not contain additional information other than those attributes necessary for specific identification.
- f. **UN (UNLINK)** - This is a request that the object be removed from the set of linked objects. An example might be the dissolution of a relationship between a problem and a goal. Unlink presumes the original linkage was correct, but due to life cycle changes the active linkage is no longer appropriate.
- g. **UC (UNCHANGED)** - This code signifies that the segment is being included for the purposes of hierarchical set identification. It does not contain any changed or additional data. Its purpose is to allow the identification of the collection set to which subsequent segments belong in the message structure. An example might be the modification of role information requiring the previous goal segment to be appropriately identified.

12.1.4.1 Examples of action code usage

A problem list and associated goals are generated in a Point of Care system. This transaction is broadcast through an interface engine that determines which systems in the organization require the event information and then forwards the messages appropriately. Each segment included in the original message contains the Action Code for **ADD** to signify an original message instance.

- a) Upon subsequent review, it is determined that a role segment designates the wrong person as the transcribing clerk for a problem. After the information is changed in the originating system, a new message is sent to provide synchronization. The message includes the original PRB segment with the *PRB-1-action code* for **UNCHANGED** (to identify the problem for which the role is being changed). This code signifies that the segment is included for the purposes of hierarchical linkage identification and that none of the information contained in it has been changed. The accompanying role segment sent would include the role **transcriber** in *ROL-3-role*, the correct person in *ROL-4-role person*, and the value for **CORRECT** in *ROL-2-action code*.
- b) It is later decided that an additional goal must be added to a specific problem, and that an already existing goal that is currently supporting another problem should also be linked with this specific problem. The message would be constructed with the problem (PRB) segment for identification (the value for *PRB-1-action code* is **UNCHANGED**). The goal segment (GOL) for the additional goal would include *GOL-1-action code* for **ADD**. The goals already included with the problem list that need to be linked to this problem would have to be included on additional GOL segments with the *GOL-1-action code* for **LINK**.

Once data regarding a Diagnosis/Problem or a Goal have been communicated to other systems, there are occasions on which the data may have to be amended.

- c) New diagnoses/problems must be added to an individual's list. The Problem message is sent with the appropriate Problem Instance ID. All PRB segment(s) included in the message that contain the value for **ADD** in *PRB-1-action code* are processed as additions to the individual's problem list.
- d) New goals are added to the individual's record. The Goal message is sent with the GOL segments indicating the value for **ADD** as *GOL-1-action code* in each segment occurrence.
- e) Changes are made to the attributes of a goal. Examples include a change in the expected resolution date, a change in the life cycle status to reflect its successful conclusion, etc. The Goal message is sent with the appropriate *GOL-4-goal instance ID*. The GOL segments of the Goal message would include the value for **UPDATE** in *GOL-1-action code*.
- f) A new goal is attached to a problem already in the repository (e.g., the goal of "education on diabetes" for an individual diagnosed with "insulin-dependent diabetes"). A problem message would be sent with the PRB segment including the *PRB-4-problem instance ID* for the diabetes problem, and with the value **UNCHANGED** in *PRB-1-action code*. The attached GOL segment for the education goal would accompany the message and contain the value **ADD** in its *GOL-1-action code* field.
- g) A new diagnosis/problem is attached to a goal (e.g., a Goal is to "discharge an individual with intact skin." While the initial problem was "skin breakdown related to immobility," a new problem is "potential for skin breakdown related to draining wounds.") A Goal message would be sent with the GOL segment, including the *GOL-4-goal instance ID* for the discharge goal, and contain the value **UNCHANGED** in *GOL-1-action code*. The attached PRB segment identifying the new problem, "potential for skin breakdown related to draining wounds," would accompany this message and contain the value for **ADD** in *PRB-1-action code*.

Note: If there is a requirement to modify information contained on a segment and unlink that same problem/goal, two segments must be transmitted (one for the modification and one for the unlink request).

12.1.5 Message construction rules

The semantic meaning of a message is contained in the message through the use of the trigger events, the implicit hierarchical linkages of the segments, and the segment action codes. Each of these has a scope within the message. The message event as included in the *MSH-9-message type* has a scope which is global to the message. The segment hierarchical linkage has a scope which includes both the segment itself and its relationship to its parent. The segment action code's scope is to the segment itself. It may further define link and unlink actions in the hierarchical structure.

12.1.5.1 Rule 1

The trigger event defines the action at the first level of the hierarchy, and should not be contradicted by either hierarchical linkages or segment action codes. Thus, a PC1 (problem add) event should only contain problem, goal, and role segments that have action codes **ADD**.

Figure 12-1. Table of allowable trigger event types and action codes

Trigger Event Types	Allowable Action Codes
xxx-Add	Top level action code must be ADD Dependent segment action code must be ADD (or NW for Order segments)
xxx-Update	Top level action code must be CORRECT, UPDATE, or UNCHANGED Dependent segment action codes - Any are allowed at the lower hierarchical levels
xxx-Delete	Top level action code must be DELETE Dependent segments' action codes must be DELETE

12.1.5.2 Rule 2

When using the segment action codes **LINK** and **UNLINK**, only those fields which are used to define a unique instance of the object are used. This action cannot be used to send changes and updates to the other fields of that segment.

12.1.5.3 Rule 3

In dependent segments **ADD** is the action code to use to establish the initial relationship between parent-child objects. The receiving system must be ready to handle multiple adds of the same object. An example is a Problem List of three (3) problems which is being sent. Attached to these problems are three (3) goals. Problem A has Goals 1 and 2 attached to it. Problem B has the same Goal 2 and a new Goal 3 attached to it. All of these will have the **ADD** action code in the segment, and when Problem B is transmitted with Goals 2 and 3, Goal 2 will have been previously transmitted with Problem A. The message construct would look like this:

```
MSH . .
PID . .

      PRB  (Problem A)
          GOL  (Goal 1)
          GOL  (Goal 2)
      PRB  (Problem B)
          GOL  (Goal 2)
          GOL  (Goal 3)
      PRB  (Problem C)      (No attached goals)
```

When two (or more) instances of the same problem or goal segment are present in a message both such segments must have identical values for all fields.

12.1.5.4 Rule 4

Remember that HL7 only provides for error messages at the message level. Thus, if the receiving system cannot process one segment, the entire message is going to be treated as an error (See Chapter 2).

12.1.5.5 Rule 5

The Problem, Goal, and Pathway messages integrate order segments as a method for establishing causal linkages. Linkages or relationships between orders, problems, goals, and pathways can therefore be presented in the Patient Care messages.

Orders referenced in Patient Care messages are used for linkage purposes only. Initiation and status changes to orders are accomplished by using dedicated messages defined in the Order Entry Chapter.

12.1.5.6 Rule 6

Order segments are sent with Problem and Goal segments in order to establish a linkage between them, NOT to communicate new orders or changes to those orders. For purposes of these messages, an LI (Link) and a UL (Unlink) code have been added to *HL7 table 0119 - Order control*.

12.2 MESSAGE DEFINITIONS

Applications can have differing orientations for representing problem and goal hierarchies. For example, parent/child relationships may map problem(s) to goal(s), or goal(s) to problem(s). To accommodate these

different orientations, the Problem message allows representation of goals that are functionally dependent upon a problem, and the Goal message allows representation of problems that are functionally dependent on a goal.

Due to the multiple occurrences of common segments such as Variance (VAR) and Notes (NTE), we have chosen to expand the segment definitions on the message diagrams to explicitly identify the hierarchical relationships. Examples of this would be “Variance (Goal)” and “Variance (Role).” This does not imply unique segments, but indicates in the first case that the variance is related to its parent Goal, and in the second case that the variance is related to its parent Role.

The notation used to describe the sequence, the optionality, and the repetition of segments is described in Chapter 2, under “Format for defining abstract message.”

Note: For all message definitions, the “OBR etc.” notation represents all possible combinations of pharmacy and other order detail segments, as outlined in Chapter 4 conventions (See Section 4.1.2.4, “Order detail segment”).

12.2.1 PGL/ACK - patient goal message (events PC6, PC7, PC8)

This message is used to send goals from one application to another (e.g., a point of care system to a clinical repository). Many of the segments associated with this event are optional. This optionality allows systems in need of this information to set up transactions that fulfill their requirements.

<u>PGL^PC6, PC7, PC8</u>	<u>Patient Goal Message</u>	<u>Chapter</u>
MSH	Message Header	2
PID	Patient Identification	3
[PV1	Patient Visit	3
[PV2]]	Patient Visit - Additional Info	3
{		
GOL	Detail Goal	12
[{NTE}]	Notes & Comments & Comments (Goal Comments)	2
[{VAR}]	Variance (Goal)	12
[{ROL	Role (Goal)	12
[{VAR}]	Variance (Role)	12
}]		
[{PTH	Detail Pathway	12
[{VAR}]	Variance (Pathway)	12
}]		
[{OBX	Observation/Result	7
[{NTE}]	Notes & Comments (Observation/Result Comments)	2
}]		
[{PRB	Detail Problem	12
[{NTE}]	Notes & Comments (Problem Comments)	2
[{VAR}]	Variance (Problem)	12
[{ROL	Role (Problem)	12
[{VAR}]	Variance (Role)	12
}]		
[{OBX	Observation/Result	7
[{NTE}]	Notes & Comments (Observation/Result Comments)	
}]		
}]		
[{ORC	Common Order	4
[OBR, etc...	Order Detail Segment, etc.	4
[{NTE}]	Notes (Order Detail Comments)	2
[{VAR}]	Variance (Order)	12
[{OBX	Observation/Result	7
[{NTE}]	Notes & Comments (Observation Comments)	2
[{VAR}]	Variance (Observation/Result)	12
}]		
}]		
}]		
}		

<u>ACK^PC6, PC7, PC8</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

This error segment indicates the fields that caused a transaction to be rejected.

12.2.2 PPR/ACK - patient problem message (events PC1, PC2, PC3)

The patient problem message is used to send problems from one application to another (e.g., a point of care system to a clinical repository). Many of the segments associated with this event are optional. This optionality allows systems in need of this information to set up transactions that fulfill their requirements.

<u>PPR^PC1, PC2, PC3</u>	<u>Patient Problem Message</u>	<u>Chapter</u>
MSH	Message Header	2
PID	Patient Identification	3
[PV1	Patient Visit	3
[PV2]]	Patient Visit	3
{		
PRB	Detail Problem	12
[{NTE}]	Notes & Comments (Problem Comments)	2
[{VAR}]	Variance (Problem)	12
[{ROL	Role (Problem)	12
[{VAR}]	Variance (Role)	12
}]		
[{PTH	Detail Pathway	12
[{VAR}]	Variance (Pathway)	12
}]		
[{OBX	Observation/Result	7
[{NTE}]	Notes & Comments (Observation/Result Comments)	2
}]		
[{GOL	Detail Goal	12
[{NTE}]	Notes & Comments (Goal Comments)	2
[{VAR}]	Variance (Goal)	12
[{ROL	Role (Goal)	12
[{VAR}]	Variance (Role)	12
}]		
[{OBX	Observation/Result	7
[{NTE}]	Notes & Comments (Observation/Result Comments)	2
}]		
}]		
[{ORC	Common Order	4
[OBR, etc	Order Detail Segment, etc.	4
[{NTE}]	Notes & Comments (Order Detail Comments)	2
[{VAR}]	Variance (Order)	12
[{OBX	Observation/Result	7
[{NTE}]	Notes & Comments (Observation Comments)	2
[{VAR}]	Variance (Observation/Result)	12
}]		
}]		
}]		
}		

<u>ACK^PC1, PC2, PC3</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

This error segment indicates the fields that caused a transaction to be rejected.

PPP^PCB, PCC, PCD	Patient Pathway Problem-Oriented Message	Chapter
MSH	Message Header	2
PID	Patient Identification	3
[PV1	Patient Visit	3
[PV2]]	Patient Visit	3
{		
PTH	Pathway Detail	12
[{NTE}]	Notes & Comments(Pathway Comments)	2
[{VAR}]	Variance (Pathway)	12
[{ROL	Role (Pathway)	12
[{VAR}]	Variance (Role)	12
}]		
[{PRB	Detail Problem	12
[{NTE}]	Notes & Comments(Problem Comments)	2
[{VAR}]	Variance (Problem)	12
[{ROL	Role (Problem)	12
[{VAR}]	Variance (Role)	12
}]		
[{OBX	Observation/Result	7
[{NTE}]	Notes & Comments(Observation/Result Comments)	2
}]		
[{GOL	Detail Goal	12
[{NTE}]	Notes & Comments(Goal Comments)	2
[{VAR}]	Variance (Goal)	12
[{ROL	Role (Goal)	12
[{VAR}]	Variance (Role)	12
}]		
[{OBX	Observation/Result	7
[{NTE}]	Notes & Comments (Observation/Result Comments)	2
}]		
}]		
[{ORC	Common Order	4
[OBR, etc	Order Detail Segment, etc.	4
[{NTE}]	Notes & Comments(Order Detail Comments)	2
[{VAR}]	Variance (Order)	12
[{OBX	Observation/Result	7
[{NTE}]	Notes & Comments(Observation Comments)	2
[{VAR}]	Variance (Observation/Result)	12
}]		
}]		
}]		
}]		
}		

<u>ACK^PCB, PCC, PCD</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

12.2.4 PPG/ACK - patient pathway message (goal-oriented) (events PCG, PCH, PCJ)

<u>PPG^PCG, PCH, PCJ</u>	<u>Patient Pathway Goal-Oriented Message</u>	<u>Chapter</u>
MSH	Message Header	2
PID	Patient Identification	3
[PV1	Patient Visit	3
[PV2]]	Patient Visit	3
{		
PTH	Pathway Detail	12
[{NTE}]	Notes & Comments(Pathway Comments)	2
[{VAR}]	Variance (Pathway)	12
[{ROL}	Role (Pathway)	12
[{VAR}]	Variance (Role)	12

<u>ACK^PCG, PCH, PCJ</u>	<u>General Acknowledgment</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2

[PV2]]	Patient Visit	3
{		
PRB	Detail Problem	12
[{NTE}]	Notes & Comments (Problem Comments)	2
[{VAR}]	Variance (Problem)	12
[{ROL	Role (Problem)	12
[{VAR}]	Variance (Role)	12
}]		
[{PTH	Detail Pathway	12
[{VAR}]	Variance (Pathway)	12
}]		
[{OBX	Observation/Result	7
[{NTE}]	Notes & Comments (Observation/Result Comments)	2
}]		
[{GOL	Detail Goal	12
[{NTE}]	Notes & Comments (Goal Comments)	2
[{VAR}]	Variance (Goal)	12
[{ROL	Role (Goal)	12
[{VAR}]	Variance (Role)	12
}]		
[{OBX	Observation/Result	7
[{NTE}]	Notes & Comments (Observation/Result Comments)	2
}]		
}]		
[{ORC	Common Order	4
[OBR, etc.	Order Detail Segment, etc.	4
[{NTE}]	Notes & Comments (Order Detail Comments)	2
[{VAR}]	Variance (Order)	12
[{OBX	Observation/Result	7
[{NTE}]	Notes & Comments (Observation Comments)	2
[{VAR}]	Variance (Observation/Result)	12
}]		
}]		
}]		
}		
}		

12.2.7 QRY - patient goal query (event PC9)

The following trigger/message event is served by QRY (a query from another system). The *QRD-8-who filter* identifies the patient or account number upon which the query is defined and can contain a Format Code of **R** (record-oriented). If the query is based on the Patient ID and there are data associated with multiple accounts, the problem of which account data should be returned becomes an implementation issue.

<u>QRY^PC9</u>	<u>Query</u>	<u>Chapter</u>
MSH	Message Header	2
QRD	Query Definition	2
[QRF]	Query Filter	2

12.2.8 PPV - patient goal response (event PCA)

The following trigger/message event is served by PPV (a response from the system responsible for maintaining the goal information).

<u>PPV^PCA</u>	<u>Goal Query Response</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2
[QAK]	Query Acknowledgement	2
QRD	Query Definition	2
{		
PID	Patient Identification	3
[PV1	Patient Visit	3
[PV2]]	Patient Visit	3
{		
GOL	Detail Goal	12

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[{NTE}]	Notes & Comments (Goal Comments)	2
[{VAR}]	Variance (Goal)	12
[{ROL	Role (Goal)	12
[{VAR}]	Variance (Role)	12
}]		
[{PTH	Detail Pathway	12
[{VAR}]	Variance (Pathway)	12
}]		
[{OBX	Observation/Result	7
[{NTE}]	Notes & Comments (Observation/Result Comments)	2
}]		
[{PRB	Detail Problem	12
[{NTE}]	Notes & Comments (Problem Comments)	2
[{VAR}]	Variance (Problem)	12
[{ROL	Role (Problem)	12
[{VAR}]	Variance (Role)	12
}]		
[{OBX	Observation/Result	7
[{NTE}]	Notes & Comments (Observation/Result Comments)	2
}]		
}]		
[{ORC	Common Order	4
[OBR, etc.	Order Detail Segment, etc.	4
[{NTE}]	Notes & Comments (Order Detail Comments)	2
[{VAR}]	Variance (Order)	12
[{OBX	Observation/Result	7
[{NTE}]	Notes & Comments (Observation Comments)	2
[{VAR}]	Variance (Observation/Result)	12
}]		
]		
}]		
}		
}		

12.2.9 QRY - patient pathway (problem-oriented) query (event PCE)

The following trigger/message event is served by QRY (a query from another system). The *QRD-8-who filter* identifies the patient or account number upon which the query is defined and can contain a Format Code of **R** (record-oriented). If the query is based on the Patient ID and there are data associated with multiple accounts, the problem of which account data should be returned becomes an implementation issue.

<u>QRY^PCE</u>	<u>Query</u>	<u>Chapter</u>
MSH	Message Header	2
QRD	Query Definition	2
[QRF]	Query Filter	2

12.2.10 PTR - patient pathway (problem-oriented) response (event PCF)

The following trigger/message event is served by PTR (a response from the system responsible for maintaining the problem-oriented pathway information).

<u>PTR^PCF</u>	<u>Patient Pathway Problem-Oriented Response</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2
[QAK]	Query Acknowledgement	2
QRD	Query Definition	2
{		
PID	Patient Identification	3
[PV1	Patient Visit	3
[PV2]]	Patient Visit	3
{		
PTH	Pathway Detail	12
[{NTE}]	Notes & Comments (Pathway Comments)	2
[{VAR}]	Variance (Pathway)	12
[{ROL	Role (Pathway)	12

[{VAR}]	Variance (Role)	12
}}0		
[{PRB	Detail Problem	12
[{NTE}]	Notes & Comments (Problem Comments)	2
[{VAR}]	Variance (Problem)	12
[{ROL	Role (Problem)	12
[{VAR}]	Variance (Role)	12
}]		
[{OBX	Observation/Result	7
{NTE}]	Notes & Comments (Observation/Result Comments)	2
}]		
[{GOL	Detail Goal	12
[{NTE}]	Notes & Comments (Goal Comments)	2
[{VAR}]	Variance (Goal)	12
[{ROL	Role (Goal)	12
[{VAR}]	Variance (Role)	12
}]		
[{OBX	Observation/Result	7
{NTE}]	Notes & Comments (Observation/Result Comments)	2
}]		
}]		
[{ORC	Common Order	4
[OBR, etc.	Order Detail Segment, etc.	4
[{NTE}]	Notes & Comments (Order Detail Comments)	2
[{VAR}]	Variance (Order)	12
[{OBX	Observation/Result	7
{NTE}]	Notes & Comments (Observation Comments)	2
{VAR}]	Variance (Observation/Result)	12
}]		
]		
}]		
}]		
}		
}		

12.2.11 QRY - patient pathway (goal-oriented) query (event PCK)

The following trigger/message event is served by QRY (a query from another system). The *QRD-8-who filter* identifies the patient or account number upon which the query is defined and can contain a Format Code of **R** (record-oriented). If the query is based on the Patient ID and there are data associated with multiple accounts, the problem of which account data should be returned becomes an implementation issue.

<u>QRY^PCK</u>	<u>Query</u>	<u>Chapter</u>
MSH	Message Header	2
QRD	Query Definition	2
[QRF]	Query Filter	2

12.2.12 PPT - patient pathway (goal-oriented) response (event PCL)

The following trigger/message event is served by PPT (a response from the system responsible for maintaining the goal-oriented pathway information).

<u>PPT^PCL</u>	<u>Patient Pathway Goal-Oriented Response</u>	<u>Chapter</u>
MSH	Message Header	2
MSA	Message Acknowledgment	2
[ERR]	Error	2
[QAK]	Query Acknowledgement	2
QRD	Query Definition	2
{		
PID	Patient Identification	3
[PV1	Patient Visit	3
[PV2]]	Patient Visit	3
{		
PTH	Pathway Detail	12
[{NTE}]	Notes & Comments (Pathway Comments)	2
[{VAR}]	Variance (Pathway)	12

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[{ROL	Role (Pathway)	12
[{VAR}]	Variance (Role)	12
}]		
[{GOL	Detail Goal	12
[{NTE}]	Notes & Comments (Goal Comments)	2
[{VAR}]	Variance (Goal)	12
[{ROL	Role (Goal)	12
[{VAR}]	Variance (Role)	12
}]		
[{OBX	Observation/Result	7
[{NTE}]	Notes & Comments (Observation/Result Comments)	2
}]		
[{PRB	Detail Problem	12
[{NTE}]	Notes & Comments (Problem Comments)	2
[{VAR}]	Variance (Problem)	12
[{ROL	Role (Problem)	12
[{VAR}]	Variance (Role)	12
}]		
[{OBX	Observation/Result	7
[{NTE}]	Notes & Comments (Observation/Result Comments)	2
}]		
}]		
[{ORC	Common Order	4
[OBR, etc.	Order Detail Segment, etc.	4
[{NTE}]	Notes & Comments (Order Detail Comments)	2
[{VAR}]	Variance (Order)	12
[{OBX	Observation/Result	7
[{NTE}]	Notes & Comments (Observation Comments)	2
[{VAR}]	Variance (Observation/Result)	12
}]		
}]		
}]		
}		
}		

12.3 MESSAGE SEGMENTS

12.3.1 GOL - goal detail segment

The goal detail segment contains the data necessary to add, update, correct, and delete the goals for an individual.

Figure 12-2. GOL attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	2	ID	R		0287	00816	Action Code
2	26	TS	R			00817	Action Date/Time
3	80	CE	R			00818	Goal ID
4	60	EI	R			00819	Goal Instance ID
5	60	EI	O			00820	Episode of Care ID
6	60	NM	O			00821	Goal List Priority
7	26	TS	O			00822	Goal Established Date/Time
8	26	TS	O			00824	Expected Goal Achieve Date/Time
9	80	CE	O			00825	Goal Classification
10	80	CE	O			00826	Goal Management Discipline
11	80	CE	O			00827	Current Goal Review Status
12	26	TS	O			00828	Current Goal Review Date/Time
13	26	TS	O			00829	Next Goal Review Date/Time
14	26	TS	O			00830	Previous Goal Review Date/Time

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
15	200	TQ	O			00831	Goal Review Interval
16	80	CE	O			00832	Goal Evaluation
17	300	ST	O	Y		00833	Goal Evaluation Comment
18	80	CE	O			00834	Goal Life Cycle Status
19	26	TS	O			00835	Goal Life Cycle Status Date/Time
20	80	CE	O	Y		00836	Goal Target Type
21	80	XPN	O	Y		00837	Goal Target Name

12.3.1.0 GOL field definitions

The business and/or application must assume responsibility for maintaining knowledge about data ownership, versioning, and/or audit trail control (for purposes of data integrity). It is also their responsibility to represent the appropriate version of that data.

12.3.1.1 Action code (ID) 00816

Definition: The action code field gives the intent of the problem or goal. Refer to *HL7 table 0287 – Problem/goal action code* for valid values.

Table 0287 – Problem/goal action code

Value	Description
AD	ADD
CO	CORRECT
DE	DELETE
LI	LINK
UC	UNCHANGED *
UN	UNLINK
UP	UPDATE

* The UNCHANGED action code is used to signify to the applications programs that this particular segment includes no information to be modified. It is supplied in order to identify the correct record for which the following modification is intended.

12.3.1.2 Action date/time (TS) 00817

Definition: This field contains the date/time that the operation represented by the action code was performed.

12.3.1.3 Goal ID (CE) 00818

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field identifies the goal. This is the identifier from an institution's master list of goals.

12.3.1.4 Goal instance ID (EI) 00819

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (IS)> ^ <universal ID type (ID)>

Definition: This field contains the unique identifier assigned by an initiating system to this instance of the goal.

Note: It is required that the value in this field be unique over time. This instance ID identifies a specific instance for a specific patient and is unique across all patients. See entity ID data type description in Chapter 2.

12.3.1.5 Episode of care ID (EI) 00820

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (IS)> ^ <universal ID type (ID)>

Definition: This field uniquely identifies the episode of care to which this goal applies. See note under “Ongoing issues.”

Note: Based on application use, this field is required to be unique over time.

12.3.1.6 Goal list priority (NM) 00821

Definition: This field prioritizes this goal on a list that is maintained for an individual.

12.3.1.7 Goal established date/time (TS) 00822

Definition: This field identifies the date/time when the stated goal was initially created.

12.3.1.8 Expected goal achieve date/time (TS) 00824

Definition: This field contains the projected date/time for achieving the stated goal.

12.3.1.9 Goal classification (CE) 00825

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field indicates the kind of goal. This field can be used to categorize goals so that they may be managed and viewed independently within different applications (e.g., admission, final, post-operative, pre-operative, outpatient, discharge, etc.).

Note: This field can be used to differentiate separate goal lists that may be managed independently within applications.

12.3.1.10 Goal management discipline (CE) 00826

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field indicates the category of caregiver with responsibility for managing this specific goal (e.g., care team, nursing, medicine, respiratory therapy, occupational therapy, dietary etc.). This is a repeating field to allow identification of all disciplines who may have the responsibility for this goal.

12.3.1.11 Current goal review status (CE) 00827

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the current point in the continuum of a goal review cycle (e.g., due, initiated, reviewed, overdue, verified, etc.).

12.3.1.12 Current goal review date/time (TS) 00828

Definition: This field contains the date/time of the current review of the goal.

12.3.1.13 Next goal review date/time (TS) 00829

Definition: This field contains the date/time of the next scheduled goal review.

12.3.1.14 Previous goal review date/time (TS) 00830

Definition: This field contains the date/time that the goal was reviewed prior to the current review.

12.3.1.15 Goal review interval (TQ) 00831

Components: <quantity (CQ)> ^ <interval (CM)> ^ <duration (CM)> ^ <start date/time (TS)> ^ <end date/time (TS)> ^ <priority (ID)> ^ <condition (ST)> ^ <text (TX)> ^ <conjunction (ID)> ^ <order sequencing (CM)> ^ <occurrence duration (CE)> ^ <total occurrences (NM)>

Definition: This field contains the interval used to calculate the next goal review date. (See Chapter 4, Section 4.4.2, "Interval component (CM)").

12.3.1.16 Goal evaluation (CE) 00832

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field provides an indicator of progress towards achievement of the goal (e.g., achieved, ahead of schedule, delayed, failed to achieve, etc.).

12.3.1.17 Goal evaluation comment (ST) 00833

Definition: This field contains the comments associated with the goal evaluation. Examples of comments that might be entered in this field include: a reason for delay in achieving goal, or a clinical footnote about progress made towards the goal, etc.

12.3.1.18 Goal life cycle status (CE) 00834

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains an indication of the state of the goal (e.g., Active, Canceled, Inactive, Suspended, etc.).

12.3.1.19 Goal life cycle status date/time (TS) 00835

Definition: This field contains the effective date/time of the current goal life cycle status.

12.3.1.20 Goal target type (CE) 00836

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the individual/group for whom the goal has been established (e.g., family group, family member, patient, etc.).

Note: This field is focused on a specific person/group that is directly patient-related.

12.3.1.21 Goal target name (XPN) 00837

Components: <family name (IS)> ^ <given name (IS)> & <last name prefix (IS)> ^ <middle initial or name (IS)> ^ <suffix (e.g., JR or III) (IS)> ^ <prefix (e.g., DR) (IS)> ^ <degree (e.g., MD) (IS)> ^ <name type code (ID)> ^ <name representation code (ID)>

Definition: This field contains the identification of the person(s) on whom the goal is focused. This is a repeating field which allows for the identification of a group of individuals.

12.3.2 PRB - problem detail segment PRB

The problem detail segment contains the data necessary to add, update, correct, and delete the problems of a given individual.

Figure 12-3. PRB attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	2	ID	R	Y	0287	00816	Action Code
2	26	TS	R			00817	Action Date/Time
3	80	CE	R			00838	Problem ID
4	60	EI	R			00839	Problem Instance ID
5	60	EI	O			00820	Episode of Care ID
6	60	NM	O			00841	Problem List Priority
7	26	TS	O			00842	Problem Established Date/Time
8	26	TS	O			00843	Anticipated Problem Resolution Date/Time
9	26	TS	O			00844	Actual Problem Resolution Date/Time
10	80	CE	O			00845	Problem Classification
11	80	CE	O			00846	Problem Management Discipline
12	80	CE	O			00847	Problem Persistence
13	80	CE	O			00848	Problem Confirmation Status
14	80	CE	O			00849	Problem Life Cycle Status
15	26	TS	O			00850	Problem Life Cycle Status Date/Time
16	26	TS	O			00851	Problem Date of Onset
17	80	ST	O			00852	Problem Onset Text
18	80	CE	O			00853	Problem Ranking
19	60	CE	O			00854	Certainty of Problem
20	5	NM	O			00855	Probability of Problem (0-1)
21	80	CE	O			00856	Individual Awareness of Problem
22	80	CE	O			00857	Problem Prognosis
23	80	CE	O			00858	Individual Awareness of Prognosis
24	200	ST	O			00859	Family/Significant Other Awareness of Problem/Prognosis
25	80	CE	O			00823	Security/Sensitivity

The business and/or application must assume the responsibility for maintaining knowledge about data ownership, versioning, and/or audit trail control (for purposes of data integrity). It is also their responsibility to represent the appropriate version of that data.

12.3.2.0 PRB field definitions

12.3.2.1 Action code (ID) 00816

Definition: This field contains the intent of the message. Refer to *HL7 table 0287 – Problem/goal action code* for valid values.

12.3.2.2 Action date/time (TS) 00817

Definition: This field contains the date/time that the operation represented by the action code was performed.

12.3.2.3 Problem ID (CE) 00838

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field identifies the problem. This is the identifier from an institution's master list of problems.

12.3.2.4 Problem instance ID (EI) 00839

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (IS)> ^ <universal ID type (ID)>

Definition: This field contains the identifier assigned by an initiating system to an instance of a problem.

Note: It is required that this value remain unique over time . This instance ID identifies a specific instance for a specific patient and is unique across all patients. See entity ID data type description in Chapter 2.

12.3.2.5 Episode of care ID (EI) 00820

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (IS)> ^ <universal ID type (ID)>

Definition: This field uniquely identifies the episode of care to which this problem applies. (See note under "Ongoing issues.")

Note: It is required that this field be unique over time.

12.3.2.6 Problem list priority (NM) 00841

Definition: This field prioritizes this problem on a list that is maintained for the individual.

12.3.2.7 Problem established date/time (TS) 00842

Definition: This field contains the date/time when the corresponding problem was initially identified by the caregiver.

12.3.2.8 Anticipated problem resolution date/time (TS) 00843

Definition: This field contains the estimated date/time for resolving the stated problem.

12.3.2.9 Actual problem resolution date/time (TS) 00844

Definition: This field contains the date/time that the problem was actually resolved.

12.3.2.10 Problem classification (CE) 00845

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field indicates the kind of problem. This field can be used to categorize problems so that they may be managed and viewed independently within different applications (e.g., admission, final, post-operative, pre-operative, outpatient, discharge, etc.).

12.3.2.11 Problem management discipline (CE) 00846

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field indicates the category of caregiver with responsibility for managing this specific problem (e.g., care team, nursing, medicine, respiratory therapy, occupational therapy, dietary etc.). This is a repeating field to allow identification of all disciplines who may have the responsibility for this problem.

12.3.2.12 Problem persistence (CE) 00847

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the perseverance of a problem (e.g., acute, chronic, etc.).

12.3.2.13 Problem confirmation status (CE) 00848

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the verification status of a problem (e.g., confirmed, differential, provisional, rule-out, etc.).

12.3.2.14 Problem life cycle status (CE) 00849

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the current status of the problem at this particular date/time (e.g., active, active-improving, active-stable, active-worsening, inactive, resolved, etc.).

12.3.2.15 Problem life cycle status date/time (TS) 00850

Definition: This field indicates the effective date/time of the current problem life cycle status.

12.3.2.16 Problem date of onset (TS) 00851

Definition: This field contains the date/time when the problem began.

12.3.2.17 Problem onset text (ST) 00852

Definition: This field allows for a textual representation of the time when the problem began.

12.3.2.18 Problem ranking (CE) 00853

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains a user-defined prioritization of a problem (e.g., numeric ranking, or the use of words such as “primary,” “secondary,” etc.).

12.3.2.19 Certainty of problem (CE) 00854

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains a qualitative representation of the certainty of a problem (e.g., HI - high, LO - low, ME - medium, etc.).

12.3.2.20 Probability of problem (0-1) (NM) 00855

Definition: This field contains a quantitative or numeric representation of the certainty that the problem exists for this patient. This field has a valid range of 0 to 1. For example, a healthcare provider may be 75% (.75) sure that the problem has been correctly identified.

Note: We have provided for two different representations of the certainty of the problem due to varying representations in applications.

12.3.2.21 Individual awareness of problem (CE) 00856

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the individual’s comprehension of the problem (e.g., full, marginal, partial, etc.).

12.3.2.22 Problem prognosis (CE) 00857

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the prognosis for the individual's problem (e.g., good, poor, etc.).

12.3.2.23 Individual awareness of prognosis (CE) 00858

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the individual's comprehension of the prognosis for the problem (e.g., full, marginal, partial, etc.).

12.3.2.24 Family/significant other awareness of problem/prognosis (ST) 00859

Definition: This field indicates the individual's family or significant other's comprehension of the actual problem/prognosis.

12.3.2.25 Security/sensitivity (CE) 00823

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains information about the level of security and/or sensitivity surrounding the problem (e.g., highly sensitive, not sensitive, sensitive, etc.).

12.3.3 ROL - role segment

The role segment contains the data necessary to add, update, correct, and delete from the record persons involved, as well as their functional involvement with the activity being transmitted.

Figure 12-4. ROL attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	60	EI	R	Y	0287	01206	Role Instance ID
2	2	ID	R			00816	Action Code
3	80	CE	R			01197	Role-ROL
4	80	XCN	R			01198	Role Person
5	26	TS	O			01199	Role Begin Date/Time
6	26	TS	O			01200	Role End Date/Time
7	80	CE	O			01201	Role Duration
8	80	CE	O			01205	Role Action Reason

12.3.3.0 ROL - field definitions

12.3.3.1 Role instance ID (EI) 01206

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (IS)> ^ <universal ID type (ID)>

Definition: This field contains a unique identifier of the specific role record.

12.3.3.2 Action code (ID) 00816

Definition: This field reveals the intent of the message. Refer to *HL7 table 0287 – Problem/goal action code* for valid values.

12.3.3.3 Role-ROL (CE) 001197

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field indicates the functional involvement with the activity being transmitted (e.g., Case Manager, Evaluator, Transcriber, etc.).

12.3.3.4 Role person (XCN) 001198

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code(ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

subcomponents of assigning authority: <namespace ID(IS)> & <universal ID (ST)> & <universal ID type (ID)>

subcomponents of assigning facility: <namespace ID(IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the identity of the person who is assuming the role that is being transmitted.

12.3.3.5 Role begin date/time (TS) 01199

Definition: This field contains the date/time when the role began.

12.3.3.6 Role end date/time (TS) 01200

Definition: This field contains the date/time when the role ended.

12.3.3.7 Role duration (CE) 01201

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the qualitative length of time for performance of a role (e.g., until the next assessment, four days, until discharge, etc.).

12.3.3.8 Role action reason (CE) 01205

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field indicates the reason why the person is assuming (or changing) the role (e.g., shift change, new primary nurse, etc.).

12.3.4 PTH - pathway segment

The pathway segment contains the data necessary to add, update, correct, and delete from the record pathways that are utilized to address an individual's health care.

Figure 12-5. PTH attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	2	ID	R		0287	00816	Action Code
2	80	CE	R			01207	Pathway ID
3	60	EI	R			01208	Pathway Instance ID
4	26	TS	R			01209	Pathway Established Date/Time

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
5	80	CE	O			01210	Pathway Life Cycle Status
6	26	TS	C			01211	Change Pathway Life Cycle Status Date/Time

12.3.4.0 PTH - field definitions

12.3.4.1 Action code (ID) 00816

Definition: This field reveals the intent of the message. Refer to *HL7 table 0287 – Problem/goal action code* for valid values.

12.3.4.2 Pathway ID (CE) 01207

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains the pathway master data identifier associated with the referenced problem or goal. Examples; open heart pathway, new diabetic, total hip replace.

12.3.4.3 Pathway instance ID (EI) 01208

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (IS)> ^ <universal ID type (ID)>

Definition: This field contains a value generated by the originating application that represents an associated order placer group number, or other unique identifier assigned to the grouping of pathway directives.

Note: It is required that this value remain unique over time. This instance ID identifies a specific instance for a specific patient and is unique across all patients. See entity ID data type description in Chapter 2.

12.3.4.4 Pathway established date/time (TS) 01209

Definition: This field contains the identification of the event time for the current pathway record.

12.3.4.5 Pathway life cycle status (CE) 01210

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field contains an application-specific set of state identifiers (e.g., Active, Suspended, Complete, Canceled, Delayed, Scheduled).

12.3.4.6 Change pathway life cycle status (TS) 01211

Definition: This field contains the date/time when pathway has been modified or deactivated. (Marked as conditional - must be filled in if trigger event is update or terminate pathway)

12.3.5 VAR - variance segment

The variance segment contains the data necessary to describe differences that may have occurred at the time when a healthcare event was documented.

Figure 12-6. VAR attributes

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	60	EI	R			01212	Variance Instance ID
2	26	TS	R			01213	Documented Date/Time
3	26	TS	O			01214	Stated Variance Date/Time

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SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
4	80	XCN	O	Y		01215	Variance Originator
5	60	CE	O			01216	Variance Classification
6	512	ST	O	Y		01217	Variance Description

12.3.5.0 VAR - field definitions

12.3.5.1 Variance instance ID (EI) 01212

Components: <entity identifier (ST)> ^ <namespace ID (IS)> ^ <universal ID (IS)> ^ <universal ID type (ID)>

Definition: This field contains the unique identifier of the specific variance record.

12.3.5.2 Documented date/time (TS) 01213

Definition: This field contains the time stamp that identifies the timed occurrence of the variance documentation.

12.3.5.3 Stated variance date/time (TS) 01214

Definition: This field contains the time stamp that identifies a stated time of the variance which may be different than the time it was documented.

12.3.5.4 Variance originator (XCN) 01215

Components: <ID number (ST)> ^ <family name (ST)> & <last name prefix> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (IS)> ^ <source table (IS)> ^ <assigning authority (HD)> ^ <name type code (ID)> ^ <identifier check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <identifier type code (IS)> ^ <assigning facility (HD)> ^ <name representation code (ID)>

subcomponents of assigning authority: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

subcomponents of assigning facility: <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>

Definition: This field contains the originator (person or system) documenting the variance.

12.3.5.5 Variance classification (CE) 01216

Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)>

Definition: This field identifies a categorical set of variances. Classification may be used by applications for presentation and processing functions.

12.3.5.6 Variance description (ST) 01217

Definition: This field specifies the details of a variance. The content of the field is a string with optional formatting.

12.4 EXAMPLE TRANSACTIONS

The following is an example of a patient goal message.

```
MSH|^~\&|PCIS|MEDCENTER|REPOSITORY|MEDCENTER||PGL^PC4|<cr>
PID||0123456-1||ROBERTSON^JOHN^H|||||9821111|<cr>
```

```

PV1|1|I|2000^2012^01|||004777^LEBAUER^SIDNEY^J.|||SUR|||ADM|A0|<cr>

GOL|AD|199505011200|00312^Improve Peripheral Circulation^Goal Master
List|||199505011200|199505101200|Due^Review Due^Next Review List||
199505021200||QAM||ACT^Active^Kaiser Internal|199505011200|P^Patient^Kaiser
Internal||<cr>

ROL|12^Primary Nurse^Role Master List|AD|^Wilson^Jane^L^^RN|199505011200|||<cr>

ROL|45^Recorder^Role Master List|AD|^Smith^Ellen^^^^|199505011201|||<cr>

PRB|AD|199505011200|04411^Restricted Circulation^Nursing Problem List||
||199505011200|||IP^Inpatient^Problem Classification List|NU^Nursing^Management
Discipline List|Acute^Acute^Persistence List|C^Confirmed^Confirmation Status
List|A1^Active^Life Cycle Status List|
199505011200|199504250000||2^Secondary^Ranking List|HI^High^Certainty Coding
List||1^Fully^Awareness Coding List|2^Good^Prognosis Coding List|||<cr>

ROL|1^Diagnosing Provider^Role Master List|AD|^Edwards^John^H^^MD|
199505011200|||<cr>

OBX|001|TX|^Peripheral Dependent Edema|1|Increasing Edema in lower limbs|<cr>

```

The following is an example of a patient problem message.

```

MSH|^~\&|PCIS|MEDCENTER|REPOSITORY|MEDCENTER|||PPR^PC1|<cr>

PID|0123456-1|ROBERTSON^JOHN^H|||9821111|<cr>

PV1|1|I|2000^2012^01|||004777^LEBAUER^SIDNEY^J.|||SUR|||ADM|A0|<cr>

PRB|AD|199505011200|04411^Restricted Circulation^Nursing Problem List||
||199505011200|||IP^Inpatient^Problem Classification List|NU^Nursing^Management
Discipline List|Acute^Acute^Persistence List|C^Confirmed^Confirmation Status
List|A1^Active^Life Cycle Status List|
199505011200|199504250000||2^Secondary^Ranking List|HI^High^Certainty Coding
List||1^Fully^Awareness Coding List|2^Good^Prognosis Coding List|||<cr>

ROL|1^Diagnosing Provider^Role Master List|AD|^Edwards^John^H^^MD|
199505011200|||<cr>

ROL|45^Recorder^Role Master List|AD|^Smith^Ellen^^^^|199505011201|||<cr>

OBX|001|TX|^Peripheral Dependent Edema|1|Increasing Edema in lower limbs|<cr>

GOL|AD|199505011200|00312^Improve Peripheral Circulation^Goal Master
List|||199505011200|199505101200|Due^Review Due^Next Review List||
199505021200||QAM||ACT^Active^Kaiser Internal|199505011200|P^Patient^Kaiser
Internal||<cr>

ROL|12^Primary Nurse^Role Master List|AD|^Wilson^Jane^L^^RN|199505011200|||<cr>

```

The following is an example of a patient pathway problem-oriented message.

```

MSH|^~\&|PCIS|MEDCENTER|REPOSITORY|MEDCENTER|||PPP^PCB|<cr>

PID|0123456-1|ROBERTSON^JOHN^H|||9821111|<cr>

PV1|1|I|2000^2012^01|||004777^LEBAUER^SIDNEY^J.|||SUR|||ADM|A0|<cr>

PTH|AD^^HL70287|0H457^Open Heart
Pathway^AHCPR|0018329078785^PCIS1|199505011200|A1^Active^Pathway Life Cycle
Status List|199505011200|<cr>

VAR|84032847876^PCIS1|199505011200||^Wilson^Jane^L^^RN|23^Coincident^Variance Class
List|Exceeds APACHE III threshold score.|<cr>

```

```
PRB|AD|199505011200|04411^Restricted Circulation^Nursing Problem List||  
||199505011200||IP^Inpatient^Problem Classification List|NU^Nursing^Management  
Discipline List|Acute^Acute^Persistence List|C^Confirmed^Confirmation Status  
List|A1^Active^Life Cycle Status List|  
199505011200|199504250000||2^Secondary^Ranking List|HI^High^Certainty Coding  
List||1^Fully^Awareness Coding List|2^Good^Prognosis Coding List|||<cr>  
  
ROL|1^Diagnosing Provider^Role Master List|AD|^Edwards^John^H^MD|  
199505011200|||<cr>  
  
ROL|45^Recorder^Role Master List|AD|^Smith^Ellen^|199505011201|||<cr>  
  
ORC|NW|2045^OE|||E|^C^199505011200^199505011200^TM30^^^|<cr>  
  
RXO|||3|L|IV|D5W WITH 1/2 NS WITH 20 MEQ KCL EVERY THIRD BOTTLE STARTING WITH  
FIRST||WB&825&A^N|||||H30<cr>  
  
ORC|NW|1000^OE|999999^RX|||E|^Q6H^D10^^^R|||||<cr>  
  
RXA|1|199505011200|||0047-0402-30^Ampicillin 250 MG TAB^NDC|2|TAB||<cr>
```

12.5 IMPLEMENTATION CONSIDERATIONS

The Patient Care Technical Committee recognizes that this document contains a great deal of information for computer systems that are currently under development. The participating institutions/vendors will be responsible for defining the necessary tables that have been previously discussed. As these tables are defined and clarified, they will be included in this document for distribution.

Applications can have differing orientations for representing problem and goal hierarchies. For example, parent:child relationships may map problem(s) to goal(s), or goal(s) to problem(s). To accommodate these different orientations, the Problem message allows representation of goals that are functionally dependent upon a problem, and the Goal message allow representation of problems that are functionally dependent on a goal. We recognize that institutions will decide on one or the other of the methodologies based on practice preferences.

12.6 ONGOING ISSUES

In both the Problem and Goal segments a field named "Episode of Care" has been included. This field is intended to accommodate an entity defined by consensus business rules that defines an episode of care.

Individual businesses/applications must be cognizant of and able to handle data integrity issues that may arise from the fact that problem lists and goal lists may not have a single owner of record. This chapter does not address the need for joint data ownership (of problem and goal data) between two or more front-end clinical applications concurrently supporting patient care in real-time. From a data integrity perspective, problem/goal data must be sourced/originated (and thus owned) by a single application only - for example, a front-end clinical application (source) transmitting to a back-end repository application. This is not recognized to be within the current scope of the Patient Care Committee; therefore, this concern will be submitted to the Control/Query group for further debate.

The Patient Care Technical Committee will be addressing the following issues in the future:

1. The relationship between one problem and another problem.
2. The relationships between problems, goals and related patient care events.

A.

Data Definition Tables

A.1 INTRODUCTION

The HL7 specifications were prepared using a data dictionary database. Certain outputs from that database are included in the chapters that define the abstract messages. These outputs list the data fields and field notes associated with a segment. Other Data Dictionary outputs are included here to comprise appendix A. These include:

- a list of the message types that comprise the HL7 protocol
- a list of the segment IDs and segment names
- a list of each data element organized alphabetically by name
- a list of the IDs and names of all tables of coded values
- a cross reference of table IDs vs. data element names
- a list of the contents of each table
- a list of all data element names.

A.2 MESSAGE TYPES

Message	Description	Chapter
ACK	General acknowledgment message	2
ADR	ADT response	3
ADT	ADT message	3
BAR	Add/change billing account	6
CRM	Clinical study registration message	7
CSU	Unsolicited study data message	7
DFT	Detail financial transactions	6
DOC	Document response	9
DSR	Display response	2
EDR	Enhanced display response	2
EQQ	Embedded query language query	2
ERP	Event replay response	2
MDM	Medical document management	9

Appendix A: Data Definition Tables

Message	Description	Chapter
MFD	Master files delayed application acknowledgment	8
MFK	Master files application acknowledgment	8
MFN	Master files notification	8
MFQ	Master files query	8
MFR	Master files response	8
OMD	Dietary order	4
OMN	Nonstock requisition order message	4
OMS	Stock requisition order message	4
ORD	Dietary order - General order acknowledgment message	4
ORF	Query for results of observation	7
ORM	Pharmacy/treatment order message	4
ORN	Nonstock requisition - General order acknowledgment message	4
ORR	General order response message response to any ORM	4
ORS	Stock requisition - General order acknowledgment message	4
ORU	Unsolicited transmission of an observation message	7
OSQ	Query response for order status	4
OSR	Query response for order status	4
PEX	Product experience message	7
PGL	Patient goal message	12
PIN	Patient insurance information	11
PPG	Patient pathway message (goal-oriented)	12
PPP	Patient pathway message (problem-oriented)	12
PPR	Patient problem message	12
PPT	Patient pathway goal-oriented response	12
PPV	Patient goal response	12
PRR	Patient problem response	12
PTR	Patient pathway problem-oriented response	12
QCK	Deferred query	2
QRY	Query, original mode	3
R0R	Pharmacy/treatment order response	4
RAR	Pharmacy/treatment administration information	4
RAS	Pharmacy/treatment administration message	4
RCI	Return clinical information	11
RCL	Return clinical list	11
RDE	Pharmacy/treatment encoded order message	4

Appendix A: Data Definition Tables

Message	Description	Chapter
RDO	Pharmacy/treatment order message	4
RDR	Pharmacy/treatment dispense information	4
RDS	Pharmacy/treatment dispense message	4
REF	Patient referral	11
RER	Pharmacy/treatment encoded order information	4
RGR	Pharmacy/treatment dose information	4
RGV	Pharmacy/treatment give message	4
RPA	Return patient authorization	11
RPI	Return patient information	11
RPL	Return patient display list	11
RPR	Return patient list	11
RQA	Request patient authorization	11
RQC	Request clinical information	11
RQI	Request patient information	11
RQP	Request patient demographics	11
RQQ	Event replay query	2
RRA	Pharmacy/treatment administration acknowledgement message	4
RRD	Pharmacy/treatment dispense acknowledgment message	4
RRE	Pharmacy/treatment encoded order acknowledgment message	4
RRG	Pharmacy/treatment give acknowledgment message	4
RRI	Return referral information	11
RRO	ORR message for pharmacy/treatment	4
SIU	Schedule information unsolicited	10
SPQ	Stored procedure request	2
SQM	Schedule query message	10
SQR	Schedule query response	10
SRM	Schedule request message	10
SRR	Scheduled request response	10
SUR	Summary product experience report	7
TBR	Tabular data response	2
UDM	Unsolicited display update message	2
VQQ	Virtual table query	2
VXQ	Query for vaccination record	4
VXR	Vaccination record response	4
VXU	Unsolicited vaccination record update	4
VXX	Response for vaccination query with multiple PID matches	4

A.3 SEGMENTS

Segment	Description	Chapter
ACC	Accident segment	6
ADD	Addendum segment	2
AIG	Appointment information - general resource segment	10
AIL	Appointment information - location resource segment	10
AIP	Appointment information - personnel resource segment	10
AIS	Appointment information - service segment	10
AL1	Patient allergy information segment	3
APR	Appointment preferences segment	10
ARQ	Appointment request segment	10
AUT	Authorization information segment	11
BHS	Batch header segment	2
BLG	Billing segment	4
BTS	Batch trailer segment	2
CDM	Charge description master segment	8
CM0	Clinical study master segment	8
CM1	Clinical study phase master segment	8
CM2	Clinical study schedule master segment	8
CSP	Clinical study phase segment	7
CSR	Clinical study registration segment	7
CSS	Clinical study data schedule segment	7
CTD	Contact data segment	11
CTI	Clinical trial identification segment	7
DB1	Disability segment	3
DG1	Diagnosis segment	6
DRG	Diagnosis related group segment	6
DSC	Continuation pointer segment	2
DSP	Display data segment	2
EQL	Embedded query language segment	2
ERQ	Event replay query segment	2
ERR	Error segment	2
EVN	Event type segment	3
FAC	Facility segment	7
FHS	File header segment	2
FT1	Financial transaction segment	6
FTS	File trailer segment	2

Segment	Description	Chapter
GOL	Goal detail segment	12
GT1	Guarantor segment	6
IN1	Insurance segment	6
IN2	Insurance additional information segment	6
IN3	Insurance additional information, certification segment	6
LCC	Location charge code segment	8
LCH	Location characteristic segment	8
LDP	Location department segment	8
LOC	Location identification segment	8
LRL	Location relationship segment	8
MFA	Master file acknowledgment segment	8
MFE	Master file entry segment	8
MFI	Master file identification segment	8
MRG	Merge patient information segment	3
MSA	Message acknowledgment segment	2
MSH	Message header segment	2
NCK	System clock segment	C
NK1	Next of kin / associated parties segment	3
NPU	Bed status update segment	3
NSC	Status change segment	C
NST	Statistics segment	C
NTE	Notes and comments segment	2
OBR	Observation request segment	4,7
OBX	Observation/result segment	7,9
ODS	Dietary orders, supplements, and preferences segment	4
ODT	Diet tray instructions segment	4
OM1	General segment - fields that apply to most observations	8
OM2	Numeric observation segment	8
OM3	Categorical test/observation segment	8
OM4	Observations that require specimens segment	8
OM5	Observation batteries (sets) segment	8
OM6	Observations that are calculated from other observations segment	8
ORC	Common order segment	4
PCR	Possible causal relationship segment	7
PD1	Patient additional demographic segment	3

Appendix A: Data Definition Tables

Segment	Description	Chapter
PDC	Product detail country segment	7
PEO	Product experience observation segment	7
PES	Product experience sender segment	7
PID	Patient identification segment	3
PR1	Procedures segment	6
PRA	Practitioner detail segment	8
PRB	Problem detail segment	12
PRC	Pricing segment	8
PRD	Provider data segment	11
PSH	Product summary header segment	7
PTH	Pathway segment	12
PV1	Patient visit segment	3
PV2	Patient visit - additional information segment	3
QAK	Query acknowledgment segment	2
QRD	Original-style query definition segment	2
QRF	Original style query filter segment	2,4
RDF	Table row definition segment	2
RDT	Table row data segment	2
RF1	Referral information segment	11
RGS	Resource group segment	10
ROL	Role segment	12
RQ1	Requisition detail-1 segment	4
RQD	Requisition detail segment	4
RXA	Pharmacy/treatment administration segment	4
RXC	Pharmacy/treatment component order segment	4
RXD	Pharmacy/treatment dispense segment	4
RXE	Pharmacy/treatment encoded order segment	4
RXG	Pharmacy/treatment give segment	4
RXO	Pharmacy/treatment order segment	4
RXR	Pharmacy/treatment route segment	4
SCH	Schedule activity information segment	10
SPR	Stored procedure request definition segment	2
STF	Staff identification segment	8
TXA	Transcription document header segment	9
UB1	UB82 data segment	6
UB2	UB92 data segment	6

Segment	Description	Chapter
URD	Results/update definition segment	2
URS	Unsolicited selection segment	2
VAR	Variance segment	12
VTQ	Virtual table query request segment	2

A.4 HL7 AND USER-DEFINED TABLES - ALPHABETIC SORT

Type	Table	Name	Chapter
HL7	0078	Abnormal flags	7
HL7	0155	Accept/application acknowledgment conditions	2
User	0050	Accident code	6
User	0129	Accommodation code	3
User	0117	Account status	3
HL7	0008	Acknowledgment code	2
HL7	0323	Action code	4
HL7	0251	Action taken in response to the event	7
HL7	0183	Active/inactive	8
HL7	0190	Address type	2
HL7	0164	Administration device	4
HL7	0165	Administration method	4
HL7	0163	Administrative site	4,7
User	0007	Admission type	3
User	0023	Admit source	3
User	0339	Advanced beneficiary notice code	4
User	0128	Allergy severity	3
User	0127	Allergy type	3
HL7	0161	Allow substitution	4
User	0279	Allow substitution codes	10
HL7	0356	Alternate character set handling scheme	2
HL7	0211	Alternate character sets	2
User	0009	Ambulatory status	3
User	0193	Amount class	6
User	0146	Amount type	6
User	0019	Anesthesia code	6
User	0317	Annotations	7
User	0345	Appeal reason	6

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Type	Table	Name	Chapter
User	0276	Appointment reason codes	10
User	0277	Appointment type codes	10
User	0363	Assigning authority	
User	0135	Assignment of benefits	6
User	0347	Auto accident state	6
User	0021	Bad debt agency code	6
User	0304	Bed	2
User	0116	Bed status	3
User	0293	Billing category	8
User	0022	Billing status	6
User	0307	Building	2
HL7	0252	Causality observations	7
User	0288	Census tract	
User	0346	Certification agency	6
HL7	0337	Certification status	8
User	0269	Charge on indicator	8
HL7	0122	Charge type	4
User	0032	Charge/price indicator	3
HL7	0061	Check digit scheme	2
User	0171	Citizenship	3,6
User	0297	CN ID source	2
User	0364	Comment type	2
User	0042	Company plan code	6
HL7	0322	Completion status	4
User	0043	Condition code	6
User	0177	Confidentiality code	8
User	0059	Consent code	6
User	0222	Contact reason	3,6
User	0131	Contact role	3,11
User	0044	Contract code	3
User	0173	Coordination of benefits	6
User	0289	County code	2
User	0045	Courtesy code	3
User	0309	Coverage type	6
HL7	0298	CP range type	2

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Type	Table	Name	Chapter
User	0046	Credit rating	3
HL7	0353	CWE statuses	2
HL7	0158	Date/time selection qualifier	2
User	0149	Day type	6
HL7	0267	Days of the week	2,8
HL7	0107	Deferred response type	2
User	0360	Degree	2
HL7	0102	Delayed acknowledgment type	2
User	0111	Delete account code	3
User	0184	Department	8
User	0049	Department code	6
User	0319	Department cost center	4
User	0342	Dependent of military recipient	6
HL7	0170	Derived specimen	8
User	0228	Diagnosis classification	6
User	0051	Diagnosis code	6
HL7	0053	Diagnosis coding method	6
HL7	0359	Diagnosis priority	6
User	0052	Diagnosis type	6
User	0055	Diagnostic related group	6
HL7	0074	Diagnostic service section ID	4,7
HL7	0159	Diet code specification type	4
User	0114	Diet type	3
User	0334	Disabled person	3
User	0112	Discharge disposition	3
User	0113	Discharged to location	3
HL7	0321	Dispense method	4
HL7	0273	Document availability status	9
HL7	0271	Document completion status	9
HL7	0272	Document confidentiality status	9
HL7	0275	Document storage status	9
User	0270	Document type	9
User	0056	DRG grouper review code	6
User	0229	DRG payor	6
User	0255	Duration categories	8

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Type	Table	Name	Chapter
User	0144	Eligibility source	6
User	0328	Employee classification	3
User	0139	Employer information data	6
User	0066	Employment status	6
HL7	0299	Encoding	2
HL7	0225	Escort required	4,7
User	0189	Ethnic group	6
HL7	0240	Event consequence	7
HL7	0239	Event expected	7
HL7	0237	Event qualification	7
User	0062	Event reason	3
HL7	0236	Event reported to	7
HL7	0238	Event seriousness	7
HL7	0003	Event type	2,12
HL7	0331	Facility type	7
User	0024	Fee schedule	6
HL7	0178	File level event code	8
User	0278	Filler status codes	10
User	0064	Financial class	3
User	0308	Floor	2
User	0249	Generic product	7
User	0341	Guarantor credit rating code	6
User	0068	Guarantor type	6
User	0295	Handicap	3
User	0069	Hospital service	3
User	0203	Identifier type	2
HL7	0243	Identity may be divulged	7
HL7	0253	Indirect exposure mechanism	7
User	0232	Insurance company contact reason	6
User	0285	Insurance company ID codes	11
User	0072	Insurance plan ID	6
User	0073	Interest rate code	3
User	0320	Item natural account code	4
User	0327	Job code/class	3
User	0311	Job status	3

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Type	Table	Name	Chapter
HL7	0254	Kind of quantity	8
User	0263	Level of care	8
User	0220	Living arrangement	6
User	0223	Living dependency	6
User	0315	Living will	3
User	0324	Location characteristic ID	8
User	0264	Location department	8
User	0261	Location equipment	8
User	0325	Location relationship ID	8
User	0306	Location status	2
User	0137	Mail claim party	6
User	0118	Major diagnostic category	6
HL7	0227	Manufacturers of vaccines (code=MVX)	4
User	0002	Marital status	3
HL7	0330	Marketing basis	7
HL7	0175	Master file identifier code	8
HL7	0357	Message error condition codes	2
HL7	0354	Message structure	2
HL7	0076	Message type	2
User	0181	MFN record-level error return	8
User	0343	Military handicapped program	6
User	0141	Military rank/grade	6
User	0140	Military service	6
User	0142	Military status	6
HL7	0290	MIME base64 encoding characters	2
User	0259	Modality	8
HL7	0200	Name type	2
HL7	4000	Name/address representation	2
User	0300	Namespace ID	2
User	0212	Nationality	3,6
HL7	0080	Nature of abnormal testing	7
HL7	0257	Nature of challenge	8
User	0174	Nature of test/observation	8
User	0333	Network change type	C
HL7	0332	Network source type	C

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Type	Table	Name	Chapter
User	0233	Non-concur code/description	6
User	0143	Non-covered insurance code	6
HL7	0085	Observation result status codes interpretation	7
User	0350	Occurrence code	6
User	0351	Occurrence span	6
User	0188	Operator ID	3
HL7	0119	Order control codes and their meaning	4
HL7	0038	Order status	4
User	0316	Organ donor	3
User	0204	Organizational name type	2
User	0083	Outlier type	6
User	0268	Override	8
User	0218	Patient charge adjustment code	6
User	0004	Patient class	3
User	0260	Patient location type	8
HL7	0241	Patient outcome	7
User	0216	Patient status code	3
User	0018	Patient type	3,6
User	0344	Patient's relationship to insured	6
User	0148	Penalty type	6
User	0084	Performed by code	6
User	0305	Person location type	2
User	0010	Physician ID	2
User	0086	Plan type	6
User	0302	Point of care	2
User	0312	Policy scope	6
User	0313	Policy source	6
User	0147	Policy type	6
User	0186	Practitioner category	8
User	0358	Practitioner group	8
User	0338	Practitioner ID number type	8
User	0087	Preadmit test indicator	3
User	0150	Pre-certification patient type	6
HL7	0185	Preferred method of contact	8
HL7	0205	Price type	2

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Type	Table	Name	Chapter
HL7	0355	Primary key value type	8
User	0296	Primary language	3
HL7	0242	Primary observer's qualification	7
HL7	0027	Priority	8
User	0262	Privacy level	8
HL7	0287	Problem/goal action code	12
User	0088	Procedure code	6
User	0340	Procedure code modifier	6
User	0089	Procedure coding method	6
User	0230	Procedure functional type	6
User	0133	Procedure practitioner identifier code type	6
HL7	0103	Processing ID	2
HL7	0207	Processing mode	2
HL7	0168	Processing priority	8
User	0246	Product available for inspection	7
User	0245	Product problem	7
HL7	0248	Product source	7
HL7	0187	Provider billing	8
User	0286	Provider role	11
User	0349	PSRO/UR approval indicator	6
User	0215	Publicity code	3,6
User	0213	Purge status	3
HL7	0126	Quantity limited request	2
HL7	0329	Quantity method	7
HL7	0091	Query priority	2
HL7	0208	Query response status	2
HL7	0108	Query results level	2
HL7	0106	Query/response format code	2
User	0005	Race	3,6
User	0092	Re-admission indicator	3
HL7	0180	Record-level event code	8
User	0219	Recurring Service Code	3
User	0284	Referral category	11
User	0282	Referral disposition	11
User	0280	Referral priority	11

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Type	Table	Name	Chapter
User	0336	Referral reason	11
User	0283	Referral status	11
User	0281	Referral type	11
HL7	0250	Relatedness assessment	7
HL7	0210	Relational conjunction	2
HL7	0209	Relational operator	2
User	0063	Relationship	3,6
HL7	0258	Relationship modifier	8
User	0093	Release information	6
User	0006	Religion	3,6
User	0335	Repeat pattern	2
HL7	0109	Report priority	2
HL7	0235	Report source	7
HL7	0234	Report timing	7
HL7	0169	Reporting priority	8
HL7	0121	Response flag	4
HL7	0179	Response level	8
HL7	0123	Result status	4,7
User	0303	Room	2
User	0145	Room type	6
HL7	0162	Route of administration	4
HL7	0166	RX component type	4
User	0152	Second opinion documentation received	6
User	0151	Second opinion status	6
HL7	0206	Segment action code	2
User	0361	Sending/receiving application	2
User	0362	Sending/receiving facility	2
User	0115	Servicing facility	3
User	0001	Sex	3
User	0244	Single use device	7
HL7	0105	Source of comment	2
User	0214	Special program codes	3
User	0348	Special program indicator	6
User	0265	Specialty type	8
HL7	0065	Specimen action code	4,7

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Type	Table	Name	Chapter
HL7	0070	Specimen source codes	4,7
User	0182	Staff type	8
HL7	0247	Status of evaluation	7
User	0231	Student status	6
HL7	0167	Substitution status	4
HL7	0291	Subtype of referenced data	2
HL7	0202	Telecommunication equipment type	2
HL7	0201	Telecommunication use code	2
HL7	0256	Time delay post challenge	8
User	0294	Time selection criteria parameter class codes	2,10
User	0132	Transaction code	6,8
User	0017	Transaction type	6
User	0110	Transfer to bad debt code	3
HL7	0224	Transport arranged	4,7
HL7	0124	Transportation mode	4,7
HL7	0160	Tray type	4
User	0098	Type of agreement	6
HL7	0191	Type of referenced data	2,9
HL7	0301	Universal ID type	2
HL7	0292	Vaccines administered (code = CVX) (parenteral, unless oral is noted)	4
User	0153	Value code	6
HL7	0125	Value type	7
HL7	0104	Version ID	2
User	0172	Veterans military status	3
User	0099	VIP indicator	3
User	0326	Visit indicator	3
User	0217	Visit priority code	3
User	0130	Visit user code	3
HL7	0048	What subject filter	2
HL7	0100	When to charge	4
HL7	0156	Which date/time qualifier	2
HL7	0157	Which date/time status qualifier	2
HL7	0136	Yes/no indicator	2,4

A.5 HL7 AND USER-DEFINED TABLES - NUMERIC SORT

Type	Table	Name	Value	Description
User	0001	Sex		
	0001		F	Female
	0001		M	Male
	0001		O	Other
	0001		U	Unknown
User	0002	Marital Status		
	0002		A	Separated
	0002		D	Divorced
	0002		M	Married
	0002		S	Single
	0002		W	Widowed
HL7	0003	Event Type		
	0003		A01	ADT/ACK - Admit/visit notification
	0003		A02	ADT/ACK - Transfer a patient
	0003		A03	ADT/ACK - Discharge/end visit
	0003		A04	ADT/ACK - Register a patient
	0003		A05	ADT/ACK - Pre-admit a patient
	0003		A06	ADT/ACK - Change an outpatient to an inpatient
	0003		A07	ADT/ACK - Change an inpatient to an outpatient
	0003		A08	ADT/ACK - Update patient information
	0003		A09	ADT/ACK - Patient departing - tracking
	0003		A10	ADT/ACK - Patient arriving - tracking
	0003		A11	ADT/ACK - Cancel admit/visit notification
	0003		A12	ADT/ACK - Cancel transfer
	0003		A13	ADT/ACK - Cancel discharge/end visit
	0003		A14	ADT/ACK - Pending admit
	0003		A15	ADT/ACK - Pending transfer
	0003		A16	ADT/ACK - Pending discharge
	0003		A17	ADT/ACK - Swap patients
	0003		A18	ADT/ACK - Merge patient information
	0003		A19	QRY/ADR - Patient query
	0003		A20	ADT/ACK - Bed status update
	0003		A21	ADT/ACK - Patient goes on a "leave of absence"
	0003		A22	ADT/ACK - Patient returns from a "leave of absence"

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Type	Table	Name	Value	Description
	0003		A23	ADT/ACK - Delete a patient record
	0003		A24	ADT/ACK - Link patient information
	0003		A25	ADT/ACK - Cancel pending discharge
	0003		A26	ADT/ACK - Cancel pending transfer
	0003		A27	ADT/ACK - Cancel pending admit
	0003		A28	ADT/ACK - Add person information
	0003		A29	ADT/ACK - Delete person information
	0003		A30	ADT/ACK - Merge person information
	0003		A31	ADT/ACK - Update person information
	0003		A32	ADT/ACK - Cancel patient arriving - tracking
	0003		A33	ADT/ACK - Cancel patient departing - tracking
	0003		A34	ADT/ACK - Merge patient information - patient ID only
	0003		A35	ADT/ACK - Merge patient information - account number only
	0003		A36	ADT/ACK - Merge patient information - patient ID and account number
	0003		A37	ADT/ACK - Unlink patient information
	0003		A38	ADT/ACK - Cancel pre-admit
	0003		A39	ADT/ACK - Merge person – patient ID
	0003		A40	ADT/ACK - Merge patient – patient identifier list
	0003		A41	ADT/ACK - Merge account - patient account number
	0003		A42	ADT/ACK - Merge visit - visit number
	0003		A43	ADT/ACK - Move patient information – patient identifier list
	0003		A44	ADT/ACK - Move account information - patient account number
	0003		A45	ADT/ACK - Move visit information - visit number
	0003		A46	ADT/ACK - Change patient ID
	0003		A47	ADT/ACK - Change patient identifier list
	0003		A48	ADT/ACK - Change alternate patient ID
	0003		A49	ADT/ACK - Change patient account number
	0003		A50	ADT/ACK - Change visit number
	0003		A51	ADT/ACK - Change alternate visit ID
	0003		C01	CRM - Register a patient on a clinical trial
	0003		C02	CRM - Cancel a patient registration on clinical trial (for clerical mistakes only)
	0003		C03	CRM - Correct/update registration information

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Type	Table	Name	Value	Description
	0003		C04	CRM - Patient has gone off a clinical trial
	0003		C05	CRM - Patient enters phase of clinical trial
	0003		C06	CRM - Cancel patient entering a phase (clerical mistake)
	0003		C07	CRM - Correct/update phase information
	0003		C08	CRM - Patient has gone off phase of clinical trial
	0003		C09	CSU - Automated time intervals for reporting, like monthly
	0003		C10	CSU - Patient completes the clinical trial
	0003		C11	CSU - Patient completes a phase of the clinical trial
	0003		C12	CSU - Update/correction of patient order/result information
	0003		CNQ	QRY/EQQ/SPQ/VQQ/RQQ - Cancel query
	0003		I01	RQI/RPI - Request for insurance information
	0003		I02	RQI/RPL - Request/receipt of patient selection display list
	0003		I03	RQI/RPR - Request/receipt of patient selection list
	0003		I04	RQD/RPI - Request for patient demographic data
	0003		I05	RQC/RCI - Request for patient clinical information
	0003		I06	RQC/RCL - Request/receipt of clinical data listing
	0003		I07	PIN/ACK - Unsolicited insurance information
	0003		I08	RQA/RPA - Request for treatment authorization information
	0003		I09	RQA/RPA - Request for modification to an authorization
	0003		I10	RQA/RPA - Request for resubmission of an authorization
	0003		I11	RQA/RPA - Request for cancellation of an authorization
	0003		I12	REF/RRI - Patient referral
	0003		I13	REF/RRI - Modify patient referral
	0003		I14	REF/RRI - Cancel patient referral
	0003		I15	REF/RRI - Request patient referral status
	0003		M01	MFN/MFK - Master file not otherwise specified (for backward compatibility only)
	0003		M02	MFN/MFK - Master file – staff practitioner
	0003		M03	MFN/MFK - Master file - test/observation (for backward compatibility only)
	0003		varies	MFQ/MFR - Master files query (use event same as asking for e.g., M05 - location)
	0003		M04	MFN/MFK - Master files charge description
	0003		M05	MFN/MFK - Patient location master file

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Type	Table	Name	Value	Description
	0003		M06	MFN/MFK - Clinical study with phases and schedules master file
	0003		M07	MFN/MFK - Clinical study without phases but with schedules master file
	0003		M08	MFN/MFK - Test/observation (numeric) master file
	0003		M09	MFN/MFK - Test/observation (categorical) master file
	0003		M10	MFN/MFK - Test /observation batteries master file
	0003		M11	MFN/MFK - Test/calculated observations master file
	0003		O01	ORM - Order message (also RDE, RDS, RGV, RAS)
	0003		O02	ORR - Order response (also RRE, RRD, RRG, RRA)
	0003		P01	BAR/ACK - Add patient accounts
	0003		P02	BAR/ACK - Purge patient accounts
	0003		P03	DFT/ACK - Post detail financial transaction
	0003		P04	QRY/DSP – Generate bill and A/R statements
	0003		P05	BAR/ACK – Update account
	0003		P06	BAR/ACK - End account
	0003		P07	PEX - Unsolicited initial individual product experience report
	0003		P08	PEX - Unsolicited update individual product experience report
	0003		P09	SUR - Summary product experience report
	0003		PC1	PPR - PC/ Problem Add
	0003		PC2	PPR - PC/ Problem Update
	0003		PC3	PPR - PC/ Problem Delete
	0003		PC4	QRY - PC/ Problem Query
	0003		PC5	PRR - PC/ Problem Response
	0003		PC6	PGL - PC/ Goal Add
	0003		PC7	PGL - PC/ Goal Update
	0003		PC8	PGL - PC/ Goal Delete
	0003		PC9	QRY - PC/ Goal Query
	0003		PCA	PPV - PC/ Goal Response
	0003		PCB	PPP - PC/ Pathway (Problem-Oriented) Add
	0003		PCC	PPP - PC/ Pathway (Problem-Oriented) Update
	0003		PCD	PPP - PC/ Pathway (Problem-Oriented) Delete
	0003		PCE	QRY - PC/ Pathway (Problem-Oriented) Query
	0003		PCF	PTR - PC/ Pathway (Problem-Oriented) Query Response
	0003		PCG	PPG - PC/ Pathway (Goal-Oriented) Add

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Type	Table	Name	Value	Description
	0003		PCH	PPG - PC/ Pathway (Goal-Oriented) Update
	0003		PCJ	PPG - PC/ Pathway (Goal-Oriented) Delete
	0003		PCK	QRY - PC/ Pathway (Goal-Oriented) Query
	0003		PCL	PPT - PC/ Pathway (Goal-Oriented) Query Response
	0003		Q01	QRY/DSR - Query sent for immediate response
	0003		Q02	QRY/QCK - Query sent for deferred response
	0003		Q03	DSR/ACK - Deferred response to a query
	0003		Q04	EQQ – Embedded query language query
	0003		Q05	UDM/ACK - Unsolicited display update message
	0003		Q06	OSQ/OSR - Query for order status
	0003		Q07	VQQ – Virtual table query
	0003		Q08	SPQ – Stored procedure request
	0003		Q09	RQQ – event replay query
	0003		R01	ORU/ACK - Unsolicited transmission of an observation message
	0003		R02	QRY - Query for results of observation
	0003		R03	QRY/DSR Display-oriented results, query/unsol. update (for backward compatibility only)
	0003		R04	ORF - Response to query; transmission of requested observation
	0003		R05	QRY/DSR - query for display results
	0003		R06	UDM - unsolicited update/display results
	0003		R07	EDR – enhanced display response
	0003		R08	TBR – tabular data response
	0003		R09	ERP – event replay response
	0003		RAR	RAR - Pharmacy administration information query response
	0003		RDR	RDR - Pharmacy dispense information query response
	0003		RER	RER - Pharmacy encoded order information query response
	0003		RGR	RGR - Pharmacy dose information query response
	0003		R0R	R0R - Pharmacy prescription order query response
	0003		S01	SRM/SRR - Request new appointment booking
	0003		S02	SRM/SRR - Request appointment rescheduling
	0003		S03	SRM/SRR - Request appointment modification
	0003		S04	SRM/SRR - Request appointment cancellation
	0003		S05	SRM/SRR - Request appointment discontinuation

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Type	Table	Name	Value	Description
	0003		S06	SRM/SRR - Request appointment deletion
	0003		S07	SRM/SRR - Request addition of service/resource on appointment
	0003		S08	SRM/SRR - Request modification of service/resource on appointment
	0003		S09	SRM/SRR - Request cancellation of service/resource on appointment
	0003		S10	SRM/SRR - Request discontinuation of service/resource on appointment
	0003		S11	SRM/SRR - Request deletion of service/resource on appointment
	0003		S12	SIU/ACK - Notification of new appointment booking
	0003		S13	SIU/ACK - Notification of appointment rescheduling
	0003		S14	SIU/ACK - Notification of appointment modification
	0003		S15	SIU/ACK - Notification of appointment cancellation
	0003		S16	SIU/ACK - Notification of appointment discontinuation
	0003		S17	SIU/ACK - Notification of appointment deletion
	0003		S18	SIU/ACK - Notification of addition of service/resource on appointment
	0003		S19	SIU/ACK - Notification of modification of service/resource on appointment
	0003		S20	SIU/ACK - Notification of cancellation of service/resource on appointment
	0003		S21	SIU/ACK - Notification of discontinuation of service/resource on appointment
	0003		S22	SIU/ACK - Notification of deletion of service/resource on appointment
	0003		S23	SIU/ACK - Notification of blocked schedule time slot(s)
	0003		S24	SIU/ACK - Notification of opened ("unblocked") schedule time slot(s)
	0003		S25	SQM/SQR - Schedule query message and response
	0003		S26	SIU/ACK Notification that patient did not show up for schedule appointment
	0003		T01	MDM/ACK - Original document notification
	0003		T02	MDM/ACK - Original document notification and content
	0003		T03	MDM/ACK - Document status change notification
	0003		T04	MDM/ACK - Document status change notification and content
	0003		T05	MDM/ACK - Document addendum notification
	0003		T06	MDM/ACK - Document addendum notification and content

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Type	Table	Name	Value	Description
	0003		T07	MDM/ACK - Document edit notification
	0003		T08	MDM/ACK - Document edit notification and content
	0003		T09	MDM/ACK - Document replacement notification
	0003		T10	MDM/ACK - Document replacement notification and content
	0003		T11	MDM/ACK - Document cancel notification
	0003		T12	QRY/DOC - Document query
	0003		V01	VXQ - Query for vaccination record
	0003		V02	VXX - Response to vaccination query returning multiple PID matches
	0003		V03	VXR - Vaccination record response
	0003		V04	VXU - Unsolicited vaccination record update
	0003		W01	ORU - Waveform result, unsolicited transmission of requested information
	0003		W02	QRF - Waveform result, response to query
User	0004	Patient Class		
	0004		E	Emergency
	0004		I	Inpatient
	0004		O	Outpatient
	0004		P	Preadmit
	0004		R	Recurring patient
	0004		B	Obstetrics
User	0005	Race		
User	0006	Religion		
User	0007	Admission type		
	0007		A	Accident
	0007		E	Emergency
	0007		L	Labor and Delivery
	0007		R	Routine
HL7	0008	Acknowledgment code		
	0008		AA	Original mode: Application Accept - Enhanced mode: Application acknowledgment: Accept
	0008		AE	Original mode: Application Error - Enhanced mode: Application acknowledgment: Error
	0008		AR	Original mode: Application Reject - Enhanced mode: Application acknowledgment: Reject
	0008		CA	Enhanced mode: Accept acknowledgment: Commit Accept

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
	0008		CE	Enhanced mode: Accept acknowledgment: Commit Error
	0008		CR	Enhanced mode: Accept acknowledgment: Commit Reject
User	0009	Ambulatory status		
	0009		A0	No functional limitations
	0009		A1	Ambulates with assistive device
	0009		A2	Wheelchair/stretchers bound
	0009		A3	Comatose; non-responsive
	0009		A4	Disoriented
	0009		A5	Vision impaired
	0009		A6	Hearing impaired
	0009		A7	Speech impaired
	0009		A8	Non-English speaking
	0009		A9	Functional level unknown
	0009		B1	Oxygen therapy
	0009		B2	Special equipment (tubes, IVs, catheters)
	0009		B3	Amputee
	0009		B4	Mastectomy
	0009		B5	Paraplegic
	0009		B6	Pregnant
User	0010	Physician ID		
User	0017	Transaction type		
	0017		CG	Charge
	0017		CD	Credit
	0017		PY	Payment
	0017		AJ	Adjustment
User	0018	Patient type		
User	0019	Anesthesia code		
User	0021	Bad debt agency code		
User	0022	Billing status		
User	0023	Admit source		
	0023		1	Physician referral
	0023		2	Clinic referral
	0023		3	HMO referral
	0023		4	Transfer from a hospital
	0023		5	Transfer from a skilled nursing facility

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Type	Table	Name	Value	Description
	0023		6	Transfer from another health care facility
	0023		7	Emergency room
	0023		8	Court/law enforcement
	0023		9	Information not available
User	0024	Fee Schedule		
HL7	0027	Priority		
	0027		S	Stat (do immediately)
	0027		A	As soon as possible (a priority lower than stat)
	0027		R	Routine
	0027		P	Preoperative (to be done prior to surgery)
	0027		T	Timing critical (do as near as possible to requested time)
User	0032	Charge/price indicator		
HL7	0038	Order status		
	0038		A	Some, but not all, results available
	0038		CA	Order was canceled
	0038		CM	Order is completed
	0038		DC	Order was discontinued
	0038		ER	Error, order not found
	0038		HD	Order is on hold
	0038		IP	In process, unspecified
	0038		RP	Order has been replaced
	0038		SC	In process, scheduled
User	0042	Company plan code		
User	0043	Condition code		
	0043		01	Military service related
	0043		02	Condition is employment related
	0043		03	Patient covered by insurance not reflected here
	0043		04	HMO enrollee
	0043		05	Lien has been filed
	0043		06	ESRD patient in first 18 months of entitlement covered by employer group health insurance
	0043		07	Treatment of non-terminal condition for hospice patient
	0043		08	Beneficiary would not provide information concerning other insurance coverage
	0043		09	Neither patient nor spouse is employed
	0043		10	Patient and/or spouse is employed but no EGHP exists

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Type	Table	Name	Value	Description
	0043		11	Disabled beneficiary but no LGHP
	0043		12 ... 16	Payer codes.
	0043		18	Maiden name retained
	0043		19	Child retains mother's name
	0043		20	Beneficiary requested billing
	0043		21	Billing for Denial Notice
	0043		26	VA eligible patient chooses to receive services in a medicare certified facility
	0043		27	Patient referred to a sole community hospital for a diagnostic laboratory test
	0043		28	Patient and/or spouse's EGHP is secondary to Medicare
	0043		29	Disabled beneficiary and/or family member's LGHP is secondary to Medicare
	0043		31	Patient is student (full time-day)
	0043		32	Patient is student (cooperative/work study program)
	0043		33	Patient is student (full time-night)
	0043		34	Patient is student (Part time)
	0043		36	General care patient in a special unit
	0043		37	Ward accommodation as patient request
	0043		38	Semi-private room not available
	0043		39	Private room medically necessary
	0043		40	Same day transfer
	0043		41	Partial hospitalization
	0043		46	Non-availability statement on file
	0043		48	Psychiatric residential treatment centers for children and adolescents
	0043		55	SNF bed not available
	0043		56	Medical appropriateness
	0043		57	SNF readmission
	0043		60	Day outlier
	0043		61	Cost outlier
	0043		62	Payer code
	0043		66	Provider does not wish cost outlier payment
	0043		67	Beneficiary elects not to use life time reserve (LTR) days
	0043		68	Beneficiary elects to use life time reserve (LTR) days
	0043		70	Self-administered EPO
	0043		71	Full care in unit

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
	0043		72	Self-care in unit
	0043		73	Self-care training
	0043		74	Home
	0043		75	Home - 100% reimbursement
	0043		76	Back-up in facility dialysis
	0043		77	Provider accepts or is obligated/required due to a contractual arrangement or law to accept payment by a primary payer as payment in full
	0043		78	New coverage not implemented by HMO
	0043		79	Corf services provided off-site
	0043		80	Pregnant
User	0044	Contract code		
User	0045	Courtesy code		
User	0046	Credit rating		
HL7	0048	What subject filter		
	0048		ADV	Advice/diagnosis
	0048		ANU	Nursing unit lookup (returns patients in beds, excluding empty beds)
	0048		APN	Patient name lookup
	0048		APP	Physician lookup
	0048		ARN	Nursing unit lookup (returns patients in beds, including empty beds)
	0048		APM	Medical record number query, returns visits for a medical record number
	0048		APA	Account number query, return matching visit
	0048		CAN	Cancel. Used to cancel a query
	0048		DEM	Demographics
	0048		FIN	Financial
	0048		GOL	Goals
	0048		MRI	Most recent inpatient
	0048		MRO	Most recent outpatient
	0048		NCK	Network clock
	0048		NSC	Network status change
	0048		NST	Network statistic
	0048		ORD	Order
	0048		OTH	Other
	0048		PRB	Problems

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
	0048		PRO	Procedure
	0048		RES	Result
	0048		RAR	Pharmacy administration information
	0048		RER	Pharmacy encoded order information
	0048		RDR	Pharmacy dispense information
	0048		RGR	Pharmacy give information
	0048		ROR	Pharmacy prescription information
	0048		SAL	All schedule related information, including open slots, booked slots, blocked slots
	0048		SBK	Booked slots on the identified schedule
	0048		SBL	Blocked slots on the identified schedule
	0048		SOP	Open slots on the identified schedule
	0048		SSA	Time slots available for a single appointment
	0048		SSR	Time slots available for a recurring appointment
	0048		STA	Status
	0048		VXI	Vaccine Information
User	0049	Department codes		
User	0050	Accident code		
User	0051	Diagnosis code		
User	0052	Diagnosis type		
	0052		A	Admitting
	0052		W	Working
	0052		F	Final
HL7	0053	Diagnosis coding method		
User	0055	Diagnostic related group		
User	0056	DRG grouper review code		
User	0059	Consent code		
HL7	0061	Check digit scheme		
	0061		M10	Mod 10 algorithm
	0061		M11	Mod 11 algorithm
	0061		ISO	ISO 7064: 1983
	0061		NPI	Check digit algorithm in the US National Provider Identifier
User	0062	Event reason		
	0062		01	Patient request
	0062		02	Physician order

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
	0062		03	Census management
User	0063	Relationship		
User	0064	Financial class		
HL7	0065	Specimen action code		
	0065		A	Add ordered tests to the existing specimen
	0065		G	Generated order; reflex order
	0065		L	Lab to obtain specimen from patient
	0065		O	Specimen obtained by service other than Lab
	0065		P	Pending specimen; Order sent prior to delivery
	0065		R	Revised order
	0065		S	Schedule the tests specified below
User	0066	Employment status		
User	0068	Guarantor type		
User	0069	Hospital service		
HL7	0070	Specimen source codes		
	0070		ABS	Abscess
	0070		AMN	Amniotic fluid
	0070		ASP	Aspirate
	0070		BPH	Basophils
	0070		BIFL	Bile fluid
	0070		BLDA	Blood arterial
	0070		BBL	Blood bag
	0070		BLDC	Blood capillary
	0070		BPU	Blood product unit
	0070		BLDV	Blood venous
	0070		BON	Bone
	0070		BRTH	Breath (use EXHLD)
	0070		BRO	Bronchial
	0070		BRN	Burn
	0070		CALC	Calculus (=Stone)
	0070		CDM	Cardiac muscle
	0070		CNL	Cannula
	0070		CTP	Catheter tip
	0070		CSF	Cerebral spinal fluid
	0070		CVM	Cervical mucus

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Type	Table	Name	Value	Description
	0070		CVX	Cervix
	0070		COL	Colostrum
	0070		CBLD	Cord blood
	0070		CNJT	Conjunctiva
	0070		CUR	Curettage
	0070		CYST	Cyst
	0070		DIAF	Dialysis fluid
	0070		DOSE	Dose med or substance
	0070		DRN	Drain
	0070		DUFL	Duodenal fluid
	0070		EAR	Ear
	0070		EARW	Ear wax (cerumen)
	0070		ELT	Electrode
	0070		ENDC	Endocardium
	0070		ENDM	Endometrium
	0070		EOS	Eosinophils
	0070		RBC	Erythrocytes
	0070		EYE	Eye
	0070		EXHLD	Exhaled gas (=breath)
	0070		FIB	Fibroblasts
	0070		FLT	Filter
	0070		FIST	Fistula
	0070		FLU	Body fluid, unsp
	0070		GAS	Gas
	0070		GAST	Gastric fluid/contents
	0070		GEN	Genital
	0070		GENC	Genital cervix
	0070		GENL	Genital lochia
	0070		GENV	Genital vaginal
	0070		HAR	Hair
	0070		IHG	Inhaled Gas
	0070		IT	Intubation tube
	0070		ISLT	Isolate
	0070		LAM	Lamella
	0070		WBC	Leukocytes

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Type	Table	Name	Value	Description
	0070		LN	Line
	0070		LNA	Line arterial
	0070		LVN	Line venous
	0070		LIQ	Liquid NOS
	0070		LYM	Lymphocytes
	0070		MAC	Macrophages
	0070		MAR	Marrow
	0070		MEC	Meconium
	0070		MBLD	Menstrual blood
	0070		MLK	Milk
	0070		MILK	Breast milk
	0070		NAIL	Nail
	0070		NOS	Nose (nasal passage)
	0070		ORH	Other
	0070		PAFL	Pancreatic fluid
	0070		PAT	Patient
	0070		PRT	Peritoneal fluid /ascites
	0070		PLC	Placenta
	0070		PLAS	Plasma
	0070		PLB	Plasma bag
	0070		PLR	Pleural fluid (thoracentesis fld)
	0070		PMN	Polymorphonuclear neutrophils
	0070		PPP	Platelet poor plasma
	0070		PRP	Platelet rich plasma
	0070		PUS	Pus
	0070		RT	Route of medicine
	0070		SAL	Saliva
	0070		SEM	Seminal fluid
	0070		SER	Serum
	0070		SKN	Skin
	0070		SKM	Skeletal muscle
	0070		SPRM	Spermatozoa
	0070		SPT	Sputum
	0070		SPTC	Sputum - coughed
	0070		SPTT	Sputum - tracheal aspirate

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Type	Table	Name	Value	Description
	0070		STON	Stone (use CALC)
	0070		STL	Stool = Fecal
	0070		SWT	Sweat
	0070		SNV	Synovial fluid (Joint fluid)
	0070		TEAR	Tears
	0070		THRT	Throat
	0070		THRB	Thrombocyte (platelet)
	0070		TISS	Tissue
	0070		TISG	Tissue gall bladder
	0070		TLGI	Tissue large intestine
	0070		TLNG	Tissue lung
	0070		TISPL	Tissue placenta
	0070		TSMI	Tissue small intestine
	0070		TISU	Tissue ulcer
	0070		TUB	Tube NOS
	0070		ULC	Ulcer
	0070		UMB	Umbilical blood
	0070		UMED	Unknown medicine
	0070		URTH	Urethra
	0070		UR	Urine
	0070		URC	Urine clean catch
	0070		URT	Urine catheter
	0070		URNS	Urine sediment
	0070		USUB	Unknown substance
	0070		VOM	Vomitus
	0070		BLD	Whole blood
	0070		BDY	Whole body
	0070		WAT	Water
	0070		WICK	Wick
	0070		WND	Wound
	0070		WNDA	Wound abscess
	0070		WNDE	Wound exudate
	0070		WNDD	Wound drainage
	0070		XXX	To be specified in another part of the 422.3.10070message
User	0072	Insurance plan ID		

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Type	Table	Name	Value	Description
User	0073	Interest rate code		
HL7	0074	Diagnostic service section ID		
	0074		AU	Audiology
	0074		BG	Blood Gases
	0074		BLB	Blood Bank
	0074		CUS	Cardiac Ultrasound
	0074		CTH	Cardiac Catheterization
	0074		CT	CAT Scan
	0074		CH	Chemistry
	0074		CP	Cytopathology
	0074		EC	Electrocardiac (e.g., EKG, EEC, Holter)
	0074		EN	Electroneuro (EEG, EMG, EP, PSG)
	0074		HM	Hematology
	0074		ICU	Bedside ICU Monitoring
	0074		IMM	Immunology
	0074		LAB	Laboratory
	0074		MB	Microbiology
	0074		MCB	Mycobacteriology
	0074		MYC	Mycology
	0074		NMS	Nuclear medicine scan
	0074		NMR	Nuclear magnetic resonance
	0074		NRS	Nursing service measures
	0074		OUS	OB Ultrasound
	0074		OT	Occupational Therapy
	0074		OTH	Other
	0074		OSL	Outside Lab
	0074		PHR	Pharmacy
	0074		PT	Physical Therapy
	0074		PHY	Physician (Hx. Dx, admission note, etc.)
	0074		PF	Pulmonary function
	0074		RAD	Radiology
	0074		RX	Radiograph
	0074		RUS	Radiology ultrasound
	0074		RC	Respiratory Care (therapy)
	0074		RT	Radiation therapy

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Type	Table	Name	Value	Description
	0074		SR	Serology
	0074		SP	Surgical Pathology
	0074		TX	Toxicology
	0074		VUS	Vascular Ultrasound
	0074		VR	Virology
	0074		XRC	Cineradiograph
HL7	0076	Message type		
	0076		ACK	General acknowledgment message
	0076		ADR	ADT response
	0076		ARD	Ancillary RPT (display) (for backward compatibility only)
	0076		ADT	ADT message
	0076		BAR	Add/change billing account
	0076		CRM	Clinical study registration
	0076		CSU	Unsolicited clinical study data
	0076		DFT	Detail financial transaction
	0076		DOC	Document query
	0076		DSR	Display response
	0076		EDR	Enhanced display response
	0076		EQQ	Embedded query language query
	0076		ERP	Event replay response
	0076		MCF	Delayed acknowledgment
	0076		MDM	Documentation message
	0076		MFN	Master files notification
	0076		MFK	Master files application acknowledgment
	0076		MFD	Master files delayed application acknowledgment
	0076		MFQ	Master files query
	0076		MFR	Master files query response
	0076		NMD	Network management data
	0076		NMQ	Network management query
	0076		NMR	Network management response
	0076		ORF	Observ. result/record response
	0076		ORM	Order message
	0076		ORR	Order acknowledgment message
	0076		ORU	Observ result/unsolicited
	0076		OSQ	Order status query

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Type	Table	Name	Value	Description
	0076		OSR	Order status response
	0076		PEX	Product experience
	0076		PGL	Patient goal
	0076		PIN	Patient insurance information
	0076		PPG	Patient pathway (goal-oriented) message
	0076		PPP	Patient pathway (problem-oriented) message
	0076		PPR	Patient problem
	0076		PPT	Patient pathway (goal oriented) response
	0076		PPV	Patient goal response
	0076		PRR	Patient problem response
	0076		PTR	Patient pathway (problem-oriented) response
	0076		QCK	Query general acknowledgment
	0076		QRY	Query, original mode
	0076		RAR	Pharmacy administration information
	0076		RAS	Pharmacy administration message
	0076		RCI	Return clinical information
	0076		RCL	Return clinical list
	0076		RDE	Pharmacy encoded order message
	0076		RDR	Pharmacy dispense information
	0076		RDS	Pharmacy dispense message
	0076		REF	Patient referral
	0076		RER	Pharmacy encoded order information
	0076		RGV	Pharmacy give message
	0076		RGR	Pharmacy dose information
	0076		ROR	Pharmacy prescription order response
	0076		RPA	Return patient authorization
	0076		RPI	Return patient information
	0076		RPL	Return patient display list
	0076		RPR	Return patient list
	0076		RQA	Request patient authorization
	0076		RQC	Request clinical information
	0076		RQI	Request patient information
	0076		RQP	Request patient demographics
	0076		RQQ	Event replay query
	0076		RRA	Pharmacy administration acknowledgment

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Type	Table	Name	Value	Description
	0076		RRD	Pharmacy dispense acknowledgment
	0076		RRE	Pharmacy encoded order acknowledgment
	0076		RRG	Pharmacy give acknowledgment
	0076		RRI	Return patient referral
	0076		SIU	Schedule information unsolicited
	0076		SPQ	Stored procedure request
	0076		SQM	Schedule query
	0076		SQR	Schedule query response
	0076		SRM	Schedule request
	0076		SRR	Scheduled request response
	0076		SUR	Summary product experience report
	0076		TBR	Tabular data response
	0076		UDM	Unsolicited display message
	0076		VQQ	Virtual table query
	0076		VXQ	Query for vaccination record
	0076		VXX	Vaccination query response with multiple PID matches
	0076		VXR	Vaccination query record response
	0076		VXU	Unsolicited vaccination record update
HL7	0078	Abnormal flags		
	0078		L	Below low normal
	0078		H	Above high normal
	0078		LL	Below lower panic limits
	0078		HH	Above upper panic limits
	0078		<	Below absolute low-off instrument scale
	0078		>	Above absolute high-off instrument scale
	0078		N	Normal (applies to non-numeric results)
	0078		A	Abnormal (applies to non-numeric results)
	0078		AA	Very abnormal (applies to non-numeric units, analogous to panic limits for numeric units)
	0078		null	No range defined, or normal ranges don't apply
	0078		U	Significant change up
	0078		D	Significant change down
	0078		B	Better--use when direction not relevant
	0078		W	Worse--use when direction not relevant
	0078	For microbiology susceptibilities only:		
	0078		S	Susceptible*

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Type	Table	Name	Value	Description
	0078		R	Resistant*
	0078		I	Intermediate*
	0078		MS	Moderately susceptible*
	0078		VS	Very susceptible*
HL7	0080	Nature of abnormal testing		
	0080		A	An age-based population
	0080		N	None - generic normal range
	0080		R	A race-based population
	0080		S	A sex-based population
User	0083	Outlier type		
	0083		D	Outlier days
	0083		C	Outlier cost
User	0084	Performed by code		
HL7	0085	Observation result status codes interpretation		
	0085		C	Record coming over is a correction and thus replaces a final result
	0085		D	Deletes the OBX record
	0085		F	Final results; Can only be changed with a corrected result.
	0085		I	Specimen in lab; results pending
	0085		N	Not asked; used to affirmatively document that the observation identified in the OBX was not sought when the universal service ID in OBR-4 implies that it would be sought.
	0085		O	Order detail description only (no result)
	0085		P	Preliminary results
	0085		R	Results entered -- not verified
	0085		S	Partial results
	0085		X	Results cannot be obtained for this observation
	0085		U	Results status change to final without retransmitting results already sent as 'preliminary.' E.g., radiology changes status from preliminary to final
	0085		W	Post original as wrong, e.g., transmitted for wrong patient
User	0086	Plan type		
User	0087	Preadmit test indicator		
User	0088			
User	0089	Procedure coding method		
HL7	0091	Query priority		

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Type	Table	Name	Value	Description
	0091		D	Deferred
	0091		I	Immediate
User	0092	Re-admission indicator		
User	0093	Release information		
	0093		Y	Yes
	0093		N	No
User	0098	Type of agreement		
	0098		S	Standard
	0098		U	Unified
	0098		M	Maternity
User	0099	VIP indicator		
HL7	0100	When to charge		
	0100		D	On discharge
	0100		O	On receipt of order
	0100		R	At time service is completed
	0100		S	At time service is started
	0100		T	At a designated date/time
HL7	0102	Delayed acknowledgment type		
	0102		D	Message received, stored for later processing
	0102		F	Acknowledgment after processing
HL7	0103	Processing ID		
	0103		D	Debugging
	0103		P	Production
	0103		T	Training
HL7	0104	Version ID		
	0104		2.0	Release 2.0
	0104		2.0D	Demo 2.0
	0104		2.1	Release 2. 1
	0104		2.2	Release 2.2
	0104		2.3	Release 2.3
	0104		2.3.1	Release 2.3.1
	0104		2.3.2	Release 2.3.2
HL7	0105	Source of comment		
	0105		L	Ancillary (filler) department is source of comment
	0105		P	Orderer (placer) is source of comment

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Type	Table	Name	Value	Description
	0105		O	Other system is source of comment
HL7	0106	Query/response format code		
	0106		D	Response is in display format
	0106		D	Response is in display format
	0106		R	Response is in record-oriented format
	0106		R	Response is in record-oriented format
	0106		T	Response is in tabular format
	0106		T	Response is in tabular format
HL7	0107	Deferred response type		
	0107		B	Before the Date/Time specified
	0107		L	Later than the Date/Time specified
HL7	0108	Query results level		
	0108		O	Order plus order status
	0108		R	Results without bulk text
	0108		S	Status only
	0108		T	Full results
HL7	0109	Report priority		
	0109		R	Routine
	0109		S	Stat
User	0110	Transfer to bad debt code		
User	0111	Delete account code		
User	0112	Discharge disposition		
	0112		01	Discharged to home or self care (routine discharge)
	0112		02	Discharged/transferred to another short term general hospital for inpatient care
	0112		03	Discharged/transferred to skilled nursing facility (SNF)
	0112		04	Discharged/transferred to an intermediate care facility (ICF)
	0112		05	Discharged/transferred to another type of institution for inpatient care or referred for outpatient services to another institution
	0112		06	Discharged/transferred to home under care of organized home health service organization
	0112		07	Left against medical advice or discontinued care
	0112		08	Discharged/transferred to home under care of Home IV provider
	0112		09	Admitted as an inpatient to this hospital
	0112		10	Discharge to be defined at state level, if necessary

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Type	Table	Name	Value	Description
	0112		11	Discharge to be defined at state level, if necessary
	0112		12	Discharge to be defined at state level, if necessary
	0112		13	Discharge to be defined at state level, if necessary
	0112		14	Discharge to be defined at state level, if necessary
	0112		15	Discharge to be defined at state level, if necessary
	0112		16	Discharge to be defined at state level, if necessary
	0112		17	Discharge to be defined at state level, if necessary
	0112		18	Discharge to be defined at state level, if necessary
	0112		19	Discharge to be defined at state level, if necessary
	0112		20	Expired
	0112		21	Expired to be defined at state level, if necessary
	0112		22	Expired to be defined at state level, if necessary
	0112		23	Expired to be defined at state level, if necessary
	0112		24	Expired to be defined at state level, if necessary
	0112		25	Expired to be defined at state level, if necessary
	0112		26	Expired to be defined at state level, if necessary
	0112		27	Expired to be defined at state level, if necessary
	0112		28	Expired to be defined at state level, if necessary
	0112		29	Expired to be defined at state level, if necessary
	0112		30	Still patient or expected to return for outpatient services
	0112		31	Still patient to be defined at state level, if necessary
	0112		32	Still patient to be defined at state level, if necessary
	0112		33	Still patient to be defined at state level, if necessary
	0112		34	Still patient to be defined at state level, if necessary
	0112		35	Still patient to be defined at state level, if necessary
	0112		36	Still patient to be defined at state level, if necessary
	0112		37	Still patient to be defined at state level, if necessary
	0112		38	Still patient to be defined at state level, if necessary
	0112		39	Still patient to be defined at state level, if necessary
	0112		40	Expired at home
	0112		41	Expired in a medical facility; e.g., hospital, SNF, ICF, or free standing hospice
	0112		42	Expired - place unknown
User	0113	Discharged to location		
User	0114	Diet type		
User	0115	Serving facility		

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Type	Table	Name	Value	Description
User	0116	Bed status		
	0116		C	Closed
	0116		H	Housekeeping
	0116		O	Occupied
	0116		U	Unoccupied
	0116		K	Contaminated
	0116		I	Isolated
User	0117	Account status		
User	0118	Major diagnostic category		
HL7	0119	Order control codes and their meaning		
	0119		NW	New order (O01)
	0119		OK	Order accepted & OK (O02)
	0119		UA	Unable to accept order (O02/ORR)
	0119		CA	Cancel order request (O01)
	0119		OC	Order canceled (O01)
	0119		CR	Canceled as requested (O02)
	0119		UC	Unable to cancel (O02)
	0119		DC	Discontinue order request (O01)
	0119		OD	Order discontinued (O01)
	0119		DR	Discontinued as requested (O02)
	0119		UD	Unable to discontinue (O02)
	0119		HD	Hold order request (O01)
	0119		OH	Order held (O01)
	0119		UH	Unable to put on hold (O02)
	0119		HR	On hold as requested (O02)
	0119		RL	Release previous hold (O01)
	0119		OE	Order released (O01)
	0119		OR	Released as requested
	0119		UR	Unable to release (O02)
	0119		RP	Order replace request (O01)
	0119		RU	Replaced unsolicited (O01)
	0119		RO	Replacement order (O01)
	0119		RQ	Replaced as requested (O02)
	0119		UM	Unable to replace (O02)
	0119		PA	Parent order (O01/ORU)

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Type	Table	Name	Value	Description
	0119		CH	Child order (O01/ORU)
	0119		XO	Change order request (O01)
	0119		XX	Order changed, unsol. (O01)
	0119		UX	Unable to change (O02)
	0119		XR	Changed as requested (O02)
	0119		DE	Data errors (O01/O02)
	0119		RE	Observations to follow (O01/R01)
	0119		RR	Request received (O02)
	0119		SR	Response to send order status request (O02(Q06)
	0119		SS	Send order status request (O01)
	0119		SC	Status changed (O01)
	0119		SN	Send order number (O01)
	0119		NA	Number assigned (O02)
	0119		CN	Combined result (R01)
	0119		RF	Refill order request (O01)
	0119		AF	Order refill request approval (O02)
	0119		DF	Order refill request denied (O02)
	0119		FU	Order refilled, unsolicited (O01)
	0119		OF	Order refilled as requested (O02)
	0119		UF	Unable to refill (O02)
	0119		LI	Link order to patient care problem or goal
	0119		UN	Unlink order from patient care problem or goal
HL7	0121	Response flag		
	0121		E	Report exceptions only
	0121		R	Same as E, also Replacement and Parent-Child
	0121		D	Same as R, also other associated segments
	0121		F	Same as D, plus confirmations explicitly
	0121		N	Only the MSA segment is returned
HL7	0122	Charge type		
	0122		CH	Charge
	0122		CO	Contract
	0122		CR	Credit
	0122		DP	Department
	0122		GR	Grant
	0122		NC	No Charge

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Type	Table	Name	Value	Description
	0122		PC	Professional
	0122		RS	Research
HL7	0123	Result status		
	0123		O	Order received; specimen not yet received
	0123		I	No results available; specimen received, procedure incomplete
	0123		S	No results available; procedure scheduled, but not done
	0123		A	Some, but not all, results available
	0123		P	Preliminary: A verified early result is available, final results not yet obtained
	0123		C	Correction to results
	0123		C	Correction to results
	0123		R	Results stored; not yet verified
	0123		F	Final results; results stored and verified. Can only be changed with a corrected result.
	0123		X	No results available; Order canceled.
	0123		Y	No order on record for this test. (Used only on queries)
	0123		Y	No order on record for this test. (Used only on queries)
	0123		Z	No record of this patient. (Used only on queries)
HL7	0124	Transportation mode		
	0124		CART	Cart - patient travels on cart or gurney
	0124		PORT	The examining device goes to patient's location
	0124		WALK	Patient walks to diagnostic service
	0124		WHLC	Wheelchair
HL7	0125	Value type		
	0125		AD	Address
	0125		CE	Coded Entry
	0125		CF	Coded Element With Formatted Values
	0125		CK	Composite ID With Check Digit
	0125		CN	Composite ID And Name
	0125		CP	Composite Price
	0125		CX	Extended Composite ID With Check Digit
	0125		DT	Date
	0125		ED	Encapsulated Data
	0125		FT	Formatted Text (Display)
	0125		MO	Money
	0125		NM	Numeric

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Type	Table	Name	Value	Description
	0125		PN	Person Name
	0125		RP	Reference Pointer
	0125		SN	Structured Numeric
	0125		ST	String Data.
	0125		TM	Time
	0125		TN	Telephone Number
	0125		TS	Time Stamp (Date & Time)
	0125		TX	Text Data (Display)
	0125		XAD	Extended Address
	0125		XCN	Extended Composite Name And Number For Persons
	0125		XON	Extended Composite Name And Number For Organizations
	0125		XPN	Extended Person Name
	0125		XTN	Extended Telecommunications Number
HL7	0126	Quantity limited request		
	0126		CH	Characters
	0126		LI	Lines
	0126		PG	Pages
	0126		RD	Records
	0126		ZO	Locally defined
User	0127	Allergy type		
	0127		DA	Drug allergy
	0127		FA	Food allergy
	0127		MA	Miscellaneous allergy
	0127		MC	Miscellaneous contraindication
User	0128	Allergy severity		
	0128		SV	Severe
	0128		MO	Moderate
	0128		MI	Mild
User	0129	Accommodation code		
User	0130	Visit user code		
User	0131	Contact role		
User	0132	Transaction code		
User	0133	Procedure practitioner identifier code type		
	0133		AN	Anesthesiologist
	0133		PR	Procedure MD (surgeon)

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
	0133		RD	Radiologist
	0133		RS	Resident
	0133		NP	Nurse Practitioner
	0133		CM	Certified Nurse Midwife
	0133		SN	Scrub Nurse
	0133		PS	Primary Surgeon
	0133		AS	Assistant Surgeon
User	0135	Assignment of benefits		
	0135		Y	Yes
	0135		N	No
	0135		M	Modified assignment
HL7	0136	Yes/no indicator		
	0136		Y	Yes
	0136		N	No
User	0137	Mail claim party		
	0137		E	Employer
	0137		G	Guarantor
	0137		I	Insurance company
	0137		O	Other
	0137		P	Patient
User	0139	Employer information data		
User	0140	Military service		
	0140		USA	U.S. Army
	0140		USN	U.S. Navy
	0140		USAF	U.S. Air Force
	0140		USMC	U.S. Marines
	0140		USCG	U.S. Coast Guard
	0140		USPHS	U.S. Public Health Service
	0140		NOAA	National Oceanic and Atmospheric Administration
	0140		NATO	North Atlantic Treaty Organization
User	0141	Military rank/guide		
	0141		E1 ... E9	Enlisted
	0141		O1 ... O10	Officers
	0141		W1 ... W4	Warrant Officers
User	0142	Military status		

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
	0142		ACT	Active duty
	0142		RET	Retired
	0142		DEC	Deceased
User	0143	Non-covered insurance code		
User	0144	Eligibility source		
	0144		1	Insurance company
	0144		2	Employer
	0144		3	Insured presented policy
	0144		4	Insured presented card
	0144		5	Signed statement on file
	0144		6	Verbal information
	0144		7	None
User	0145	Room type		
	0145		PRI	Private room
	0145		2PRI	Second private room
	0145		SPR	Semi-private room
	0145		2SPR	Second semi-private room
	0145		ICU	Intensive care unit
	0145		2ICU	Second intensive care unit
User	0146	Amount type		
	0146		DF	Differential
	0146		LM	Limit
	0146		PC	Percentage
	0146		RT	Rate
	0146		UL	Unlimited
User	0147	Policy type		
	0147		ANC	Ancillary
	0147		2ANC	Second ancillary
	0147		MMD	Major medical
	0147		2MMD	Second major medical
	0147		3MMD	Third major medical
User	0148	Penalty type		
	0148		AT	Currency amount
	0148		PC	Percentage
User	0149	Day type		

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
	0149		AP	Approved
	0149		DE	Denied
	0149		PE	Pending
User	0150	Pre-certification patient type		
	0150		ER	Emergency
	0150		IPE	Inpatient elective
	0150		OPE	Outpatient elective
	0150		UR	Urgent
User	0151	Second opinion status		
User	0152	Second opinion documentation received		
User	0153	Value code		
	0153		01	Most common semi-private rate
	0153		02	Hospital has no semi-private rooms
	0153		04	Inpatient professional component charges which are combined billed
	0153		05	Professional component included in charges and also billed separate to carrier
	0153		06	Medicare blood deductible
	0153		08	Medicare life time reserve amount in the first calendar year
	0153		09	Medicare co-insurance amount in the first calendar year
	0153		10	Lifetime reserve amount in the second calendar year
	0153		11	Co-insurance amount in the second calendar year
	0153		12	Working aged beneficiary/spouse with employer group health plan
	0153		13	ESRD beneficiary in a Medicare coordination period with an employer group health plan
	0153		14	No Fault including auto/other
	0153		15	Worker's Compensation
	0153		16	PHS, or other federal agency
	0153		17	Payer code
	0153		21	Catastrophic
	0153		22	Surplus
	0153		23	Recurring monthly incode
	0153		24	Medicaid rate code
	0153		30	Pre-admission testing
	0153		31	Patient liability amount

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
	0153		37	Pints of blood furnished
	0153		38	Blood deductible pints
	0153		39	Pints of blood replaced
	0153		40	New coverage not implemented by HMO (for inpatient service only)
	0153		41	Black lung
	0153		42	VA
	0153		43	Disabled beneficiary under age 64 with LGHP
	0153		44	Amount provider agreed to accept from primary payer when this amount is less than charges but higher than payment received,, then a Medicare secondary payment is due
	0153		45	Accident hour
	0153		46	Number of grace days
	0153		47	Any liability insurance
	0153		48	Hemoglobin reading
	0153		49	Hematocrit reading
	0153		50	Physical therapy visits
	0153		51	Occupational therapy visits
	0153		52	Speech therapy visits
	0153		53	Cardiac rehab visits
	0153		56	Skilled nurse - home visit hours
	0153		57	Home health aide - home visit hours
	0153		58	Arterial blood gas
	0153		59	Oxygen saturation
	0153		60	HHA branch MSA
	0153		67	Peritoneal dialysis
	0153		68	EPO-drug
	0153		70 ... 72	Payer codes
	0153		75 ... 79	Payer codes
	0153		80	Psychiatric visits
	0153		81	Visits subject to co-payment
	0153		A1	Deductible payer A
	0153		A2	Coinsurance payer A
	0153		A3	Estimated responsibility payer A
	0153		X0	Service excluded on primary policy
	0153		X4	Supplemental coverage

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
HL7	0155	Accept/application acknowledgment conditions		
	0155		AL	Always
	0155		NE	Never
	0155		ER	Error/reject conditions only
	0155		SU	Successful completion only
HL7	0156	White date/time qualifier		
	0156		ANY	Any date/time within a range
	0156		COL	Collection date/time, equivalent to film or sample collection date/time
	0156		ORD	Order date/time
	0156		RCT	Specimen receipt date/time, receipt of specimen in filling ancillary (Lab)
	0156		REP	Report date/time, report date/time at filing ancillary (i.e., Lab)
	0156		SCHED	Schedule date/time
HL7	0157	Which date/time status qualifier		
	0157		ANY	Any status
	0157		CFN	Current final value, whether final or corrected
	0157		COR	Corrected only (no final with corrections)
	0157		FIN	Final only (no corrections)
	0157		PRE	Preliminary
	0157		REP	Report completion date/time
HL7	0158	Date/time selection qualifier		
	0158		IST	First value within range
	0158		ALL	All values within the range
	0158		LST	Last value within the range
	0158		REV	All values within the range returned in reverse chronological order (This is the default if not otherwise specified.)
HL7	0159	Diet code specification type		
	0159		D	Diet
	0159		S	Supplement
	0159		P	Preference
HL7	0160	Tray type		
	0160		EARLY	Early tray
	0160		LATE	Late tray
	0160		GUEST	Guest tray

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
	0160		NO	No tray
	0160		MSG	Tray message only
HL7	0161	Allow substitution		
	0161		N	Substitutions are NOT authorized. (This is the default - null.)
	0161		G	Allow generic substitutions.
	0161		T	Allow therapeutic substitutions
HL7	0162	Route of administration		
	0162		AP	Apply Externally
	0162		B	Buccal
	0162		DT	Dental
	0162		EP	Epidural
	0162		ET	Endotrachial Tube*
	0162		GTT	Gastrostomy Tube
	0162		GU	GU Irrigant
	0162		IMR	Immerse (Soak) Body Part
	0162		IA	Intra-arterial
	0162		IB	Intrabursal
	0162		IC	Intracardiac
	0162		ICV	Intracervical (uterus)
	0162		ID	Intradermal
	0162		IH	Inhalation
	0162		IHA	Intrahepatic Artery
	0162		IM	Intramuscular
	0162		IN	Intranasal
	0162		IO	Intraocular
	0162		IP	Intraperitoneal
	0162		IS	Intrasynovial
	0162		IT	Intrathecal
	0162		IU	Intrauterine
	0162		IV	Intravenous
	0162		MTH	Mouth/Throat
	0162		MM	Mucous Membrane
	0162		NS	Nasal
	0162		NG	Nasogastric
	0162		NP	Nasal Prongs*

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
	0162		NT	Nasotrachial Tube
	0162		OP	Ophthalmic
	0162		OT	Otic
	0162		OTH	Other/Miscellaneous
	0162		PF	Perfusion
	0162		PO	Oral
	0162		PR	Rectal
	0162		RM	Rebreather Mask*
	0162		SD	Soaked Dressing
	0162		SC	Subcutaneous
	0162		SL	Sublingual
	0162		TP	Topical
	0162		TRA	Tracheostomy*
	0162		TD	Transdermal
	0162		TL	Translingual
	0162		UR	Urethral
	0162		VG	Vaginal
	0162		VM	Ventimask
	0162		WND	Wound
HL7	0163	Administrative site		
	0163		BE	Bilateral Ears
	0163		OU	Bilateral Eyes
	0163		BN	Bilateral Nares
	0163		BU	Buttock
	0163		CT	Chest Tube
	0163		LA	Left Arm
	0163		LAC	Left Anterior Chest
	0163		LACF	Left Antecubital Fossa
	0163		LD	Left Deltoid
	0163		LE	Left Ear
	0163		LEJ	Left External Jugular
	0163		OS	Left Eye
	0163		LF	Left Foot
	0163		LG	Left Gluteus Medius
	0163		LH	Left Hand

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
	0163		LIJ	Left Internal Jugular
	0163		LLAQ	Left Lower Abd Quadrant
	0163		LLFA	Left Lower Forearm
	0163		LMFA	Left Mid Forearm
	0163		LN	Left Naris
	0163		LPC	Left Posterior Chest
	0163		LSC	Left Subclavian
	0163		LT	Left Thigh
	0163		LUA	Left Upper Arm
	0163		LUAQ	Left Upper Abd Quadrant
	0163		LUFA	Left Upper Forearm
	0163		LVG	Left Ventragluteal
	0163		LVL	Left Vastus Lateralis
	0163		NB	Nebulized
	0163		PA	Perianal
	0163		PERIN	Perineal
	0163		RA	Right Arm
	0163		RAC	Right Anterior Chest
	0163		RAC	Right Anterior Chest
	0163		RACF	Right Antecubital Fossa
	0163		RD	Right Deltoid
	0163		RE	Right Ear
	0163		REJ	Right External Jugular
	0163		OD	Right Eye
	0163		RF	Right Foot
	0163		RG	Right Gluteus Medius
	0163		RH	Right Hand
	0163		RIJ	Right Internal Jugular
	0163		RLAQ	Rt Lower Abd Quadrant
	0163		RLFA	Right Lower Forearm
	0163		RMFA	Right Mid Forearm
	0163		RN	Right Naris
	0163		RPC	Right Posterior Chest
	0163		RSC	Right Subclavian
	0163		RT	Right Thigh

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
	0163		RUA	Right Upper Arm
	0163		RUAQ	Right Upper Abd Quadrant
	0163		RUFA	Right Upper Forearm
	0163		RVL	Right Vastus Lateralis
	0163		RVG	Right Ventragluteal
HL7	0164	Administration device		
	0164		AP	Applicator
	0164		BT	Buretrol
	0164		HL	Heparin Lock
	0164		IPPB	IPPB
	0164		IVP	IV Pump
	0164		IVS	IV Soluset
	0164		MI	Metered Inhaler
	0164		NEB	Nebulizer
	0164		PCA	PCA Pump
HL7	0165	Administration method		
	0165		CH	Chew
	0165		DI	Dissolve
	0165		DU	Dust
	0165		IF	Infiltrate
	0165		IS	Insert
	0165		IR	Irrigate
	0165		IVPB	IV Piggyback
	0165		IVP	IV Push
	0165		NB	Nebulized
	0165		PT	Pain
	0165		PF	Perfuse
	0165		SH	Shampoo
	0165		SO	Soak
	0165		WA	Wash
	0165		WI	Wipe
HL7	0166	RX component type		
	0166		B	Base
	0166		A	Additive
HL7	0167	Substitution status		

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
	0167		N	No substitute was dispensed. This is equivalent to the default (null) value.
	0167		G	A generic substitution was dispensed.
	0167		T	A therapeutic substitution was dispensed.
	0167		0	No product selection indicated
	0167		1	Substitution not allowed by prescriber
	0167		2	Substitution allowed - patient requested product dispensed
	0167		3	Substitution allowed - pharmacist selected product dispensed
	0167		4	Substitution allowed - generic drug not in stock
	0167		5	Substitution allowed - brand drug dispensed as a generic
	0167		7	Substitution not allowed - brand drug mandated by law
	0167		8	Substitution allowed - generic drug not available in marketplace
HL7	0168	Processing priority		
	0168		S	Stat (do immediately)
	0168		A	As soon as possible (a priority lower than stat)
	0168		R	Routine
	0168		P	Preoperative (to be done prior to surgery)
	0168		T	Timing critical (do as near as possible to requested time)
	0168		C	Measure continuously (e.g., arterial line blood pressure)
	0168		B	Do at bedside or portable (may be used with other codes)
HL7	0169	Reporting priority		
	0169		C	Call back results
	0169		R	Rush reporting
HL7	0170	Derived specimen		
	0170		P	Parent Observation
	0170		C	Child Observation
	0170		N	Not Applicable
User	0171	Citizenship		
User	0172	Veterans military status		
User	0173	Coordination of benefits		
	0173		CO	Coordination
	0173		IN	Independent
User	0174	Nature of test/observation		

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
	0174		P	Profile or battery consisting of many independent atomic observations (e.g., SMA12, electrolytes), usually done at one instrument on one specimen
	0174		F	Functional procedure that may consist of one or more interrelated measures (e.g., glucose tolerance test, creatine clearance), usually done at different times and/or on different specimens
	0174		A	Atomic test/observation (test code or treatment code)
	0174		S	Superset--a set of batteries or procedures ordered under a single code unit but processed as separate batteries (e.g., routines = CBC, UA, electrolytes)
	0174		C	Single observation calculated via a rule or formula from other independent observations (e.g., Alveolar--arterial ratio, cardiac output)
HL7	0175	Master file identifier code		
	0175		CDM	Charge description master file
	0175		CMA	Clinical study with phases and scheduled master file
	0175		CMB	Clinical study without phases but with scheduled master file
	0175		LOC	Location master file
	0175		OMA	Numerical observation master file
	0175		OMB	Categorical observation master file
	0175		OMC	Observation batteries master file
	0175		OMD	Calculated observations master file
	0175		PRA	Practitioner master file
	0175		STF	Staff master file
User	0177	Confidentiality code		
	0177		V	Very restricted
	0177		R	Restricted
	0177		U	Usual control
	0177		EMP	Employee
	0177		UWM	Unwed mother
	0177		VIP	Very important person or celebrity
	0177		PSY	Psychiatric patient
	0177		AID	AIDS patient
	0177		HIV	HIV(+) patient
	0177		ETH	Alcohol/drug treatment patient
HL7	0178	File level event code		
	0178		REP	Replace current version of this master file with the version contained in this message

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
	0178		UPD	Change file records as defined in the record-level event codes for each record that follows
HL7	0179	Response level		
	0179		NE	Never. No application-level response needed
	0179		ER	Error/Reject conditions only. Only MFA segments denoting errors must be returned via the application-level acknowledgment for this message
	0179		AL	Always. All MFA segments (whether denoting errors or not) must be returned via the application-level acknowledgment message
	0179		SU	Success. Only MFA segments denoting success must be returned via the application-level acknowledgment for this message
HL7	0180	Record-level event code		
	0180		MAD	Add record to master file
	0180		MDL	Delete record from master file
	0180		MUP	Update record for master file
	0180		MDC	Deactivate: discontinue using record in master file, but do not delete from database
	0180		MAC	Reactivate deactivated record
User	0181	MFN record-level error return		
	0181		S	Successful posting of the record defined by the MFE segment
	0181		U	Unsuccessful posting of the record defined by the MFE segment
User	0182	Staff type		
HL7	0183	Active/inactive		
	0183		A	Active Staff
	0183		I	Inactive Staff
User	0184	Department		
HL7	0185	Preferred method of contact		
	0185		H	Home Phone Number
	0185		O	Office Phone Number
	0185		F	FAX Number
	0185		C	Cellular Phone Number
	0185		B	Beeper Number
	0185		E	E-Mail Address (for backward compatibility)
User	0186	Practitioner category		
HL7	0187	Provider billing		

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
	0187		P	Provider does own billing
	0187		I	Institution bills for provider
User	0188	Operator ID		
User	0189	Ethnic group		
HL7	0190	Address type		
	0190		C	Current Or Temporary
	0190		P	Permanent
	0190		M	Mailing
	0190		B	Firm/Business
	0190		O	Office
	0190		H	Home
	0190		N	Birth (nee) (birth address, not otherwise specified)
	0190		BDL	Birth delivery location (address where birth occurred)
	0190		BR	Residence at birth (home address at time of birth)
	0190		F	Country Of Origin
	0190		L	Legal Address
	0190		RH	Registry home. Refers to the information system, typically managed by a public health agency, that stores patient information such as immunization histories or cancer data, regardless of where the patient obtains services.
	0190		BA	Bad address
HL7	0191	Type of referenced data		
	0191		SI	Scanned image (HL7 V2.2 only)
	0191		SI	Scanned image
	0191		NS	Non-scanned image (HL7 V2.2 only)
	0191		NS	Non-scanned image
	0191		SD	Scanned document (HL7 V2.2 only)
	0191		SD	Scanned document
	0191		TX	Machine readable text document (HL7 V2.2 only)
	0191		TX	Machine readable text document
	0191		FT	Formatted text (HL7 V2.2 only)
	0191		FT	Formatted text
	0191		TEXT	Machine readable text document (HL7 V2.3.1 and later)
	0191		IM	Image data (new with HL7 v 2.3)
	0191		AU	Audio data (new with HL7 v 2.3)

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Type	Table	Name	Value	Description
	0191		AP	Other application data, typically uninterpreted binary data (new with HL7 v 2.3)
	0191		Image	Image data (HL7 V2.3 and later)
	0191		Audio	Audio data (HL7 V2.3 and later)
	0191		Application	Other application data, typically uninterpreted binary data (HL7 V2.3 and later)
User	0193	Amount class		
	0193		AT	Amount
	0193		LM	Limit
	0193		PC	Percentage
	0193		UL	Unlimited
HL7	0200	Name type		
	0200		A	Alias Name
	0200		L	Legal Name
	0200		D	Display Name
	0200		M	Maiden Name
	0200		C	Adopted Name
	0200		B	Name at Birth
	0200		P	Name of Partner/Spouse
	0200		S	Coded Pseudo-Name to ensure anonymity
	0200		T	Tribal/Community Name
	0200		U	Unspecified
HL7	0201	Telecommunication use code		
	0201		PRN	Primary Residence Number
	0201		ORN	Other Residence Number
	0201		WPN	Work Number
	0201		VHN	Vacation Home Number
	0201		ASN	Answering Service Number
	0201		EMR	Emergency Number
	0201		NET	Network (email) Address
	0201		BPN	Beeper Number
HL7	0202	Telecommunication equipment type		
	0202		PH	Telephone
	0202		FX	Fax
	0202		MD	Modem
	0202		CP	Cellular Phone

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
	0202		BP	Beeper
	0202		Internet	Internet Address: Use Only If Telecommunication Use Code Is NET
	0202		X.400	X.400 email address: Use Only If Telecommunication Use Code Is NET
User	0203	Identifier type		
	0203		AM	American Express
	0203		AN	Account number
	0203		BR	Birth registry number
	0203		DI	Diner's Club card
	0203		DL	Driver's license number
	0203		DN	Doctor number
	0203		DS	Discover Card
	0203		EI	Employee number
	0203		EN	Employer number
	0203		FI	Facility ID
	0203		GI	Guarantor internal identifier
	0203		GN	Guarantor external identifier
	0203		LN	License number
	0203		LR	Local Registry ID
	0203		MS	MasterCard
	0203		MA	Medicaid number
	0203		MC	Medicare number
	0203		MR	Medical record number
	0203		NE	National employer identifier
	0203		NI	National unique individual identifier
	0203		NH	National Health Plan Identifier
	0203		NNxxx	National Person Identifier where the xxx is the ISO table 3166 3-character (alphabetic) country code
	0203		NPI	National provider identifier
	0203		PI	Patient internal identifier
	0203		PN	Person number
	0203		PRN	Provider number
	0203		PT	Patient external identifier
	0203		RRI	Regional registry ID
	0203		RR	Railroad Retirement number
	0203		SL	State license

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
	0203		SR	State registry ID
	0203		SS	Social Security number
	0203		U	Unspecified
	0203		UPIN	Medicare/HCFAs Universal Physician Identification numbers
	0203		VS	VISA
	0203		VN	Visit number
	0203		WC	WIC identifier
	0203		XX	Organization identifier
User	0204	Organizational name type		
	0204		A	Alias name
	0204		L	Legal name
	0204		D	Display name
	0204		SL	Stock exchange listing name
HL7	0205	Price type		
	0205		AP	administrative price or handling fee
	0205		PF	professional fee for performing provider
	0205		UP	unit price, may be based on length of procedure or service
	0205		TF	technology fee for use of equipment
	0205		DC	direct unit cost
	0205		IC	indirect unit cost
	0205		TP	total price
HL7	0206	Segment action code		
	0206		A	Add/Insert
	0206		D	Delete
	0206		U	Update
HL7	0207	Processing mode		
	0207		A	Archive
	0207		R	Restore from archive
	0207		I	Initial load
	0207		T	Current processing, transmitted at intervals (scheduled or on demand)
	0207		not present	Not present (the default, meaning current processing)
HL7	0208	Query response status		
	0208		OK	Data found, no errors (this is the default)
	0208		NF	No data found, no errors

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
	0208		AE	Application error
	0208		AR	Application reject
HL7	0209	Relational operator		
	0209		EQ	Equal
	0209		EQ	Equal
	0209		NE	Not Equal
	0209		NE	Not Equal
	0209		LT	Less than
	0209		LT	Less than
	0209		GT	Greater than
	0209		GT	Greater than
	0209		LE	Less than or equal
	0209		LE	Less than or equal
	0209		GE	Greater than or equal
	0209		GE	Greater than or equal
	0209		CT	Contains
	0209		CT	Contains
	0209		GN	Generic
	0209		GN	Generic
HL7	0210	Relational conjunction		
	0210		AND	Default
	0210		AND	Default
	0210		OR	
	0210		OR	
HL7	0211	Alternate character sets		
	0211		ASCII	The printable 7-bit ASCII character set. (This is the default if this field is omitted)
	0211		8859/1	The printable characters from the ISO 8859/1 Character set
	0211		8859/2	The printable characters from the ISO 8859/2 Character set
	0211		8859/3	The printable characters from the ISO 8859/3 Character set
	0211		8859/4	The printable characters from the ISO 8859/4 Character set
	0211		8859/5	The printable characters from the ISO 8859/5 Character set

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
	0211		8859/6	The printable characters from the ISO 8859/6 Character set
	0211		8859/7	The printable characters from the ISO 8859/7 Character set
	0211		8859/8	The printable characters from the ISO 8859/8 Character set
	0211		8859/9	The printable characters from the ISO 8859/9 Character set
	0211		ISO IR14	Code for Information Exchange (one byte)(JIS X 0201-1976). Note that the code contains a space, i.e. "ISO IR14".
	0211		ISO IR87	Code for the Japanese Graphic Character set for information interchange (JIS X 0208-1990), Note that the code contains a space, i.e. "ISO IR87".
	0211		ISO IR159	Code of the supplementary Japanese Graphic Character set for information interchange (JIS X 0212-1990), Note that the code contains a space, i.e. "ISO IR159".
	0211		UNICODE	The world wide character standard from ISO/IEC 10646-1-1993
User	0212	Nationality		
User	0213	Purge status		
	0213		P	Marked for purge. User is no longer able to update the visit.
	0213		D	The visit is marked for deletion and the user cannot enter new data against it.
	0213		I	The visit is marked inactive and the user cannot enter new data against it.
User	0215	Publicity code		
User	0126	Patient status code		
User	0217	Visit priority code		
User	0218	Patient charge adjustment code		
User	0219	Recurring service code		
User	0220	Living arrangement		
	0220		A	Alone
	0220		F	Family
	0220		I	Institution
	0220		R	Relative
	0220		U	Unknown
	0220		S	Spouse Only
User	0222	Contact reason		
User	0223	Living dependency		

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
	0223		D	Spouse dependent
	0223		M	Medical Supervision Required
	0223		S	Small children
	0223		WU	Walk up
	0223		CB	Common Bath
HL7	0224	Transport arranged		
	0224		A	Arranged
	0224		A	Arranged
	0224		N	Not Arranged
	0224		N	Not Arranged
	0224		U	Unknown
	0224		U	Unknown
HL7	0225	Escort required		
	0225		R	Required
	0225		N	Not Required
	0225		U	Unknown
HL7	0227	Manufactures of vaccines (code=MVX)		
	0227		AB	Abbott Laboratories
	0227		AD	Adams Laboratories
	0227		ALP	Alpha Therapeutic Corporation
	0227		AR	Armour (Inactive – use CEN)
	0227		AVI	Aviron
	0227		BA	Baxter Healthcare Corporation
	0227		BAY	Bayer Corporation (includes Miles, Inc. and Cutter Laboratories)
	0227		BP	Berna Products (Inactive – use BPC)
	0227		BPC	Berna Products Corporation (includes Swiss Serum and Vaccine Institute Berna)
	0227		CEN	Centeon L.L.C. (includes Armour Pharmaceutical Company)
	0227		CHI	Chiron Corporation
	0227		CON	Connaught (inactive – use PMC)
	0227		EVN	Evans Medical Limited
	0227		GRE	Greer Laboratories, Inc.
	0227		IAG	Immuno International AG
	0227		IM	Merieux (inactive – Use PMC)
	0227		IUS	Immuno-US, Inc.

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
	0227		JPN	The Research Foundation for Microbial Diseases of Osaka University (BIKEN)
	0227		KGC	Korea Green Cross Corporation
	0227		LED	Lederle (inactive – use WAL)
	0227		MA	Massachusetts Public Health Biologic Laboratories)
	0227		MED	Medimmune, Inc.
	0227		MIL	Miles (inactive – use BAY)
	0227		MIP	Michigan Biologic Products Institute
	0227		MSD	Merck & Co., Inc.
	0227		NAB	NABI (formerly North American Biologicals, Inc.)
	0227		NYB	New York Blood Center
	0227		NAV	North American Vaccine, Inc.
	0227		NOV	Novartis Pharmaceutical Corporation
	0227		OTC	Organon Teknika Corporation
	0227		ORT	Ortho Diagnostic Systems, Inc.
	0227		PD	Parkdale Pharmaceuticals (formerly Parke-Davis)
	0227		PMC	Pasteur Merieux Connaught (includes Connaught Laboratories and Pasteur Merieux)
	0227		PRX	Praxis Biologics (inactive – use WAL)
	0227		SCL	Sclavo, Inc.
	0227		SI	Swiss Serum and Vaccine Inst. (inactive – use BPC)
	0227		SKB	SmithKline Beecham
	0227		USA	United States Army Medical Research and Materiel Command
	0227		WA	Wyeth-Ayerst (inactive – use WAL)
	0227		WAL	Wyeth-Ayerst (includes Wyeth-Lederle Vaccines and Pediatrics, Wyeth Laboratories, Lederle Laboratories, and Praxis Biologics)
	0227		OTH	Other
	0227		UNK	Unknown manufacturer
User	0228	Diagnosis classification		
	0228		C	Consultation
	0228		D	Diagnosis
	0228		M	Medication (antibiotic)
	0228		O	Other
	0228		R	Radiological scheduling (not using ICDA codes)
	0228		S	Sign and symptom

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
	0228		T	Tissue diagnosis
	0228		I	Invasive procedure not classified elsewhere (I.V., catheter, etc.)
User	0229	DRG payor		
	0229		M	Medicare
	0229		C	Champus
	0229		G	Managed Care Organization
User	0230	Procedure functional type		
	0230		A	Anesthesia
	0230		P	Procedure for treatment (therapeutic, including operations)
	0230		I	Invasive procedure not classified elsewhere (e.g., IV, catheter, etc.)
	0230		D	Diagnostic procedure
User	0231	Student status		
	0231		F	Full-time student
	0231		P	Part-time student
	0231		N	Not a student
User	0232	Insurance company contact reason		
	0232		01	Medicare claim status
	0232		02	Medicaid claim status
	0232		03	Name/address change
User	0233	Non-concur code/description		
HL7	0234	Report timing		
	0234		CO	Correction
	0234		AD	Additional information
	0234		RQ	Requested information
	0234		DE	Device evaluation
	0234		PD	Periodic
	0234		3D	3 day report
	0234		7D	7 day report
	0234		10D	10 day report
	0234		15D	15 day report
	0234		30D	30 day report
HL7	0235	Report source		
	0235		C	Clinical trial
	0235		L	Literature

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
	0235		H	Health professional
	0235		R	Regulatory agency
	0235		D	Database/registry/poison control center
	0235		N	Non-healthcare professional
	0235		P	Patient
	0235		M	Manufacturer/marketing authority holder
	0235		E	Distributor
	0235		O	Other
HL7	0236	Event reported to		
	0236		M	Manufacturer
	0236		L	Local facility/user facility
	0236		R	Regulatory agency
	0236		D	Distributor
HL7	0237	Event qualification		
	0237		I	Interaction
	0237		O	Overdose
	0237		A	Abuse
	0237		M	Misuse
	0237		D	Dependency
	0237		L	Lack of expect therapeutic effect
	0237		W	Drug withdrawal
	0237		B	Unexpected beneficial effect
HL7	0238	Event seriousness		
	0238		Y	Yes
	0238		S	Significant
	0238		N	No
HL7	0239	Event expected		
	0239		Y	Yes
	0239		N	No
	0239		U	Unknown
HL7	0240	Event consequence		
	0240		D	Death
	0240		L	Life threatening
	0240		H	Caused hospitalized
	0240		P	Prolonged hospitalization

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
	0240		C	Congenital anomaly/birth defect
	0240		I	Incapacity which is significant, persistent or permanent
	0240		J	Disability which is significant, persistent or permanent
	0240		R	Required intervention to prevent permanent impairment/damage
	0240		O	Other
HL7	0241	Patient outcome		
	0241		D	Died
	0241		R	Recovering
	0241		N	Not recovering/unchanged
	0241		W	Worsening
	0241		S	Sequelae
	0241		F	Fully recovered
	0241		U	Unknown
HL7	0242	Primary observer's qualification		
	0242		P	Physician (osteopath, homeopath)
	0242		R	Pharmacist
	0242		M	Mid-level professional (nurse, nurse practitioner, physician's assistant)
	0242		H	Other health professional
	0242		C	Health care consumer/patient
	0242		L	Lawyer/attorney
	0242		O	Other non-health professional
HL7	0243	Identity may be divulged		
	0243		Y	Yes
	0243		N	No
	0243		NA	Not applicable
User	0244	Single use device		
User	0245	Product problem		
User	0246	Product available for inspection		
HL7	0247	Status of evaluation		
	0247		Y	Evaluation completed
	0247		P	Evaluation in progress
	0247		K	Problem already known, no evaluation necessary
	0247		X	Product not made by company
	0247		A	Evaluation anticipated, but not yet begun

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
	0247		D	Product discarded -- unable to follow up
	0247		C	Product received in condition which made analysis impossible
	0247		I	Product remains implanted -- unable to follow up
	0247		U	Product unavailable for follow up investigation
	0247		Q	Product under quarantine -- unable to follow up
	0247		R	Product under recall/corrective action
	0247		O	Other
HL7	0248	Product source		
	0248		A	Actual product involved in incident was evaluated
	0248		L	A product from the same lot as the actual product involved was evaluated
	0248		R	A product from a reserve sample was evaluated
	0248		N	A product from a controlled/non-related inventory was evaluated
User	0249	Generic product		
HL7	0250	Relatedness assessment		
	0250		H	Highly probable
	0250		M	Moderately probable
	0250		S	Somewhat probable
	0250		I	Improbable
	0250		N	Not related
HL7	0251	Action taken in response to the event		
	0251		WP	Product withdrawn permanently
	0251		WT	Product withdrawn temporarily
	0251		DR	Product dose or frequency of use reduced
	0251		DI	Product dose or frequency of use increased
	0251		OT	Other
	0251		N	None
HL7	0252	Casualty observations		
	0252		AW	Abatement of event after product withdrawn
	0252		BE	Event recurred after product reintroduced
	0252		LI	Literature reports association of product with event
	0252		IN	Event occurred after product introduced
	0252		EX	Alternative explanations for the event available
	0252		PL	Effect observed when patient receives placebo

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
	0252		TC	Toxic levels of product documented in blood or body fluids
	0252		DR	Dose response observed
	0252		SE	Similar events in past for this patient
	0252		OE	Occurrence of event was confirmed by objective evidence
	0252		OT	Other
HL7	0253	Indirect exposure mechanism		
	0253		B	Breast milk
	0253		P	Transplacental
	0253		F	Father
	0253		X	Blood product
	0253		O	Other
HL7	0254	Kind of quantity		
	0254		CACT	*Catalytic Activity
	0254		CNC	*Catalytic Concentration
	0254		CCRTO	Catalytic Concentration Ratio
	0254		CCNT	*Catalytic Content
	0254		CFR	*Catalytic Fraction
	0254		CRAT	*Catalytic Rate
	0254		CRT0	Catalytic Ratio
	0254		ENT	*Entitic
	0254		ENTSUB	*Entitic Substance of Amount
	0254		ENTCAT	*Entitic Catalytic Activity
	0254		ENTNUM	*Entitic Number
	0254		ENTVOL	*Entitic Volume
	0254		MASS	*Mass
	0254		MCNC	*Mass Concentration
	0254		MCRT0	*Mass Concentration Ratio
	0254		MCNT	Mass Content
	0254		MFR	*Mass Fraction
	0254		MINC	*Mass Increment
	0254		MRAT	*Mass Rate
	0254		MRT0	*Mass Ratio
	0254		NUM	*Number
	0254		NCNC	*Number Concentration
	0254		NCNT	*Number Content

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
	0254		NFR	*Number Fraction
	0254		NRTO	*Number Ratio
	0254		SUB	*Substance Amount
	0254		SCNC	*Substance Concentration
	0254		SCRTO	*Substance Concentration Ratio
	0254		SCNT	*Substance Content
	0254		SCNTR	*Substance Content Rate
	0254		SFR	*Substance Fraction
	0254		SCNCIN	*Substance Concentration Increment
	0254		SRAT	*Substance Rate
	0254		SRTO	*Substance Ratio
	0254		VOL	*Volume
	0254		VCNT	*Volume Content
	0254		VFR	*Volume Fraction
	0254		VRAT	*Volume Rate
	0254		VRTO	*Volume Ratio
	0254		ACNC	Concentration, Arbitrary Substance
	0254		RLMCNC	*Relative Mass Concentration
	0254		RLSCNC	*Relative Substance Concentration
	0254		THRMCNC	*Threshold Mass Concentration
	0254		THRSCNC	*Threshold Substance Concentration
	0254		TIME	*Time (e.g. seconds)
	0254		TMDF	*Time Difference
	0254		TMSTP	*Time Stamp -- Date and Time
	0254		TRTO	*Time Ratio
	0254		RCRLTM	*Reciprocal Relative Time
	0254		RLTM	*Relative Time
	0254		ABS	Absorbance
	0254		ACT	*Activity
	0254		APER	Appearance
	0254		ARB	*Arbitrary
	0254		AREA	Area
	0254		ASPECT	Aspect
	0254		CLAS	Class
	0254		CNST	*Constant

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
	0254		COEF	*Coefficient
	0254		COLOR	Color
	0254		CONS	Consistency
	0254		DEN	Density
	0254		DEV	Device
	0254		DIFF	*Difference
	0254		ELAS	Elasticity
	0254		ELPOT	Electrical Potential (Voltage)
	0254		ELRAT	Electrical current (amperage)
	0254		ELRES	Electrical Resistance
	0254		ENGR	Energy
	0254		EQL	Equilibrium
	0254		FORCE	Mechanical force
	0254		FREQ	Frequency
	0254		IMP	Impression/ interpretation of study
	0254		KINV	*Kinematic Viscosity
	0254		LEN	Length
	0254		LINC	*Length Increment
	0254		LIQ	*Liquefaction
	0254		MGFLUX	Magnetic flux
	0254		MORPH	Morphology
	0254		MOTIL	Motility
	0254		OD	Optical density
	0254		OSMOL	*Osmolality
	0254		PRID	Presence/Identity/Existence
	0254		PRES	*Pressure (Partial)
	0254		PWR	Power (wattage)
	0254		RANGE	*Ranges
	0254		RATIO	*Ratios
	0254		RDEN	*Relative Density
	0254		REL	*Relative
	0254		SATFR	*Saturation Fraction
	0254		SHAPE	Shape
	0254		SMELL	Smell
	0254		SUSC	*Susceptibility

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
	0254		TASTE	Taste
	0254		TEMP	*Temperature
	0254		TEMPDF	*Temperature Difference
	0254		TEMPIN	*Temperature Increment
	0254		TITR	*Dilution Factor (Titer)
	0254		TYPE	*Type
	0254		VEL	*Velocity
	0254		VELRT	*Velocity Ratio
	0254		VISC	*Viscosity
User	0255	Duration categories		
	0255		PT	To identify measures at a point in time. This is a synonym for "spot" or "random" as applied to urine measurements.
	0255		* (star)	Life of the "unit." Used for blood products.
	0255		30M	30 minutes
	0255		1H	1 hour
	0255		2H	2 hours
	0255		2.5H	2½ hours
	0255		3H	3 hours
	0255		4H	4 hours
	0255		5H	5 hours
	0255		6H	6 hours
	0255		7H	7 hours
	0255		8H	8 hours
	0255		12H	12 hours
	0255		24H	24 hours
	0255		2D	2 days
	0255		3D	3 days
	0255		4D	4 days
	0255		5D	5 days
	0255		6D	6 days
	0255		1W	1 week
	0255		2W	2 weeks
	0255		3W	3 weeks
	0255		4W	4 weeks
	0255		1L	1 months (30 days)

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Type	Table	Name	Value	Description
	0255		2L	2 months
	0255		3L	3 months
HL7	0256	Time delay post challenge		
	0256		BS	Baseline (time just before the challenge)
	0256		PEAK	The time post drug dose at which the highest drug level is reached (differs by drug)
	0256		TROUGH	The time post drug dose at which the lowest drug level is reached (varies with drug)
	0256		RANDOM	Time from the challenge, or dose not specified. (random)
	0256		1M	1 minute post challenge
	0256		2M	2 minutes post challenge
	0256		3M	3 minutes post challenge
	0256		4M	4 minutes post challenge
	0256		5M	5 minutes post challenge
	0256		6M	6 minutes post challenge
	0256		7M	7 minutes post challenge
	0256		8M	8 minutes post challenge
	0256		9M	9 minutes post challenge
	0256		10M	10 minutes post challenge
	0256		15M	15 minutes post challenge
	0256		20M	20 minutes post challenge
	0256		25M	25 minutes post challenge
	0256		30M	30 minutes post challenge
	0256		1H	1 hour post challenge
	0256		2H	2 hours post challenge
	0256		2.5H	2 1/2 hours post challenge
	0256		3H	3 hours post challenge
	0256		4H	4 hours post challenge
	0256		5H	5 hours post challenge
	0256		6H	6 hours post challenge
	0256		7H	7 hours post challenge
	0256		8H	8 hours post challenge
	0256		8H SHIFT	8 hours aligned on nursing shifts
	0256		12H	12 hours post challenge
	0256		24H	24 hours post challenge
	0256		2D	2 days

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
	0256		3D	3 days
	0256		4D	4 days
	0256		5D	5 days
	0256		6D	6 days
	0256		7D	7 days
	0256		1W	1 week
	0256		10D	10 days
	0256		2W	2 weeks
	0256		3W	3 weeks
	0256		4W	4 weeks
	0256		1L	1 month (30 days) post challenge
	0256		2L	2 months (60 days) post challenge
	0256		3L	3 months (90 days) post challenge
HL7	0257	Nature of challenge		
	0257		CFST	Fasting (no calorie intake) for the period specified in the time component of the term, e.g., 1H POST CFST
	0257		EXCZ	Exercise undertaken as challenge (can be quantified)
	0257		FFST	No fluid intake for the period specified in the time component of the term
HL7	0258	Relationship modifier		
	0258		CONTROL	Control
	0258		PATIENT	Patient
	0258		DONOR	Donor
	0258		BPU	Blood product unit
User	0259	Modality		
	0259		AS	Angioscopy
	0259		BS	Biomagnetic imaging
	0259		CD	Color flow doppler
	0259		CP	Colposcopy
	0259		CR	Computed radiography
	0259		CS	Cystoscopy
	0259		CT	Computed tomography
	0259		DD	Duplex doppler
	0259		DG	Diapanography
	0259		DM	Digital microscopy
	0259		EC	Echocardiography

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
	0259		ES	Endoscopy
	0259		FA	Fluorescein angiography
	0259		FS	Fundoscopy
	0259		LP	Laparoscopy
	0259		LS	Laser surface scan
	0259		MA	Magnetic resonance angiography
	0259		MS	Magnetic resonance spectroscopy
	0259		NM	Nuclear Medicine (radioisotope study)
	0259		OT	Other
	0259		PT	Positron emission tomography (PET)
	0259		RF	Radio fluoroscopy
	0259		ST	Single photon emission computed tomography (SPECT)
	0259		TG	Thermography
	0259		US	Ultrasound
	0259		XA	X-ray Angiography
User	0260	Patient location type		
	0260		N	Nursing Unit
	0260		R	Room
	0260		B	Bed
	0260		E	Exam Room
	0260		O	Operating Room
	0260		C	Clinic
	0260		D	Department
	0260		L	Other Location
User	0261	Location equipment		
	0261		OXY	Oxygen
	0261		SUC	Suction
	0261		VIT	Vital signs monitor
	0261		INF	Infusion pump
	0261		IVP	IV pump
	0261		EEG	Electro-Encephalogram
	0261		EKG	Electro-Cardiogram
	0261		VEN	Ventilator
User	0262	Privacy level		
	0262		F	Isolation

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
	0262		P	Private room
	0262		J	Private room - medically justified
	0262		Q	Private room - due to overflow
	0262		S	Semi-private room
	0262		W	Ward
User	0263	Level of care		
	0263		A	Ambulatory
	0263		E	Emergency
	0263		F	Isolation
	0263		N	Intensive care
	0263		C	Critical care
	0263		R	Routine
	0263		S	Surgery
User	0264	Location department		
User	0265	Specialty type		
	0265		AMB	Ambulatory
	0265		PSY	Psychiatric
	0265		PPS	Pediatric psychiatric
	0265		REH	Rehabilitation
	0265		PRE	Pediatric rehabilitation
	0265		ISO	Isolation
	0265		OBG	Obstetrics, gynecology
	0265		PIN	Pediatric/neonatal intensive care
	0265		INT	Intensive care
	0265		SUR	Surgery
	0265		PSI	Psychiatric intensive care
	0265		EDI	Education
	0265		CAR	Coronary/cardiac care
	0265		NBI	Newborn, nursery, infants
	0265		CCR	Critical care
	0265		PED	Pediatrics
	0265		EMR	Emergency
	0265		OBS	Observation
	0265		WIC	Walk-in clinic
	0265		PHY	General/family practice

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
	0265		ALC	Allergy
	0265		FPC	Family planning
	0265		CHI	Chiropractic
	0265		CAN	Cancer
	0265		NAT	Naturopathic
	0265		OTH	Other specialty
HL7	0267	Days of the Week		
	0267		SAT	Saturday
	0267		SUN	Sunday
	0267		MON	Monday
	0267		TUE	Tuesday
	0267		WED	Wednesday
	0267		THU	Thursday
	0267		FRI	Friday
User	0268	Override		
	0268		X	Override not allowed
	0268		A	Override allowed
	0268		R	Override required
User	0269	Charge on indicator		
	0269		O	Charge on Order
	0269		R	Charge on Result
User	0270	Document type		
	0270		AR	Autopsy report
	0270		CD	Cardiodiagnostics
	0270		CN	Consultation
	0270		DI	Diagnostic imaging
	0270		DS	Discharge summary
	0270		ED	Emergency department report
	0270		HP	History and physical examination
	0270		OP	Operative report
	0270		PC	Psychiatric consultation
	0270		PH	Psychiatric history and physical examination
	0270		PN	Procedure note
	0270		PR	Progress note
	0270		SP	Surgical pathology

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
	0270		TS	Transfer summary
HL7	0271	Document completion status		
	0271		DI	Dictated
	0271		DO	Documented
	0271		IP	In Progress
	0271		IN	Incomplete
	0271		PA	Pre-authenticated
	0271		AU	Authenticated
	0271		LA	Legally authenticated
HL7	0272	Document confidentiality status		
	0272		V	Very restricted
	0272		R	Restricted
	0272		U	Usual control
HL7	0273	Document availability status		
	0273		AV	Available for patient care
	0273		CA	Deleted
	0273		OB	Obsolete
	0273		UN	Unavailable for patient care
HL7	0275	Document storage status		
	0275		AC	Active
	0275		AA	Active and archived
	0275		AR	Archived (not active)
	0275		PU	Purged
User	0276	Appointment reason code		
	0276		Routine	Routine appointment - default if not valued
	0276		Walkin	A previously unscheduled walk-in visit
	0276		Checkup	A routine check-up, such as an annual physical
	0276		Followup	A follow up visit from a previous appointment
	0276		Emergency	Emergency appointment
User	0277	Appointment type codes		
	0277		Normal	Routine schedule request type - default if not valued
	0277		Tentative	A request for a tentative (e.g., "penciled in") appointment
	0277		Complete	A request to add a completed appointment, used to maintain records of completed appointments
User	0278	Filler status codes		
	0278		Pending	Appointment has not yet been confirmed

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
	0278		Waitlist	Appointment has been placed on a waiting list for a particular slot, or set of slots
	0278		Booked	The indicated appointment is booked
	0278		Started	The indicated appointment has begun and is currently in progress
	0278		Complete	The indicated appointment has completed normally (was not discontinued, canceled, or deleted)
	0278		Cancelled	The indicated appointment was stopped from occurring (canceled prior to starting)
	0278		Dc	The indicated appointment was discontinued (DC'ed while in progress, discontinued parent appointment, or discontinued child appointment)
	0278		Deleted	The indicated appointment was deleted from the filler application
	0278		Blocked	The indicated time slot(s) is(are) blocked
	0278		Overbook	The appointment has been confirmed; however it is confirmed in an overbooked state
User	0279	Allow substitution codes		
	0279		No	Substitution of this resource is not allowed
	0279		Confirm	Contact the Placer Contact Person prior to making any substitutions of this resource
	0279		Notify	Notify the Placer Contact Person, through normal institutional procedures, that a substitution of this resource has been made
	0279		Yes	Substitution of this resource is allowed
User	0280	Referral priority		
	0280		S	STAT
	0280		A	ASAP
	0280		R	Routine
User	0281	Referral type		
	0281		Lab	Laboratory
	0281		Rad	Radiology
	0281		Med	Medical
	0281		Skn	Skilled Nursing
	0281		Psy	Psychiatric
	0281		Hom	Home Care
User	0282	Referral disposition		
	0282		WR	Send Written Report
	0282		RP	Return Patient After Evaluation
	0282		AM	Assume Management

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
	0282		SO	Second Opinion
User	0283	Referral status		
	0283		A	Accepted
	0283		P	Pending
	0283		R	Rejected
	0283		E	Expired
User	0284	Referral category		
	0284		I	Inpatient
	0284		O	Outpatient
	0284		A	Ambulatory
	0284		E	Emergency
User	0285	Insurance company ID codes		
User	0286	Provider role		
	0286		RP	Referring Provider
	0286		PP	Primary Care Provider
	0286		CP	Consulting Provider
	0286		RT	Referred to Provider
HL7	0287	Problem/goal action code		
	0287		AD	ADD
	0287		CO	CORRECT
	0287		DE	DELETE
	0287		LI	LINK
	0287		UC	UNCHANGED *
	0287		UN	UNLINK
	0287		UP	UPDATE
User	0288	Census Tract		
HL7	0290	MIME base64 encoding characters		
				See Chapter 2 Section 2.8.16.4 for values
HL7	0291	Subtype of referenced data		
	0291		TIFF	TIFF image data
	0291		PICT	PICT format image data
	0291		DICOM	Digital Imaging and Communications in Medicine
	0291		FAX	Facsimile data
	0291		JOT	Electronic ink data (Jot 1.0 standard)
	0291		BASIC	ISDN PCM audio data

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Type	Table	Name	Value	Description
	0291		Octet-stream	Uninterpreted binary data
	0291		PostScript	PostScript program
	0291		JPEG	Joint Photographic Experts Group
	0291		GIF	Graphics Interchange Format
	0291		HTML	Hypertext Markup Language
	0291		SGML	Structured General Markup Language (HL7 V2.3.1 and later)
	0291		XML	Extensible Markup Language (HL7 V2.3.1 and later)
	0291		RTF	Rich Text Format
HL7	0292	Vaccines administered (code=CVX) (parenteral, unless oral is noted)		
	0292		54	Adenovirus, type 4
	0292		55	Adenovirus, type 7
	0292		82	Adenovirus, NOS
	0292		24	Anthrax
	0292		19	BCG
	0292		27	Botulinum antitoxin
	0292		26	Cholera
	0292		29	CMVIG
	0292		56	Dengue fever
	0292		12	Diphtheria antitoxin
	0292		28	DT(pediatric)
	0292		20	DTaP
	0292		50	DtaP-Hib
	0292		01	DTP
	0292		22	DTP-Hib
	0292		57	Hantavirus
	0292		52	Hep A - adult
	0292		83	Hep A, ped/adol, 2 dose
	0292		84	Hep A, ped/adol, 3 dose
	0292		31	Hep A, pediatric, NOS
	0292		85	Hep A, NOS
	0292		30	HBIG
	0292		08	Hep B, adolescent or pediatric
	0292		42	Hep B, adolescent/high risk infant
	0292		43	Hep B, adult
	0292		44	Hep B, dialysis

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Type	Table	Name	Value	Description
	0292		45	Hep B, NOS
	0292		58	Hep C
	0292		59	Hep E
	0292		60	Herpes simplex 2
	0292		46	Hib (PRP-D)
	0292		47	Hib (HbOC)
	0292		48	Hib (PRP-T)
	0292		49	Hib (PRP-OMP)
	0292		17	Hib, NOS
	0292		51	Hib-Hep B
	0292		61	HIV
	0292		62	HPV
	0292		86	IG
	0292		87	IGIV
	0292		14	IG, NOS
	0292		15	Influenza—split (incl. purified surface antigen)
	0292		16	Influenza—whole
	0292		88	Influenza, NOS
	0292		10	IPV
	0292		02	OPV
	0292		89	Polio, NOS
	0292		39	Japanese encephalitis
	0292		63	Junin virus
	0292		64	Leishmaniasis
	0292		65	Leprosy
	0292		66	Lyme disease
	0292		03	MMR
	0292		04	M/R
	0292		67	Malaria
	0292		05	Measles
	0292		68	Melanoma
	0292		32	Meningococcal
	0292		07	Mumps
	0292		69	Parainfluenza-3
	0292		11	Pertussis

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Type	Table	Name	Value	Description
	0292		23	Plague
	0292		33	Pneumococcal
	0292		70	Q fever
	0292		18	Rabies, intramuscular injection
	0292		40	Rabies, intradermal injection
	0292		90	Rabies, NOS
	0292		72	Rheumatic fever
	0292		73	Rift Valley fever
	0292		34	RIG
	0292		74	Rotavirus
	0292		71	RSV-IGIV
	0292		06	Rubella
	0292		38	Rubella/Mumps
	0292		75	Smallpox
	0292		76	Staphylococcus bacterio lysate
	0292		09	Td (Adult)
	0292		35	Tetanus toxoid
	0292		77	Tick-borne encephalitis
	0292		13	TIG
	0292		78	Tularemia vaccine
	0292		25	Typhoid—oral
	0292		41	Typhoid—parenteral
	0292		53	Typhoid, parenteral, AKD (U.S. military)
	0292		91	Typhoid, NOS
	0292		79	Vaccinia immune globulin
	0292		21	Varicella
	0292		81	VEE, inactivated
	0292		80	VEE, live
	0292		92	VEE, NOS
	0292		36	VZIG
	0292		37	Yellow fever
User	0293	Billing category		
User	0294	Time selection criteria parameter class codes		
	0294		Prefstart	The preferred start time for the appointment request, service or resource. Any legal time specification in the format HHMM, using 24-hour clock notation

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
	0294		PREFSTART	The preferred start time for the appointment request, service or resource. Any legal time specification in the format HHMM, using 24-hour clock notation
	0294		Prefend	The preferred end time for the appointment request, service or resource. Any legal time specification in the format HHMM, using 24-hour clock notation
	0294		PREFEND	The preferred end time for the appointment request, service or resource. Any legal time specification in the format HHMM, using 24-hour clock notation
	0294		Mon	An indicator that Monday is or is not preferred for the day on which the appointment will occur. OK = Preferred appointment day NO = Day is not preferred
	0294		MON	An indicator that Monday is or is not preferred for the day on which the appointment will occur. OK = Preferred appointment day NO = Day is not preferred
	0294		TUE	An indicator that Tuesday is or is not preferred for the day on which the appointment will occur. OK = Preferred appointment day NO = Day is not preferred
	0294		Tue	An indicator that Tuesday is or is not preferred for the day on which the appointment will occur. OK = Preferred appointment day NO = Day is not preferred
	0294		Wed	An indicator that Wednesday is or is not preferred for the day on which the appointment will occur. OK = Preferred appointment day NO = Day is not preferred
	0294		WED	An indicator that Wednesday is or is not preferred for the day on which the appointment will occur. OK = Preferred appointment day NO = Day is not preferred
	0294		Thu	An indicator that Thursday is or is not preferred for the day on which the appointment will occur. OK = Preferred appointment day NO = Day is not preferred
	0294		THU	An indicator that Thursday is or is not preferred for the day on which the appointment will occur. OK = Preferred appointment day NO = Day is not preferred
	0294		Fri	An indicator that Friday is or is not preferred for the day on which the appointment will occur. OK = Preferred appointment day NO = Day is not preferred
	0294		FRI	An indicator that Friday is or is not preferred for the day on which the appointment will occur. OK = Preferred appointment day NO = Day is not preferred
	0294		Sat	An indicator that Saturday is or is not preferred for the day on which the appointment will occur. OK = Preferred appointment day NO = Day is not preferred
	0294		SAT	An indicator that Saturday is or is not preferred for the day on which the appointment will occur. OK = Preferred appointment day NO = Day is not preferred
	0294		Sun	An indicator that Sunday is or is not preferred for the day on which the appointment will occur. OK = Preferred appointment day NO = Day is not preferred

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Type	Table	Name	Value	Description
	0294		SUN	An indicator that Sunday is or is not preferred for the day on which the appointment will occur. OK = Preferred appointment day NO = Day is not preferred
User	0295	Handicap		
User	0296	Primary language		
User	0297	CN ID source		
HL7	0298	CP range type		
	0298		P	Pro-rate. Apply this price to this interval, pro-rated by whatever portion of the interval has occurred/been consumed
	0298		F	Flat-rate. Apply the entire price to this interval, do not pro-rate the price if the full interval has not occurred/been consumed
HL7	0299	Encoding		
	0299		A	no encoding - data are displayable ASCII characters.
	0299		Hex	hexadecimal encoding - consecutive pairs of hexadecimal digits represent consecutive single octets.
	0299		Base64	encoding as defined by MIME (Multipurpose Internet Mail Extensions) standard RFC 1521. Four consecutive ASCII characters represent three consecutive octets of binary data. Base64 utilizes a 65-character subset of US-ASCII, consisting of both the upper a
User	0300	Namespace ID		
HL7	0301	Universal ID type		
	0301		DNS	An Internet dotted name. Either in ASCII or as integers
	0301		GUID	Same as UUID.
	0301		HCD	The CEN Healthcare Coding Scheme Designator. (Identifiers used in DICOM follow this assignment scheme.)
	0301		HL7	Reserved for future HL7 registration schemes
	0301		ISO	An International Standards Organization Object Identifier
	0301		L,M,N	These are reserved for locally defined coding schemes.
	0301		Random	Usually a base64 encoded string of random bits. The uniqueness depends on the length of the bits. Mail systems often generate ASCII string "unique names," from a combination of random bits and system names. Obviously, such identifiers will not be con
	0301		UUID	The DCE Universal Unique Identifier
	0301		x400	An X.400 MHS format identifier
	0301		x500	An X.500 directory name
User	0302	Point of care		
User	0303	Room		

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Type	Table	Name	Value	Description
User	0304	Bed		
User	0305	Person location type		
User	0307	Building		
User	0308	Floor		
User	0309	Coverage type		
	0309		H	Hospital/institutional
	0309		P	Physician/professional
	0309		B	Both hospital and physician
User	0311	Job status		
User	0312	Policy scope		
User	0313	Policy source		
User	0315	Living will		
	0315		Y	Yes, patient has a living will
	0315		F	Yes, patient has a living will but it is not on file
	0315		N	No, patient does not have a living will and no information was provided
	0315		I	No, patient does not have a living will but information was provided
	0315		U	Unknown
User	0316	Organ donor		
	0316		Y	Yes, patient is a donor and card is on file
	0316		F	Yes, patient is a donor, but card is not on file
	0316		I	No, patient does not have a living will but information was provided
	0316		U	Unknown
User	0317	Annotations		
	0317		9900	Pace spike
	0317		9901	SAS marker
	0317		9902	Sense marker
	0317		9903	Beat marker
	0317		9904	etc.
User	0319	Department cost center		
User	0320	Item national account code		
HL7	0321	Dispense method		
	0321		TR	Traditional
	0321		TR	Traditional
	0321		UD	Unit Dose

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Type	Table	Name	Value	Description
	0321		UD	Unit Dose
	0321		F	Floor Stock
	0321		F	Floor Stock
	0321		AD	Automatic Dispensing
	0321		AD	Automatic Dispensing
HL7	0322	Completion status		
	0322		CP	Complete
	0322		RE	Refused
	0322		NA	Not Administered
	0322		PA	Partially Administered
HL7	0323	Action code		
	0323		A	Add
	0323		D	Delete
	0323		U	Update
User	0324	Location characteristic ID		
	0324		SMK	Smoking
	0324		LIC	Licensed
	0324		IMP	Implant: can be used for radiation implant patients
	0324		SHA	Shadow: a temporary holding location that does not physically exist
	0324		INF	Infectious disease: this location can be used for isolation
	0324		PRL	Privacy level: indicating the level of private versus non-private room
	0324		LCR	Level of care
	0324		OVR	Overflow
	0324		STF	Bed is staffed
	0324		SET	Bed is set up
	0324		GEN	Gender of patient(s)
	0324		TEA	Teaching location
User	0325	Location relationship ID		
	0325		RX	Nearest pharmacy
	0325		RX2	Second pharmacy
	0325		LAB	Nearest lab
	0325		LB2	Second lab
	0325		DTY	Nearest dietary
	0325		ALI	Location Alias(es)

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Type	Table	Name	Value	Description
	0325		PAR	Parent location
User	0326	Visit indicator		
	0326		A	Account level (default)
	0326		V	Visit level
User	0327	Job code/class		
User	0328	Employee classification		
HL7	0329	Quantity method		
	0329		A	Actual count
	0329		E	Estimated (see comment)
HL7	0330	Marketing basis		
	0330		510K	510 (K)
	0330		510E	510 (K) exempt
	0330		PMA	Premarketing authorization
	0330		PRE	Preamendment
	0330		TXN	Transitional
	0330		522S	Post marketing study (522)
HL7	0331	Facility type		
	0331		U	User
	0331		M	Manufacturer
	0331		D	Distributor
	0331		A	Agent for a foreign manufacturer
HL7	0332	Network source type		
	0332		I	Initiate
	0332		A	Accept
User	0333	Network change type		
	0333		SU	Start up
	0333		SD	Shut down
	0333		M	Migrates to different CPU
User	0334	Disabled person		
	0334		PT	Patient
	0334		GT	Guarantor
	0334		IN	Insured
	0334		AP	Associated party
User	0335	Repeat pattern		
User	0336	Referral reason		

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Type	Table	Name	Value	Description
	0336		S	Second Opinion
	0336		P	Patient Preference
	0336		O	Provider Ordered
	0336		W	Work Load
HL7	0337	Certification status		
	0337		E	Eligible
	0337		C	Certified
User	0338	Practitioner ID number type		
	0338		UPIN	Unique physician ID no.
	0338		SL	State license number
	0338		MCD	Medicaid number
	0338		GL	General ledger number
	0338		CY	County number
	0338		TAX	Tax ID number
	0338		DEA	Drug Enforcement Agency no.
	0338		MCR	Medicare number
	0338		L&I	Labor and industries number
	0338		QA	QA number
	0338		TRL	Training license number
User	0339	Advanced beneficiary notice code		
	0339		1	Service is subject to medical necessity procedures
	0339		2	Patient has been informed of responsibility, and agrees to pay for service
	0339		3	Patient has been informed of responsibility, and asks that the payer be billed
	0339		4	Advanced Beneficiary Notice has not been signed
User	0340	Procedure code modifier		
User	0341	Guarantor credit rating code		
User	0342	Dependent of military recipient		
User	0343	Military handiciapped program		
User	0344	Patient's relationship to insured		
	0344		01	Patient is insured
	0344		02	Spouse
	0344		03	Natural child/insured financial responsibility
	0344		04	Natural child/Insured does not have financial responsibility
	0344		05	Step child

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Type	Table	Name	Value	Description
	0344		06	Foster child
	0344		07	Ward of the court
	0344		08	Employee
	0344		09	Unknown
	0344		10	Handicapped dependent
	0344		11	Organ donor
	0344		12	Cadaver donor
	0344		13	Grandchild
	0344		14	Niece/nephew
	0344		15	Injured plaintiff
	0344		16	Sponsored dependent
	0344		17	Minor dependent of a minor dependent
	0344		18	Parent
	0344		19	Grandparent
User	0345	Appeal reason		
User	0346	Certification agency		
User	0347	Auto accident state		
User	0348	Special program indicator		
	0348		01	EPSDT-CHAP
	0348		02	Physically handicapped children's program
	0348		03	Special federal funding
	0348		04	Family planning
	0348		05	Disability
	0348		06	PPV/Medicare 100% payment
	0348		07	Induced abortion-danger to life
	0348		08	Induced abortion victim rape/incest
User	0349	PSOR/UR approval indicator		
	0349		1	Approved by the PSRO/UR as billed
	0349		2	Automatic approval as billed based on focused review
	0349		3	Partial approval
	0349		4	Admission denied
	0349		5	Postpayment review applicable
User	0350	Occurrence code		
	0350		01	Auto accident
	0350		02	No fault insurance involved-including auto accident/other

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Type	Table	Name	Value	Description
	0350		03	Accident/tort liability
	0350		04	Accident/employment related
	0350		05	Other accident
	0350		06	Crime victim
	0350		09	Start of infertility treatment cycle
	0350		10	Last menstrual period
	0350		11	Onset of symptoms/illness
	0350		12	Date of onset for a chronically dependent individual
	0350		17	Date outpatient occupational therapy plan established or last reviewed
	0350		18	Date of retirement patient/beneficiary
	0350		19	Date of retirement spouse
	0350		20	Guarantee of payment began
	0350		21	UR notice received
	0350		22	Date active care ended
	0350		24	Date insurance denied
	0350		25	Date benefits terminated by primary payor
	0350		26	Date SNF bed available
	0350		27	Date home health plan established
	0350		28	Spouse's date of birth
	0350		29	Date outpatient physical therapy plan established or last reviewed
	0350		30	Date outpatient speech pathology plan established or last reviewed
	0350		31	Date beneficiary notified of intent to bill (accommodations)
	0350		32	Date beneficiary notified of intent to bill (procedures or treatments)
	0350		33	First day of the Medicare coordination period for ESRD beneficiaries covered by EGHP
	0350		34	Date of election of extended care facilities
	0350		35	Date treatment started for P.T.
	0350		36	Date of inpatient hospital discharge for covered transplant patients
	0350		37	Date of inpatient hospital discharge for non-covered transplant patient
	0350		40	Scheduled date of admission
	0350		41	Date of first test for pre-admission testing
	0350		42	Date of discharge

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Type	Table	Name	Value	Description
	0350		43	Scheduled date of canceled surgery
	0350		44	Date treatment started for O.T.
	0350		45	Date treatment started for S.T.
	0350		46	Date treatment started for cardiac rehab.
	0350		47 ... 49	Payer codes
	0350		50	Date lien released
	0350		51	Date treatment started for psychiatric care
	0350		70 ... 99	Occurrence span codes and dates
	0350		A1	Birthdate - insured A
	0350		A2	Effective date - insured A policy
	0350		A3	Benefits exhausted payer A
User	0351	Occurrence span		
	0351		70	Qualifying stay dates for SNF
	0351		71	Prior stay dates
	0351		72	First/last visit
	0351		73	Benefit eligibility period
	0351		74	Non-covered level of care
	0351		75	SNF level of care
	0351		76	Patient liability
	0351		77	Provider liability period
	0351		78	SNF prior stay dates
	0351		79	Payer code
	0351		M0	PRO/UR approved stay dates
HL7	0353	CWE statuses		
	0353		U	Unknown
	0353		UASK	Asked but Unknown
	0353		NAV	Not available
	0353		NA	Not applicable
	0353		NASK	Not asked
HL7	0354	Message structure		
	0354		ADT_A01	A01, A04, A05, A08, A13, A14, A28, A31
	0354		ADT_A02	A02, A21, A22, A23, A25, A26, A27, A29, A32, A33
	0354		ADT_A03	A03
	0354		ADT_A06	A06, A07
	0354		ADT_A09	A09, A10, A11, A15

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Type	Table	Name	Value	Description
	0354		ADT_A12	A12
	0354		ADT_A16	A16
	0354		ADT_A17	A17
	0354		ADT_A18	A18
	0354		ADT_A20	A20
	0354		ADT_A24	A24
	0354		ADT_A28	A28, A31
	0354		ADT_A30	A30, A34, A35, 136, A46, A47, A48, A49
	0354		ADT_A37	A37
	0354		ADT_A38	A38
	0354		ADT_A39	A39, A40, A41, A42
	0354		ADT_A43	A43, A44
	0354		ADT_A45	A45
	0354		ADT_A50	A50, A51
	0354		ARD_A19	A19
	0354		BAR_P01	P01, P05
	0354		BAR_P02	P02
	0354		BAR_P06	P06
	0354		CRM_C01	C01, C02, C03, C04, C05, C06, C07, C08
	0354		CSU_C09	C09, C10, C11, C12
	0354		DFT_P03	P03
	0354		DOC_T12	T12
	0354		DSR_Q01	Q01
	0354		DSR_Q03	Q03
	0354		EDR_R07	R07
	0354		EQQ_Q04	Q04
	0354		ERP_R09	R09
	0354		MDM_T01	T01, T03, T05, T07, T09, T11
	0354		MDM_T02	T02, T04, T06, T08, T10
	0354		MFD_P09	P09
	0354		MFK_M01	M01, M03, M05, M06, M07, M08, M09, M10, M11
	0354		MFN_M01	M01
	0354		MFN_M02	M02
	0354		MFN_M03	M03
	0354		MFN_M05	M05

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
	0354		MFN_M06	M06
	0354		MFN_M07	M07
	0354		MFN_M08	M08
	0354		MFN_M09	M09
	0354		MFN_M10	M10
	0354		MFN_M11	M11
	0354		NUL	Null
	0354		ORF_R02	R02, R04
	0354		ORM__O01	O01
	0354		ORM_Q06	Q06
	0354		ORR_O02	O02
	0354		ORR_Q06	Q06
	0354		ORU_R01	R01
	0354		ORU_W01	W01
	0354		OSQ_Q06	Q06
	0354		OSR_Q06	Q06
	0354		PEX_P07	P07, P08
	0354		PGL_PC6	PC6, PC7, PC8
	0354		PIN_I07	I07
	0354		PPG_PCG	PCC, PCH, PCJ
	0354		PPP_PCB	PCB, PCD
	0354		PPR_PC1	PC1, PC2, PC3
	0354		PPT_PCL	PCL
	0354		PPV_PCA	PCA
	0354		PRR_PC5	PC5
	0354		PTR_PCF	PCF
	0354		QCK_Q02	Q02
	0354		QRY_A19	A19
	0354		QRY_PC4	PC4, PC9, PCE, PCK
	0354		QRY_Q01	Q01
	0354		QRY_Q02	Q02
	0354		QRY_R02	R02, R04
	0354		QRY_T12	T12
	0354		RAR_RAR	RAR
	0354		RAS_O01	O01

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
	0354		RAS_O02	O022
	0354		RCI_I05	I05
	0354		RCL_I06	I06
	0354		RDE_O01	O01
	0354		RDR_RDR	RDR
	0354		RDS_O01	O01
	0354		REF_I12	I12, I13, I14, I15
	0354		RER_RER	RER
	0354		RGR_RGR	RGR
	0354		RGV_O01	O01
	0354		RROR_ROR	ROR
	0354		RPA_I08	I08, I09, I10, I11
	0354		RPI_I01	I01, I04
	0354		RPL_I02	I02
	0354		RPR_I03	I03
	0354		RQA_I08	I08, I09, I10, I11
	0354		RQC_I05	I05
	0354		RQC_I06	I06
	0354		RQI_I01	I01, I02, I03
	0354		RQP_I04	I04
	0354		RQQ_Q09	Q09
	0354		RRR_O02	O02
	0354		RRD_O02	O02
	0354		RRE_O01	O01
	0354		RRG_O02	O02
	0354		RRR_I12	I12, I13, I14, I15
	0354		SIU_S12	S12, S13, S14, S15, S16, S17, S18, S19, S20, S21, S22, S23, S24, S26
	0354		SPQ_Q08	Q08
	0354		SQM_S25	S25
	0354		SQR_S25	S25
	0354		SRM_S01	S01, S02, S03, S04, S05, S06, S07, S08, S09, S10, S11
	0354		SRM_T12	T12
	0354		SRR_S01	S01, S02, S03, S04, S05, S06, S07, S08, S09, S10, S11
	0354		SRR_T12	T12
	0354		SUR_P09	P09

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
	0354		TBR_R09	R09
	0354		UDM_Q05	Q05
	0354		VQQ_Q07	Q07
	0354		VXQ_V01	V01
	0354		VXR_V03	V03
	0354		VXU_V04	V04
	0354		VXX_V02	V02
HL7	0355	Primary key value type		
	0355		PL	Person location
	0355		CE	Coded element
HL7	0356	Alternate character set handling scheme		
	0356		ISO 2022-1994	This standard is titled "Information Technology - Character Code Structure and Extension Technique". This standard specifies an escape sequence from basic one byte character set to specified other character set, and vice versa. The escape sequence expl
	0356		<null>	This is the default, indicating that there is no character set switching occurring in this message.
HL7	0357	Message error condition codes		
	0357		0	Message accepted
	0357		100	Segment sequence error
	0357		101	Required field missing
	0357		102	Data type error
	0357		103	Table value not found
	0357		200	Unsupported message type
	0357		201	Unsupported event code
	0357		202	Unsupported processing id
	0357		203	Unsupported version id
	0357		204	Unknown key identifier
	0357		205	Duplicate key identifier
	0357		206	Application record locked
	0357		207	Application internal error
User	0358	Practitioner group		
HL7	0359	Diagnosis priority		
	0359		0	not included in diagnosis ranking
	0359		1	the primary diagnosis
	0359		2 and higher	for ranked secondary diagnoses

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
User	0360	Degree		
	0360		AAS	Associate of Applied Science
	0360		AA	Associate of Arts
	0360		ABA	Associate of Business Administration
	0360		AE	Associate of Engineering
	0360		AS	Associate of Science
	0360		BA	Bachelor of Arts
	0360		BBA	Bachelor of Business Administration
	0360		BE	Bachelor or Engineering
	0360		BFA	Bachelor of Fine Arts
	0360		BN	Bachelor of Nursing
	0360		BS	Bachelor of Science
	0360		BSL	Bachelor of Science – Law
	0360		BT	Bachelor of Theology
	0360		CER	Certificate
	0360		DIP	Diploma
	0360		DBA	Doctor of Business Administration
	0360		DED	Doctor of Education
	0360		PHE	Doctor of Engineering
	0360		PHD	Doctor of Philosophy
	0360		PHS	Doctor of Science
	0360		MD	Doctor of Medicine
	0360		DO	Doctor of Osteopathy
	0360		HS	High School Graduate
	0360		JD	Juris Doctor
	0360		MA	Master of Arts
	0360		MBA	Master of Business Administration
	0360		MCE	Master of Civil Engineering
	0360		MDI	Master of Divinity
	0360		MED	Master of Education
	0360		MEE	Master of Electrical Engineering
	0360		ME	Master of Engineering
	0360		MFA	Master of Fine Arts
	0360		MME	Master of Mechanical Engineering
	0360		MS	Master of Science

Appendix A: Data Definition Tables

Type	Table	Name	Value	Description
	0360		MSL	Master of Science – Law
	0360		MT	Master of Theology
	0360		NG	Non-Graduate
	0360		SEC	Secretarial Certificate
	0360		TS	Trade School Graduate
User	0361	Sending/receiving application		
User	0362	Sending/receiving facility		
User	0363	Assigning authority		
User	0364	Comment type		
	0364		PI	Patient Instructions
	0364		AI	Ancillary Instructions,
	0364		GI	General Instructions
	0364		1R	Primary Reason
	0364		2R	Secondary Reason
	0364		GR	General Reason
	0364		RE	Remark
	0364		DR	Duplicate/Interaction Reason
HL7	4000	Name/address representation		
	4000		I	Ideographic (i.e., Kanji)
	4000		A	Alphabetic (i.e., Default or some single-byte)
	4000		P	Phonetic (i.e., ASCII, Katakana, Hiragana, etc.)

A.6 DATA ELEMENT NAMES

This section reflects the HL7 database which is available through HL7 Headquarters (see the last section in Chapter 1 for information on how to contact HL7).

Description	Item#	Seg	Seq#	Len	DT	Rep	Table
Abnormal Flags	00576	OBX	8	5	ID	Y/5	0078
Abnormal Text/Codes for Categorical Observations	00639	OM3	5	200	CE		
Absolute Range for Ordinal & Continuous Obs	00633	OM2	8	200	CM		
Accept Acknowledgment Type	00015	MSH	15	2	ID		0155
Accident Code	00528	ACC	2	60	CE		0050
Accident Date/Time	00527	ACC	1	26	TS		
Accident Death Indicator	00814	ACC	6	12	ID		0136
Accident Job Related Indicator	00813	ACC	5	1	ID		0136
Accident Location	00529	ACC	3	25	ST		

Appendix A: Data Definition Tables

Description	Item#	Seg	Seq#	Len	DT	Rep	Table
Accommodation Code	00182	PV2	2	60	CE		0129
Accommodation Type	00980	LCC	3	60	CE	Y	0129
Account ID	00236	BLG	3	100	CX		
Account Status	00171	PV1	41	2	IS		0117
Acknowledgment Code	00018	MSA	1	2	ID		0008
Action By	00233	ORC	19	120	XCN	Y	
Action Code	00816	GOL	1	2	ID		0287
Action Code	00816	PRB	1	2	ID		0287
Action Code	00816	ROL	2	2	ID		0287
Action Code	00816	PTH	1	2	ID		0287
Action Code-RXA	01224	RXA	21	2	ID		0323
Action Date/Time	00817	GOL	2	26	TS		
Action Date/Time	00817	PRB	2	26	TS		
Action Taken In Response To The Event	01118	PCR	21	2	ID	Y/6	0251
Activation Date LDP	00969	LDP	7	26	TS		
Active/Inactive Flag	00675	STF	7	1	ID		0183
Active/Inactive Flag	00675	LDP	6	1	ID		0183
Active/Inactive Flag	00675	CDM	8	1	ID		0183
Active/Inactive Flag	00675	PRC	16	1	ID		0183
Activity Date/Time	00917	TXA	4	26	TS		
Actual Dispense Amount	00337	RXD	4	20	NM		
Actual Dispense Units	00338	RXD	5	60	CE		
Actual Dosage Form	00339	RXD	6	60	CE		
Actual Length of Inpatient Stay	00712	PV2	11	3	NM		
Actual Problem Resolution Date/Time	00844	PRB	9	26	TS		
Actual Strength	01132	RXD	16	20	NM		
Actual Strength Unit	01133	RXD	17	60	CE		
Addendum Continuation Pointer	00066	ADD	1	65536	ST		
Additional Insured on Auto	01275	STF	21	1	ID		0136
Additive	00647	OM4	7	60	CE		
Address	00193	NK1	4	106	XAD	Y	
Address of Outside Site(s)	00613	OM1	28	1000	XAD	Y	
Administered Amount	00348	RXA	6	20	NM		
Administered Code	00347	RXA	5	100	CE		0292
Administered Dosage Form	00350	RXA	8	60	CE		

Appendix A: Data Definition Tables

Description	Item#	Seg	Seq#	Len	DT	Rep	Table
Administered Per (Time Unit)	00354	RXA	12	20	ST		
Administered Strength	01134	RXA	13	20	NM		
Administered Strength Units	01135	RXA	14	60	CE		
Administered Units	00349	RXA	7	60	CE		
Administered-at Location	00353	RXA	11	200	CM		
Administering Provider	00352	RXA	10	200	XCN	Y	
Administration Device	00311	RXR	3	60	CE		0164
Administration Method	00312	RXR	4	60	CE		0165
Administration Notes	00351	RXG	9	200	CE	Y	
Administration Notes	00351	RXA	9	200	CE	Y	
Administration Sub-ID Counter	00344	RXA	2	4	NM		
Admission Type	00134	PV1	4	2	IS		0007
Admit Date/Time	00174	PV1	44	26	TS		
Admit Reason	00183	PV2	3	60	CE		
Admit Source	00144	PV1	14	3	IS		0023
Admitting Doctor	00147	PV1	17	60	XCN	Y	0010
Advanced Beneficiary Notice Code	01310	ORC	20	40	CE		0339
Allergy Code/Mnemonic/Description	00205	AL1	3	60	CE		
Allergy Reaction	00207	AL1	5	15	ST	Y	
Allergy Severity	00206	AL1	4	2	IS		0128
Allergy Type	00204	AL1	2	2	IS		0127
Allow Substitution Code	00895	AIS	9	10	IS		0279
Allow Substitution Code	00895	AIG	13	10	IS		0279
Allow Substitution Code	00895	AIL	11	10	IS		0279
Allow Substitution Code	00895	AIP	11	10	IS		0279
Allow Substitutions	00300	RXO	9	1	ID		0161
Alternate Character Set Handling Scheme	01317	MSH	20	20	ID		0356
Alternate Patient ID - CSR	01039	CSR	5	30	CX		
Alternate Patient ID - PID	00107	PID	4	20	CX	Y	
Alternate Study ID	01036	CSR	2	60	EI		
Alternate Study ID	01036	CM0	3	60	EI	Y/3	
Alternate Visit ID	00180	PV1	50	20	CX	N	0203
Ambulatory Status	0145	PV1	15	2	IS	Y	0009
Ambulatory Status	0145	NK1	18	2	IS	Y	0009
Ambulatory Status	00145	GT1	34	2	IS	Y	0009

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Description	Item#	Seg	Seq#	Len	DT	Rep	Table
Ambulatory Status	00145	IN2	32	2	IS	Y	0009
Anesthesia Code	00399	PR1	9	2	IS		0019
Anesthesia Minutes	00400	PR1	10	4	NM		
Anesthesiologist	00398	PR1	8	120	XCN	Y	0010
Anticipated Price	00285	RQ1	1	10	ST		
Anticipated Problem Resolution Date/Time	00843	PRB	8	26	TS		
Appeal Reason	00518	IN3	17	60	CE		0345
Application Acknowledgment Type	00016	MSH	16	2	ID		0155
Appointment Duration	00868	ARQ	9	20	NM		
Appointment Duration	00868	SCH	9	20	NM		
Appointment Duration Units	00869	ARQ	10	200	CE		
Appointment Duration Units	00869	SCH	10	200	CE		
Appointment Reason	00866	ARQ	7	200	CE		0276
Appointment Reason	00866	SCH	7	200	CE		0276
Appointment Timing Quantity	00884	SCH	11	200	TQ	Y	
Appointment Type	00867	ARQ	8	200	CE		0277
Appointment Type	00867	SCH	8	200	CE		0277
Assigned Document Authenticator	00923	TXA	10	60	XCN	Y	
Assigned Patient Location	00133	PV1	3	80	PL		
Assigned Patient Location	00133	FT1	16	80	PL		
Assignment Of Benefits	00445	IN1	20	2	IS		0135
Assistant Result Interpreter +	00265	OBR	33	200	CM	Y	
Associated Diagnosis Code	00772	PR1	15	80	CE		0051
Attending Doctor	00137	PV1	7	60	XCN	Y	0010
Attestation Date/Time	00768	DG1	19	26	TS		
Authentication Person, Time Stamp	00934	TXA	22	60	PPN	Y	
Authorization Effective Date	01149	AUT	4	26	TS		
Authorization Expiration Date	01150	AUT	5	26	TS		
Authorization Identifier	01151	AUT	6	30	EI		
Authorization Information	00439	IN1	14	55	CM		
Authorized Number of Treatments	01154	AUT	9	2	NM		
Authorizing Payor, Company ID	01147	AUT	2	200	CE		0285
Authorizing Payor, Company Name	01148	AUT	3	45	ST		
Authorizing Payor, Plan ID	01146	AUT	1	200	CE		0072
Auto Accident State	00812	ACC	4	60	CE		0347

Appendix A: Data Definition Tables

Description	Item#	Seg	Seq#	Len	DT	Rep	Table
Auto Ins. Expires	01232	STF	24	8	DT		
Baby Coverage	00490	IN2	19	1	ID		0136
Baby Detained Indicator	00738	PV2	37	1	ID		0136
Backup Person ID	00682	STF	14	60	CE	Y	
Bad Debt Agency Code	00161	PV1	31	10	IS		0021
Bad Debt Recovery Amount	00163	PV1	33	12	NM		
Bad Debt Transfer Amount	00162	PV1	32	12	NM		
Batch Comment	00090	BHS	10	80	ST		
Batch Comment	00090	BTS	2	80	ST		
Batch Control ID	00091	BHS	11	20	ST		
Batch Creation Date/Time	00087	BHS	7	26	TS		
Batch Encoding Characters	00082	BHS	2	3	ST		
Batch Field Separator	00081	BHS	1	1	ST		
Batch Message Count	00093	BTS	1	10	ST		
Batch Name/ID/Type	00089	BHS	9	20	ST		
Batch Receiving Application	00085	BHS	5	15	ST		
Batch Receiving Facility	00086	BHS	6	20	ST		
Batch Security	00088	BHS	8	40	ST		
Batch Sending Application	00083	BHS	3	15	ST		
Batch Sending Facility	00084	BHS	4	20	ST		
Batch Totals	00095	BTS	3	100	NM	Y	
Bed Location	00209	NPU	1	80	PL		
Bed Status	00170	PV1	40	1	IS		0116
Bed Status	00170	NPU	2	1	IS		0116
Billing Category	01007	PRC	14	60	CE	Y	0293
Billing Media Code	00733	PV2	32	1	ID		0136
Billing Status	00457	IN1	32	2	IS		0022
Birth Order	00128	PID	25	2	NM		
Birth Place	00126	PID	23	60	ST		
Blood Deductible	00492	IN2	21	1	ST		
Blood Deductible (43)	00531	UB1	2	1	NM		
Blood Furnished-Pints Of (40)	00532	UB1	3	2	NM		
Blood Not Replaced-Pints(42)	00534	UB1	5	2	NM		
Blood Replaced-Pints (41)	00533	UB1	4	2	NM		
Brand Name	01249	PDC	3	60	ST		

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Description	Item#	Seg	Seq#	Len	DT	Rep	Table
Business Phone Number	00195	NK1	6	40	XTN	Y	
Call Back Phone Number	00228	ORC	14	40	XTN	Y/2	
Case Manager	00522	IN3	21	48	ST		
Catalogue Identifier	01253	PDC	7	60	ST		
Cause Of Death	01090	PEO	18	60	CE	Y	
Certainty of Problem	00854	PRB	19	60	CE		
Certification Agency	00519	IN3	18	60	CE		0346
Certification Agency Phone Number	00520	IN3	19	40	XTN	Y	
Certification Begin Date	00510	IN3	9	8	DT		
Certification Contact	00516	IN3	15	48	ST		
Certification Contact Phone Number	00517	IN3	16	40	XTN	Y	
Certification Date/Time	00507	IN3	6	26	TS		
Certification End Date	00511	IN3	10	8	DT		
Certification Modify Date/Time	00508	IN3	7	26	TS		
Certification Number	00503	IN3	2	59	CX		
Certification Required	00505	IN3	4	1	ID		0136
Certified By	00504	IN3	3	60	XCN	Y	
Chairman of Study	01014	CM0	5	60	XCN	Y	
Challenge Information	00939	OM1	44	200	TX		0256/ 0257
Change Pathway Life Cycle Status Date/Time	01211	PTH	6	26	TS		
Character Set	00692	MSH	18	16	ID	Y	0211
Charge Code	00981	LCC	4	60	CE	Y	0132
Charge Code Alias	00983	CDM	2	200	CE	Y	
Charge Description Long	00985	CDM	4	250	ST		
Charge Description Short	00984	CDM	3	20	ST		
Charge On Indicator	01009	PRC	18	1	IS		0269
Charge Price Indicator	00151	PV1	21	2	IS		0032
Charge to Practice +	00256	OBR	23	40	CM		
Charge Type	00235	BLG	2	50	ID		0122
Chargeable Flag	01008	PRC	15	1	ID		0136
Checksum Errors Received	01182	NST	10	10	NM		
Citizenship	00129	PID	26	80	CE	Y	0171
Citizenship	00129	NK1	19	80	CE	Y	0171
Citizenship	00129	GT1	35	80	CE	Y	0171
Citizenship	00129	IN2	33	80	CE	Y	0171

Appendix A: Data Definition Tables

Description	Item#	Seg	Seq#	Len	DT	Rep	Table
Clinic Organization Name	00724	PV2	23	90	XON	Y	
Coded Representation of Method	00599	OM1	14	200	CE	Y	
Co-Insurance Days (25)	00535	UB1	6	2	NM		
Co-Insurance Days (9)	00554	UB2	2	3	ST		
Collection Volume *	00243	OBR	9	20	CQ		
Collector Identifier *	00244	OBR	10	60	XCN	Y	
Collector's Comment *	01030	OBR	39	200	CE	Y	
Column Description	00702	RDF	2	40	RCD	Y	
Column Value	00703	RDT	1	Variable	Variable		
Combine Baby Bill	00491	IN2	20	1	ID		0136
Comment	00098	NTE	3	65536	FT	Y	
Comment Type	01318	NTE	4	60	CE		
Company Plan Code	00460	IN1	35	8	IS		0042
Completion Status	01223	RXA	20	2	ID		0322
Component Amount	00315	RXC	3	20	NM		
Component Code	00314	RXC	2	100	CE		
Component Strength	01124	RXC	5	20	NM		
Component Strength Units	01125	RXC	6	60	CE		
Component Units	00316	RXC	4	60	CE		
Condition Code (24-30)	00555	UB2	3	2	IS	Y/7	0043
Condition Code (35-39)	00536	UB1	7	14	IS	Y/5	0043
Confidential Indicator	00767	DG1	18	1	ID		0136
Confidential Indicator	00767	DRG	10	1	ID		0136
Confidentiality Code	00615	OM1	30	1	IS		0177
Confirmation Provided By	01095	PEO	23	1	ID		0242
Connect Timeouts	01185	NST	13	10	NM		
Consent Code	00403	PR1	13	60	CE		0059
Consulting Doctor	00139	PV1	9	60	XCN	Y	0010
Contact Address	01166	FAC	7	200	XAD	Y	
Contact Address	01166	CTD	3	200	XAD	Y	
Contact Communication Information	01168	CTD	5	100	XTN	Y	
Contact for Study	01018	CM0	9	60	XCN	Y	
Contact Identifiers	01171	CTD	7	100	CM	Y	
Contact Location	01167	CTD	4	60	PL		
Contact Name	01165	CTD	2	106	XPN	Y	

Appendix A: Data Definition Tables

Description	Item#	Seg	Seq#	Len	DT	Rep	Table
Contact Person	01266	FAC	5	60	XCN	Y	
Contact Person Social Security Number	00754	NK1	37	16	ST		
Contact Person's Address	00750	NK1	32	106	XAD	Y	
Contact Person's Name	00748	NK1	30	48	XPB	Y	
Contact Person's Name	00748	GT1	45	48	XPB	Y	
Contact Person's Telephone Number	00749	NK1	31	40	XTN	Y	
Contact Person's Telephone Number	00749	GT1	46	40	XTN	Y	
Contact Phone	00978	LDP	11	40	XTN		
Contact Reason	00747	NK1	29	80	CE	Y	0222
Contact Reason	00747	GT1	47	80	CE		0222
Contact Relationship	00784	GT1	48	2	IS		0063
Contact Role	00196	NK1	7	200	CE		0131
Contact Role	00196	CTD	1	200	CE	Y	0131
Contact Telecommunication	01269	FAC	8	44	XTN	Y	
Contact Title	01267	FAC	6	60	ST	Y	
Contact's Address	01020	CM0	11	100	XAD	Y	
Contact's Tel. Number	01019	CM0	10	40	XTN		
Container Description	00643	OM4	3	60	TX		
Container Units	00645	OM4	5	60	CE		
Container Volume	00644	OM4	4	20	NM		
Continuation Pointer	00014	MSH	14	180	ST		
Continuation Pointer	00014	DSC	1	180	ST		
Contract Amount	00156	PV1	26	12	NM	Y	
Contract Code	00154	PV1	24	2	IS	Y	0044
Contract Effective Date	00155	PV1	25	8	DT	Y	
Contract Number	00992	CDM	11	200	CK	Y	
Contract Organization	00993	CDM	12	200	XON	Y	
Contract Period	00157	PV1	27	3	NM	Y	
Contraindications to Observations	00618	OM1	33	65536	CE		
Coord Of Ben. Priority	00447	IN1	22	2	ST		
Coordination Of Benefits	00446	IN1	21	2	IS		0173
Copay Limit Flag	00807	IN2	67	1	ID		0136
Copy Auto Ins	01229	STF	23	1	ID		0136
Corresponding SI Units of Measure	00629	OM2	4	60	CE		
Cost	00989	PRC	17	12	MO		

Appendix A: Data Definition Tables

Description	Item#	Seg	Seq#	Len	DT	Rep	Table
Country	01248	PDC	2	60	CE		
Country Code	00017	MSH	17	2	ID		
County Code	00115	PID	12	4	IS		0289
Courtesy Code	00152	PV1	22	2	IS		0045
Coverage Type	01227	IN1	47	3	IS		0309
Covered Days - (23)	00537	UB1	8	3	NM		
Covered Days (7)	00556	UB2	4	3	ST		
Credit Rating	00153	PV1	23	2	IS		0046
Critical Range for Ordinal & Continuous Obs	00632	OM2	7	200	CM		
Critical Text Codes for Categorical Observations	00640	OM3	6	200	CE		
Current Application	01191	NSC	4	30	ST		
Current CPU	01189	NSC	2	30	ST		
Current Facility	01192	NSC	5	30	ST		
Current Fileserver	01190	NSC	3	30	ST		
Current Goal Review Date/Time	00828	GOL	12	26	TS		
Current Goal Review Status	00827	GOL	11	80	CE		
Current Patient Balance	00176	PV1	46	12	NM		
D/T of Most Recent Refill or Dose Dispensed	00328	RXE	18	26	TS		
Daily Deductible	00501	IN2	30	25	CM		
Danger Code	00246	OBR	12	60	CE		
Data Line	00063	DSP	3	300	TX		
Date Entered Practice	01296	PRA	8	8	DT		
Date First Marketed	01260	PDC	14	26	TS		
Date Last DMV Review	01298	STF	25	8	DT		
Date Last Marketed	01261	PDC	15	26	TS		
Date Last Obs Normal Values	00580	OBX	12	26	TS		
Date Needed	00284	RQD	10	8	DT		
Date Next DMV Review	01234	STF	26	8	DT		
Date Product Returned To Manufacturer	01115	PCR	18	26	TS		
Date/Time Dispensed	00336	RXD	3	26	TS		
Date/Time End of Administration	00346	RXA	4	26	TS		
Date/time Ended Study	01049	CSR	15	26	TS		
Date/Time of Birth	00110	PID	7	26	TS		
Date/Time of Birth	00110	NK1	16	26	TS		
Date/Time Of Birth	00110	STF	6	26	TS		

Appendix A: Data Definition Tables

Description	Item#	Seg	Seq#	Len	DT	Rep	Table
Date/Time Of Message	00007	MSH	7	26	TS		
Date/Time Of Patient Study Registration	01040	CSR	6	26	TS		
Date/Time of the Observation	00582	OBX	14	26	TS		
Date/Time of Transaction	00223	ORC	9	26	TS		
Date/time Patient Study Consent Signed	01043	CSR	9	26	TS		
Date/Time Planned Event	00101	EVN	3	26	TS		
Date/Time Selection Qualifier	00044	QRF	8	12	ID	Y	0158
Date/Time Stamp for any change in Definition for the Observation	00606	OM1	21	26	TS		
Date/Time Start of Administration	00345	RXA	3	26	TS		
Date/time Study Phase Began	01052	CSP	2	26	TS		
Date/time Study Phase Ended	01053	CSP	3	26	TS		
Days	00512	IN3	11	3	CM		0149
Deferred Response Date/Time	00030	QRD	6	26	TS		
Deferred Response Type	00029	QRD	5	1	ID		0107
Delay Before L.R. Day	00459	IN1	34	4	NM		
Delayed Acknowledgment Type	00022	MSA	5	1	ID		0102
Delete Account Date	00165	PV1	35	8	DT		
Delete Account Indicator	00164	PV1	34	1	IS		0111
Deliver To ID	00283	RQD	9	60	CE		
Deliver-To Location	00299	RXO	8	200	CM		
Deliver-to Location	00299	RXE	8	200	CM		
Delta Check Criteria	00634	OM2	9	200	CM	Y	
Department	00676	STF	8	200	CE	Y	0184
Department	00676	PRC	3	200	CE	Y	0184
Department Code	00367	FT1	13	60	CE		0049
Dependent Of Military Recipient	00482	IN2	11	80	CE		0342
Dept. Cost Center	00281	RQD	7	30	IS		0319
Derivation Rule	00657	OM6	2	10240	TX		
Derived Specimen	00642	OM4	2	1	ID		0170
Description of Study Phase	01023	CM1	3	300	ST		
Description of Test Methods	00626	OM1	41	65536	TX		
Description of Time Point	01026	CM2	3	300	ST		
Description Override Indicator	00986	CDM	5	1	IS		0268
Device Family Name	01250	PDC	4	60	ST		
Device Operator Qualifications	01116	PCR	19	1	ID		0242

Appendix A: Data Definition Tables

Description	Item#	Seg	Seq#	Len	DT	Rep	Table
Diagnosing Clinician	00390	DG1	16	60	XCN	Y	
Diagnosis Classification	00766	DG1	17	3	IS		0228
Diagnosis Code - DG1	00377	DG1	3	60	CE		0051
Diagnosis Code - FT1	00371	FT1	19	60	CE	Y	0051
Diagnosis Coding Method	00376	DG1	2	2	ID		0053
Diagnosis Date/Time	00379	DG1	5	26	TS		
Diagnosis Description	00378	DG1	4	40	ST		
Diagnosis Priority	00389	DG1	15	2	ID		0359
Diagnosis Type	00380	DG1	6	2	IS		0052
Diagnostic Related Group	00382	DG1	8	60	CE		0055
Diagnostic Related Group	00382	DRG	1	60	CE		0055
Diagnostic Serv Sect ID	00257	OBR	24	10	ID		0074
Diet Type	00168	PV1	38	80	CE		0114
Diet, Supplement, or Preference Code	00271	ODS	3	60	CE	Y/20	
Disability End Date	01288	DB1	6	8	DT		
Disability Return to Work Date	01289	DB1	7	8	DT		
Disability Start Date	01287	DB1	5	8	DT		
Disability Unable to Work Date	01290	DB1	8	8	DT		
Disabled Indicator	00128006	DB1	4	1	ID		0136
Disabled Person Code	01284	DB1	2	2	IS		0334
Disabled Person Identifier	01285	DB1	3	32	CX	Y	
Discharge Date/Time	00175	PV1	45	26	TS		
Discharge Disposition	00166	PV1	36	3	IS		0112
Discharged to Location	00167	PV1	37	25	CM		0113
Dispense Amount	00323	RXE	10	20	NM		
Dispense Notes	00340	RXD	9	200	ST	Y	
Dispense Package Method	01222	RXE	30	2	ID		0321
Dispense Package Method	01222	RXD	24	2	ID		0321
Dispense Package Size	01220	RXE	28	20	NM		
Dispense Package Size	01220	RXD	22	20	NM		
Dispense Package Size Unit	01221	RXE	29	60	CE		
Dispense Package Size Unit	01221	RXD	23	60	CE		
Dispense Sub-ID Counter	00334	RXD	1	4	NM		
Dispense Sub-ID Counter	00334	RXG	2	4	NM		
Dispense Units	00324	RXE	11	60	CE		

Appendix A: Data Definition Tables

Description	Item#	Seg	Seq#	Len	DT	Rep	Table
Dispense/Give Code	00335	RXD	2	100	CE		0292
Dispense-to Location	01303	RXD	13	200	CM		
Dispense-To Location	01303	RXG	11	200	CM		
Dispensing Provider	00341	RXD	10	200	XCN	Y	
Display Level	00062	DSP	2	4	SI		
Distributed Copies (Code and Name of Recipients)	00935	TXA	23	60	XCN	Y	
Document Availability Status	00930	TXA	19	2	ID		0273
Document Change Reason	00933	TXA	21	30	ST		
Document Completion Status	00928	TXA	17	2	ID		0271
Document Confidentiality Status	00929	TXA	18	2	ID		0272
Document Content Presentation	00916	TXA	3	2	ID		0191
Document Control Number	00564	UB2	12	23	ST	Y/3	
Document Storage Status	00932	TXA	20	2	ID		0275
Document Type	00915	TXA	2	30	IS		0270
Documented Date/Time	01213	VAR	2	26	TS		
DRG Approval Indicator	00383	DG1	9	1	ID		0136
DRG Approval Indicator	00383	DRG	3	1	ID		0136
DRG Assigned Date/Time	00769	DRG	2	26	TS		
DRG Grouper Review Code	00384	DG1	10	2	IS		0056
DRG Grouper Review Code	00384	DRG	4	2	IS		0056
DRG Payor	00770	DRG	8	1	IS		0229
Driver's License Number – Staff	01302	STF	22	25	DLN		
Driver's License Number - Patient	00123	PID	20	25	DLN		
Duplicate Patient	00762	PD1	10	20	CX	Y	
Duration	00893	AIS	7	20	NM		
Duration	00893	AIG	11	20	NM		
Duration	00893	AIL	9	20	NM		
Duration	00893	AIP	9	20	NM		
Duration Units	00894	AIS	8	200	CE		
Duration Units	00894	AIG	12	200	CE		
Duration Units	00894	AIL	10	200	CE		
Duration Units	00894	AIP	10	200	CE		
Edit Date/Time	00921	TXA	8	26	TS	Y	
Effective Date	01143	RF1	7	26	TS		
Effective Date/Time	00662	MFI	5	26	TS		

Appendix A: Data Definition Tables

Description	Item#	Seg	Seq#	Len	DT	Rep	Table
Effective Date/Time	00662	MFE	3	26	TS		
Effective Date/Time of Change	00607	OM1	22	26	TS		
Effective End Date	01005	PRC	12	26	TS		
Effective End Date of Provider Role	01164	PRD	9	26	TS		
Effective Start Date	01004	PRC	11	26	TS		
Effective Start Date of Provider Role	01163	PRD	8	26	TS		
Eligibility Source	00498	IN2	27	1	IS		0144
E-Mail Address	00683	STF	15	40	ST	Y	
Employer Contact Person Name	00789	IN2	49	48	XPB	Y	
Employer Contact Person Phone Number	00790	IN2	50	40	XTN	Y	
Employer Contact Reason	00791	IN2	51	2	IS		0222
Employer Information Data	00475	IN2	4	1	IS		0139
Employment Illness Related Indicator	00716	PV2	15	1	ID		0136
Employment Status	01276	STF	20	2	IS		0066
Employment Stop Date	00783	GT1	32	8	DT		
Employment Stop Date	00783	IN2	45	8	DT		
Encoding Characters	00002	MSH	2	4	ST		
End Date	00198	NK1	9	8	DT		
Entered By	00224	ORC	10	120	XCN	Y	
Entered By Code	00765	FT1	24	120	XCN	Y	
Entered By Location	00880	ARQ	21	80	PL		
Entered by Location	00880	SCH	22	80	PL		
Entered By Person	00878	ARQ	19	48	XCN	Y	
Entered by Person	00878	SCH	20	48	XCN	Y	
Entered By Phone Number	00879	ARQ	20	40	XTN	Y	
Entered by Phone Number	00879	SCH	21	40	XTN	Y	
Entered Date/Time	00661	MFI	4	26	TS		
Enterer's Location	00227	ORC	13	80	PL		
Entering Device	00232	ORC	18	60	CE		
Entering Organization	00231	ORC	17	60	CE		
Episode of Care ID	00820	GOL	5	60	EI		
Episode of Care ID	00820	PRB	5	60	EI		
EQL Query Name	00709	EQL	3	60	CE		
EQL Query Statement	00710	EQL	4	4096	ST		
Error Code and Location	00024	ERR	1	80	CM	Y	

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Description	Item#	Seg	Seq#	Len	DT	Rep	Table
Error Condition	00023	MSA	6	100	CE		
Escort Required	01033	OBR	42	1	ID		0225
Estimated Length of Inpatient Stay	00711	PV2	10	3	NM		
Ethnic Group	00125	PID	22	80	CE	Y	0189
Ethnic Group	00125	NK1	28	80	CE	Y	0189
Ethnic Group	00125	GT1	44	80	CE	Y	0189
Ethnic Group	00125	IN2	42	80	CE	Y	0189
Evaluated Product Source	01114	PCR	17	8	ID		0248
Event Causality Observations	01119	PCR	22	2	ID	Y/6	0252
Event Completion Date/Time	00668	MFA	3	26	TS		
Event Description From Autopsy	01089	PEO	17	600	FT	Y	
Event Description From Others	01085	PEO	13	600	FT	Y	
Event Description From Patient	01087	PEO	15	600	FT	Y	
Event Description From Practitioner	01088	PEO	16	600	FT	Y	
Event Ended Date/Time	01078	PEO	6	26	TS		
Event Exacerbation Date/Time	01076	PEO	4	26	TS		
Event Expected	01082	PEO	10	1	ID		0239
Event From Original Reporter	01086	PEO	14	600	FT	Y	
Event Identifier	00706	ERQ	2	60	CE		
Event Identifiers Used	01073	PEO	1	60	CE	Y	
Event Improved Date/Time	01077	PEO	5	26	TS		
Event Location Occurred Address	01079	PEO	7	106	XAD	Y	
Event Occurred	01278	EVN	6	26	TS		
Event Onset Date/Time	01075	PEO	3	26	TS		
Event Outcome	01083	PEO	11	1	ID	Y	0240
Event Qualification	01080	PEO	8	1	ID	Y	0237
Event Reason	00883	SCH	6	200	CE		
Event Reason Code	00102	EVN	4	3	IS		0062
Event Report Date	01069	PES	10	26	TS		
Event Report Source	01071	PES	12	1	ID		0235
Event Report Timing/Type	01070	PES	11	3	ID	Y/2	0234
Event Reported To	01072	PES	13	1	ID	Y	0236
Event Serious	01081	PEO	9	1	ID		0238
Event Symptom/Diagnosis Code	01074	PEO	2	60	CE	Y	
Event Type Code	00099	EVN	1	3	ID		0003

Appendix A: Data Definition Tables

Description	Item#	Seg	Seq#	Len	DT	Rep	Table
Events Scheduled This Time Point	01027	CM2	4	60	CE	Y/200	
Expected Admit Date/Time	00188	PV2	8	26	TS		
Expected Discharge Date/Time	00189	PV2	9	26	TS		
Expected Discharge Disposition	00728	PV2	27	2	IS		0112
Expected Goal Achieve Date/Time	00824	GOL	8	26	TS		
Expected Number of Insurance Plans	00721	PV2	20	1	NM		
Expected Sequence Number	00021	MSA	4	15	NM		
Expected Shelf Life	01259	PDC	13	12	CQ		
Expected Surgery Date & Time	00734	PV2	33	26	TS		
Expiration Date	01144	RF1	8	26	TS		
Exploding Charges	00987	CDM	6	60	CE	Y	
External Referral Identifier	01300	RF1	11	30	EI	Y	
Facility Address	01264	FAC	3	200	XAD	Y	
Facility ID - PRC	00995	PRC	2	60	CE	Y	
Facility ID-FAC	01262	FAC	1	20	EI		
Facility Telecommunication	01265	FAC	4	44	XTN		
Facility Type	01263	FAC	2	1	ID		0331
Factors that may Effect the Observation	00624	OM1	39	200	TX		
Family/Significant Other Awareness of Problem/Prognosis	00859	PRB	24	200	ST		
Fee Schedule	00370	FT1	17	1	IS		0024
Field Separator	00001	MSH	1	1	ST		
File Batch Count	00079	FTS	1	10	NM		
File Control ID	00077	FHS	11	20	ST		
File Creation Date/Time	00073	FHS	7	26	TS		
File Encoding Characters	00068	FHS	2	4	ST		
File Field Separator	00067	FHS	1	1	ST		
File Header Comment	00076	FHS	10	80	ST		
File Name/ID	00075	FHS	9	20	ST		
File Receiving Application	00071	FHS	5	15	ST		
File Receiving Facility	00072	FHS	6	20	ST		
File Security	00074	FHS	8	40	ST		
File Sending Application	00069	FHS	3	15	ST		
File Sending Facility	00070	FHS	4	20	ST		
File Trailer Comment	00080	FTS	2	80	ST		
File-Level Event Code	00660	MFI	3	3	ID		0178

Appendix A: Data Definition Tables

Description	Item#	Seg	Seq#	Len	DT	Rep	Table
Filler Appointment ID	00861	ARQ	2	75	EI		
Filler Appointment ID	00861	SCH	2	75	EI		
Filler Contact Address	00887	SCH	18	106	XAD	Y	
Filler Contact Location	00888	SCH	19	80	PL		
Filler Contact Person	00885	SCH	16	38	XCN	Y	
Filler Contact Phone Number	00886	SCH	17	40	XTN		
Filler Field 1 +	00253	OBR	20	60	ST		
Filler Field 1 +	00253	OBR	20	60	ST		
Filler Field 2 +	00254	OBR	21	60	ST		
Filler Field 2 +	00254	OBR	21	60	ST		
Filler Order Number	00217	OBR	3	22	EI		
Filler Order Number	00217	FT1	23	22	EI		
Filler Order Number	00217	TXA	15	22	EI		
Filler Override Criteria	00912	APR	5	80	SCV	Y	
Filler Status Code	00889	SCH	25	200	CE		0278
Filler Status Code	00889	AIS	10	200	CE		0278
Filler Status Code	00889	AIG	14	200	CE		0278
Filler Status Code	00889	AIL	12	200	CE		0278
Filler Status Code	00889	AIP	12	200	CE		0278
Financial Class	00150	PV1	20	50	FC	Y	0064
First Similar Illness Date	00730	PV2	29	8	DT		
Fixed Canned Message	00621	OM1	36	65536	CE		
Formula	00999	PRC	6	200	ST	Y	
Generic Name	01251	PDC	5	60	CE		
Generic Product	01099	PCR	2	1	IS		0249
Give Amount - Maximum	00319	RXE	4	20	NM		
Give Amount - Maximum	00319	RXG	6	20	NM		
Give Amount - Minimum	00318	RXE	3	20	NM		
Give Amount - Minimum	00318	RXG	5	20	NM		
Give Code	00317	RXE	2	100	CE		0292
Give Code	00317	RXG	4	100	CE		0292
Give Dosage Form	00321	RXE	6	60	CE		
Give Dosage Form	00321	RXG	8	60	CE		
Give Indication	01128	RXE	27	200	CE	Y	
Give Per (Time Unit)	00331	RXE	22	20	ST		

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Description	Item#	Seg	Seq#	Len	DT	Rep	Table
Give Per (Time Unit)	00331	RXG	14	20	ST		
Give Rate Amount	00332	RXE	23	6	ST		
Give Rate Amount	00332	RXG	15	6	ST		
Give Rate Units	00333	RXE	24	60	CE		
Give Rate Units	00333	RXG	16	60	CE		
Give Strength	01126	RXE	25	20	NM		
Give Strength	01126	RXG	17	20	NM		
Give Strength Units	01127	RXE	26	60	CE		
Give Strength Units	01127	RXG	18	60	CE		
Give Sub-ID Counter	00342	RXG	1	4	NM		
Give Sub-ID Counter	00342	RXA	1	4	NM		
Give Units	00320	RXE	5	60	CE		
Give Units	00320	RXG	7	60	CE		
Goal Classification	00825	GOL	9	80	CE		
Goal Established Date/Time	00822	GOL	7	26	TS		
Goal Evaluation	00832	GOL	16	80	CE		
Goal Evaluation Comment	00833	GOL	17	300	ST	Y	
Goal ID	00818	GOL	3	80	CE		
Goal Instance ID	00819	GOL	4	60	EI		
Goal Life Cycle Status	00834	GOL	18	80	CE		
Goal Life Cycle Status Date/Time	00835	GOL	19	26	TS		
Goal List Priority	00821	GOL	6	60	NM		
Goal Management Discipline	00826	GOL	10	80	CE		
Goal Review Interval	00831	GOL	15	200	TQ		
Goal Target Name	00837	GOL	21	80	XP	Y	
Goal Target Type	00836	GOL	20	80	CE	Y	
Group Name	00434	IN1	9	130	XON	Y	
Group Number	00433	IN1	8	12	ST		
Grouper Version And Type	00388	DG1	14	4	ST		
Guarantor Address	00409	GT1	5	106	XAD	Y	
Guarantor Billing Hold Flag	00773	GT1	22	1	ID		0136
Guarantor Charge Adjustment Code	00777	GT1	26	80	CE		0218
Guarantor Credit Rating Code	00774	GT1	23	80	CE		0341
Guarantor Date - Begin	00417	GT1	13	8	DT		
Guarantor Date - End	00418	GT1	14	8	DT		

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Description	Item#	Seg	Seq#	Len	DT	Rep	Table
Guarantor Date/Time Of Birth	00412	GT1	8	26	TS		
Guarantor Death Date And Time	00775	GT1	24	26	TS		
Guarantor Death Flag	00776	GT1	25	1	ID		0136
Guarantor Employee ID Number	00423	GT1	19	20	CX	Y	
Guarantor Employer Address	00421	GT1	17	106	XAD	Y	
Guarantor Employer ID Number	00780	GT1	29	20	CX	Y	
Guarantor Employer Name	00420	GT1	16	130	XPB	Y	
Guarantor Employer Phone Number	00422	GT1	18	40	XTN	Y	
Guarantor Employer's Organization Name	01299	GT1	51	130	XON	Y	
Guarantor Employment Status	00424	GT1	20	2	IS		0066
Guarantor Financial Class	01231	GT1	54	50	FC		0064
Guarantor Hire Effective Date	00782	GT1	31	8	DT		
Guarantor Household Annual Income	00778	GT1	27	10	CP		
Guarantor Household Size	00779	GT1	28	3	NM		
Guarantor Marital Status Code	00781	GT1	30	80	CE		0002
Guarantor Name	00407	GT1	3	48	XPB	Y	
Guarantor Number	00406	GT1	2	59	CX	Y	
Guarantor Organization Name	00425	GT1	21	130	XON	Y	
Guarantor Ph Num-Business	00411	GT1	7	40	XTN	Y	
Guarantor Ph Num-Home	00410	GT1	6	40	XTN	Y	
Guarantor Priority	00419	GT1	15	2	NM		
Guarantor Race	01291	GT1	55	80	CE	Y	0005
Guarantor Relationship	00415	GT1	11	80	CE		0063
Guarantor Sex	00413	GT1	9	1	IS		0001
Guarantor Spouse Name	00408	GT1	4	48	XPB	Y	
Guarantor SSN	00416	GT1	12	11	ST		
Guarantor Type	00414	GT1	10	2	IS		0068
Guarantor's Relationship To Insured	00802	IN2	62	80	CE		0063
Handicap	00753	NK1	36	2	IS		0295
Handicap	00753	PD1	6	2	IS		0295
Handicap	00753	GT1	52	2	IS		0295
Handicap	00753	IN1	48	2	IS		0295
HCFA Patient's Relationship to Insured	00811	IN2	72	60	CE		0344
Hospital Item Code	00278	RQD	4	60	CE		
Hospital Service	00140	PV1	10	3	IS		0069

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Description	Item#	Seg	Seq#	Len	DT	Rep	Table
Hospital Service	00677	STF	9	200	CE	Y	0069
Identification Date	00208	AL1	6	8	DT		
Identity of Instrument Used to Perform this Study	00598	OM1	13	60	CE	Y	
Implicated Product	01098	PCR	1	60	CE		
Inactivated Reason	00971	LDP	9	80	ST		
Inactivation Date - LDP	00970	LDP	8	26	TS		
Indication	01123	RXO	20	200	CE	Y	
Indication	01123	RXD	21	200	CE	Y	
Indication	01123	RXG	22	200	CE	Y	
Indication	01123	RXA	19	200	CE	Y	
Indication For Product Use	01107	PCR	10	60	CE		
Indirect Exposure Mechanism	01120	PCR	23	1	ID	Y/3	0253
Individual Awareness of Problem	00856	PRB	21	80	CE		
Individual Awareness of Prognosis	00858	PRB	23	80	CE		
Input Parameter List	00705	SPR	4	256	QIP	Y	
Input Parameter List	00705	ERQ	3	256	QIP	Y	
Institution Activation Date	00680	STF	12	26	CM	Y	
Institution Inactivation Date	00681	STF	13	26	CM	Y	
Institution Registering the Patient	01037	CSR	3	60	CE		
Insurance Amount	00369	FT1	15	12	CP		
Insurance Co Contact Person	00431	IN1	6	48	XPX	Y	
Insurance Co Contact Phone Number	00798	IN2	58	40	XTN		
Insurance Co Phone Number	00432	IN1	7	40	XTN	Y	
Insurance Co. Contact Reason	00797	IN2	57	2	IS		0232
Insurance Company Address	00430	IN1	5	106	XAD	Y	
Insurance Company ID	00428	IN1	3	59	CX	Y	
Insurance Company Name	00429	IN1	4	130	XON	Y	
Insurance Plan ID	00368	FT1	14	60	CE		0072
Insurance Plan ID	00368	IN1	2	60	CE		0072
Insured Employer Organization Name And ID	00810	IN2	70	130	XON	Y	
Insured Organization Name And ID	00809	IN2	69	130	XON	Y	
Insured's Address	00444	IN1	19	106	XAD	Y	
Insured's Contact Person Phone Number	00793	IN2	53	40	XTN	Y	
Insured's Contact Person Reason	00794	IN2	54	2	IS	Y	0222
Insured's Contact Person's Name	00792	IN2	52	48	XPX	Y	

Appendix A: Data Definition Tables

Description	Item#	Seg	Seq#	Len	DT	Rep	Table
Insured's Date Of Birth	00443	IN1	18	26	TS		
Insured's Employee ID	00472	IN2	1	59	CX	Y	
Insured's Employer Phone Number	00804	IN2	64	40	XTN	Y	
Insured's Employer's Address	00469	IN1	44	106	XAD	Y	
Insured's Employer's Name and ID	00474	IN2	3	130	XCN	Y	
Insured's Employment Start Date	00787	IN2	44	8	DT		
Insured's Employment Status	00467	IN1	42	60	CE		0066
Insured's Group Emp ID	00435	IN1	10	12	CX	Y	
Insured's Group Emp Name	00436	IN1	11	130	XON	Y	
Insured's ID Number	01230	IN1	49	12	CX	Y	
Insured's Phone Number - Home	00803	IN2	63	40	XTN	Y	
Insured's Relationship To Patient	00442	IN1	17	80	CE		0063
Insured's Sex	00468	IN1	43	1	IS		0001
Insured's Social Security Number	00473	IN2	2	11	ST		
Interest Code	00158	PV1	28	2	IS		0073
Interpretation of Observations	00617	OM1	32	65536	TX		
Inventory Number	00990	CDM	9	60	CE	Y	
Item Code - External	00277	RQD	3	60	CE		
Item Code - Internal	00276	RQD	2	60	CE		
Item Natural Account Code	00282	RQD	8	30	IS		0320
Job Code/Class	00786	GT1	50	20	JCC		0327/ 0328
Job Code/Class	00786	IN2	47	20	JCC		0327/ 0328
Job Code/Class	00786	STF	19	20	JCC		0327/ 0328
Job Status	00752	NK1	34	2	IS		0311
Job Status	00752	GT1	53	2	IS		0311
Job Status	00752	IN2	48	2	IS		0311
Job Title	00785	GT1	49	20	ST		
Job Title	00785	IN2	46	20	ST		
Job Title	00785	STF	18	20	ST		
Kind of Quantity Observed	00937	OM1	42	60	CE		0254
Labeled Shelf Life	01258	PDC	12	12	CQ		
Last Accrual Date	01017	CM0	8	8	DT		
Last IRB Approval Date	01015	CM0	6	8	DT		
Length Errors Received	01183	NST	11	10	NM		

Appendix A: Data Definition Tables

Description	Item#	Seg	Seq#	Len	DT	Rep	Table
License Number	00951	LOC	7	60	CE	Y	
Lifetime Reserve Days	00458	IN1	33	4	NM		
Living Arrangement	00742	NK1	21	2	IS		0220
Living Arrangement	00742	PD1	2	2	IS		0220
Living Arrangement	00742	GT1	37	2	IS		0220
Living Arrangement	00742	IN2	35	2	IS		0220
Living Dependency	00755	NK1	17	2	IS	Y	0223
Living Dependency	00755	PD1	1	2	IS	Y	0223
Living Dependency	00755	GT1	33	2	IS		0223
Living Dependency	00755	IN2	31	2	IS		0223
Living Will	00759	PD1	7	2	IS		0315
Location Address	00948	LOC	5	106	XAD	Y	
Location Characteristic ID	01295	LCH	4	80	CE		0324
Location Characteristic Value-LCH	01294	LCH	5	80	CE		0136/ 0262/ 0263
Location Department	00964	LDP	2	10	IS		0264
Location Department	00964	LCC	2	10	IS		0264
Location Description	00944	LOC	2	48	ST		
Location Equipment	00953	LOC	8	3	IS	Y	0261
Location Group	00905	AIL	5	200	CE		
Location Phone	00949	LOC	6	40	XTN	Y	
Location Relationship ID	01277	LRL	4	80	CE		0325
Location Resource ID	00903	AIL	3	80	PL		
Location Selection Criteria	00910	APR	3	80	SCV	Y	0294
Location Service	00965	LDP	3	3	IS	Y	0069
Location Type - LOC	00945	LOC	3	2	IS	Y	0260
Location Type-AIL	00904	AIL	4	200	CE		
Logical Break Point	00064	DSP	4	2	ST		
Mail Claim Party	00476	IN2	5	1	IS	Y	0137
Major Diagnostic Category	00381	DG1	7	60	CE		0118
Manufacturer ID	00286	RQ1	2	60	CE		
Manufacturer/Distributor	01247	PDC	1	80	XON	Y	
Manufacturer's Catalog	00287	RQ1	3	16	ST		
Marital Status	00119	PID	16	80	CE		0002
Marital Status	00119	NK1	14	80	CE		0002

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Description	Item#	Seg	Seq#	Len	DT	Rep	Table
Marital Status	00119	IN2	43	80	CE	Y	0002
Marital Status	00119	STF	17	80	CE		0002
Marketing Approval ID	01257	PDC	11	60	ST		
Marketing Basis	01256	PDC	10	4	ID		0330
Master File Application Identifier	00659	MFI	2	180	HD		
Master File Identifier	00658	MFI	1	60	CE		0175
Maximum Price	01003	PRC	10	12	MO		
Maximum Quantity	01001	PRC	8	4	NM		
Medicaid Case Name	00478	IN2	7	48	XPB	Y	
Medicaid Case Number	00479	IN2	8	15	ST		
Medicare Health Ins Card Number	00477	IN2	6	15	ST		
Message Control ID	00010	MSH	10	20	ST		
Message Control ID	00010	MSA	2	20	ST		
Message Type	00009	MSH	9	7	CM		0076+ 0003
Messages Received	01180	NST	8	10	NM		
Messages Sent	01181	NST	9	10	NM		
MFN Control ID	00665	MFE	2	20	ST		
MFN Control ID	00665	MFA	2	20	ST		
MFN Record Level Error Return	00669	MFA	4	60	CE		0181
Military Handicapped Program	00805	IN2	65	60	CE		0343
Military ID Number	00481	IN2	10	20	ST		
Military Non-Avail Cert On File	00489	IN2	18	1	ID		0136
Military Non-Availability Code	00736	PV2	35	1	ID		0136
Military Organization	00483	IN2	12	25	ST		
Military Partnership Code	00735	PV2	34	1	ID		0136
Military Rank/Grade	00486	IN2	15	2	IS		0141
Military Retire Date	00488	IN2	17	8	DT		
Military Service	00485	IN2	14	14	IS		0140
Military Sponsor Name	00480	IN2	9	48	XPB	Y	
Military Station	00484	IN2	13	25	ST		
Military Status	00487	IN2	16	3	IS		0142
Minimum Collection Volume	00651	OM4	11	20	CQ		
Minimum Meaningful Increments	00635	OM2	10	20	NM		
Minimum Price	01002	PRC	9	12	MO		
Minimum Quantity	01000	PRC	7	4	NM		

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Description	Item#	Seg	Seq#	Len	DT	Rep	Table
Modality Of Imaging Measurement	00942	OM1	47	200	CE		0259
Model Identifier	01252	PDC	6	60	ST	Y	
Mother's Maiden Name	00109	PID	6	48	XPB	Y	
Mother's Maiden Name	00109	NK1	26	48	XPB	Y	
Mother's Maiden Name	00109	GT1	42	48	XPB	Y	
Mother's Maiden Name	00109	IN2	40	48	XPB	Y	
Mother's Identifier	00124	PID	21	20	CX	Y	
Multiple Birth Indicator	00127	PID	24	1	ID		0136
Name	00191	NK1	2	48	XPB	Y	
Name Of Insured	00441	IN1	16	48	XPB	Y	
Nationality	00739	PID	28	80	CE		0212
Nationality	00739	NK1	27	80	CE		0212
Nationality	00739	GT1	43	80	CE		0212
Nationality	00739	IN2	41	80	CE		0212
Nature of Abnormal Test	00578	OBX	10	2	ID		0080
Nature of Test/Observation	00603	OM1	18	1	IS		0174
Needs Human Review	00307	RXO	16	1	ID		0136
Needs Human Review	00307	RXE	20	1	ID		0136
Needs Human Review	00307	RXD	14	1	ID		0136
Needs Human Review	00307	RXG	12	1	ID		0136
Network Change Type	01188	NSC	1	4	IS		0333
Network Errors	01187	NST	15	10	NM		
New Application	01195	NSC	8	30	ST		
New CPU	01193	NSC	6	30	ST		
New Facility	01196	NSC	9	30	ST		
New Fileserver	01194	NSC	7	30	ST		
Newborn Baby Indicator	00737	PV2	36	1	ID		0136
Next Goal Review Date/Time	00829	GOL	13	26	TS		
Next of Kin / Associated Parties Employee Number	00201	NK1	12	20	CX		
Next of Kin / Associated Parties Job Code/Class	00200	NK1	11	20	JCC		0327/ 0328
Next of Kin / Associated Parties Job Title	00199	NK1	10	60	ST		
Next of Kin/Associated Party's Identifiers	00751	NK1	33	32	CX	Y	
Non Covered Days - (24)	00538	UB1	9	3	NM		
Non-Concur Code/Description	00513	IN3	12	60	CE		0233

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Description	Item#	Seg	Seq#	Len	DT	Rep	Table
Non-Concur Effective Date/Time	00514	IN3	13	26	TS		
Non-Covered Days (8)	00557	UB2	5	4	ST		
Non-Covered Insurance Code	00495	IN2	24	8	IS	Y	0143
Normal Collection Volume	00650	OM4	10	20	CQ		
Normal Text/Codes for Categorical Observations	00638	OM3	4	200	CE	Y	
Notice Of Admission Date	00449	IN1	24	8	DT		
Notice Of Admission Flag	00448	IN1	23	1	ID		0136
Number of Columns per Row	00701	RDF	1	3	NM		
Number Of Grace Days (90)	00540	UB1	11	2	NM		
Number of Product Experience Reports Filed by Distributor	01246	PSH	14	2	NM	Y/8	
Number of Product Experience Reports Filed by Facility	01245	PSH	13	2	NM	Y/8	
Number Of Refills	00304	RXO	13	3	NM		
Number of Refills	00304	RXE	12	3	NM		
Number of Refills Remaining	00326	RXE	16	20	NM		
Number of Refills Remaining	00326	RXD	8	20	NM		
Number of Refills/Doses Dispensed	00327	RXE	17	20	NM		
Number of Sample Containers *	01028	OBR	37	4	NM		
Number of Sample Containers *	01028	OBR	37	4	NM		
Observation Date/Time #	00241	OBR	7	26	TS		
Observation Description	00591	OM1	6	200	TX		
Observation End Date/Time #	00242	OBR	8	26	TS		
Observation ID Suffixes	00656	OM5	3	200	ST		
Observation Identifier	00571	OBX	3	80	CE		
Observation Method	00936	OBX	17	60	CE	Y	
Observation Producing Department/Section	00601	OM1	16	1	CE	Y	
Observation Result Status	00579	OBX	11	1	ID		0085
Observation Sub-ID	00572	OBX	4	20	ST		
Observation Value	00573	OBX	5	65536	*	Y	
Observations Required to Interpret the Obs	00616	OM1	31	200	CE		
Occur Span End Date (33)	00548	UB1	19	8	DT		
Occur Span Start Date(33)	00547	UB1	18	8	DT		
Occurrence (28-32)	00545	UB1	16	20	CM	Y/5	0350
Occurrence Code & Date (32-35)	00559	UB2	7	11	CM	Y/8	0350
Occurrence Number	00862	ARQ	3	5	NM		

Appendix A: Data Definition Tables

Description	Item#	Seg	Seq#	Len	DT	Rep	Table
Occurrence Number	00862	SCH	3	5	NM		
Occurrence Span (33)	00546	UB1	17	60	CE		0351
Occurrence Span Code/Dates (36)	00560	UB2	8	28	CM	Y/2	0351
Office/Home Address	00679	STF	11	106	XAD	Y	
Operator	00509	IN3	8	60	XCN	Y	
Operator ID	00103	EVN	5	60	XCN	Y	0188
Order Callback Phone Number	00250	OBR	17	40	XTN	Y/2	
Order Callback Phone Number	00250	OBR	17	40	XTN	Y/2	
Order Control	00215	ORC	1	2	ID		0119
Order Control Code Reason	00230	ORC	16	200	CE		
Order Effective Date/Time	00229	ORC	15	26	TS		
Order Status	00219	ORC	5	2	ID		0038
Orderability	00597	OM1	12	1	ID		0136
Ordered By Code	00373	FT1	21	120	XCN	Y	
Ordering Facility Address	01312	ORC	22	106	XAD	Y	
Ordering Facility Name	01311	ORC	21	60	XON	Y	
Ordering Facility Phone Number	01313	ORC	23	48	XTN	Y	
Ordering Provider	00226	ORC	12	120	XCN	Y	
Ordering Provider	00226	OBR	16	120	XCN	Y	
Ordering Provider Address	01314	ORC	24	106	XAD	Y	
Ordering Provider's DEA Number	00305	R XO	14	60	XCN	Y	
Ordering Provider's DEA Number	00305	RXE	13	60	XCN	Y	
Organ Donor	00760	PD1	8	2	IS		0316
Organization Name - LOC	00947	LOC	4	90	XON	Y	
Organization Name - NK1	00202	NK1	13	90	XON	Y	
Organizational Location Relationship Value	01301	LRL	5	80	XON	Y	
Originating Referral Identifier	01142	RF1	6	30	EI		
Origination Date/Time	00919	TXA	6	26	TS		
Originator Code/Name	00922	TXA	9	60	XCN	Y	
Other Errors Received	01184	NST	12	10	NM		
Other Healthcare Provider	01274	PV1	52	60	XCN	Y	0010
Other Identifier	01254	PDC	8	60	ST	Y	
Other Names	00593	OM1	8	200	ST	Y	
Other QRY Subject Filter	00041	QRF	5	60	ST	Y	
Other Test/Observation IDs for the Observation	00592	OM1	7	200	CE		

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Description	Item#	Seg	Seq#	Len	DT	Rep	Table
Outlier Cost	00387	DG1	13	12	CP		
Outlier Cost	00387	DRG	7	12	CP		
Outlier Days	00386	DG1	12	3	NM		
Outlier Days	00386	DRG	6	3	NM		
Outlier Reimbursement	00771	DRG	9	9	CP		
Outlier Type	00385	DG1	11	60	CE		0083
Outlier Type	00385	DRG	5	60	CE		0083
Outside Site(s) Where Observation may be Performed	00612	OM1	27	200	CE	Y	
Parent	00222	ORC	8	200	CM		
Parent	00261	OBR	29	200	CM		
Parent Document Number	00926	TXA	13	30	EI		
Parent Filler Appointment ID	00882	ARQ	23	75	EI		
Parent Filler Appointment ID	00882	SCH	24	75	EI		
Parent Placer Appointment ID	00881	ARQ	22	75	EI		
Parent Placer Appointment ID	00881	SCH	23	75	EI		
Parent Result +	00259	OBR	26	200	CM		
Pathway Established Date/Time	01209	PTH	4	26	TS		
Pathway ID	01207	PTH	2	80	CE		
Pathway Instance ID	01208	PTH	3	60	EI		
Pathway Life Cycle Status	01210	PTH	5	80	CE		
Patient Account Number	00121	PID	18	20	CX		
Patient Address	00114	PID	11	106	XAD	Y	
Patient Alias	00112	PID	9	48	XPN	Y	
Patient Charge Adjustment Code	00731	PV2	30	80	CE		0218
Patient Class	00132	PV1	2	1	IS		0004
Patient Death Date and Time	00740	PID	29	26	TS		
Patient Death Indicator	00741	PID	30	1	ID		0136
Patient Evaluability Status	01048	CSR	14	60	CE		
Patient ID	00105	PID	2	20	CX		
Patient Identifier List	00106	PID	3	20	CX	Y	
Patient Location Relationship Value	01292	LRL	6	80	PL		
Patient Member Number	00801	IN2	61	60	CX		
Patient Name	00108	PID	5	48	XPN	Y	
Patient Outcome	01084	PEO	12	1	ID		0241
Patient Preparation	00622	OM1	37	200	TX		

Appendix A: Data Definition Tables

Description	Item#	Seg	Seq#	Len	DT	Rep	Table
Patient Primary Care Provider Name & ID No.	00757	PD1	4	90	XCN	Y	
Patient Primary Facility	00756	PD1	3	90	XON	Y	
Patient Status Code	00725	PV2	24	2	IS		0216
Patient Study Eligibility Status	01044	CSR	10	60	CE		
Patient Type	00148	PV1	18	2	IS		0018
Patient Type	00148	FT1	18	2	IS		0018
Patient Valuables	00185	PV2	5	25	ST	Y	
Patient Valuables Location	00186	PV2	6	25	ST		
Payor ID	00496	IN2	25	59	CX	Y	
Payor Subscriber ID	00497	IN2	26	59	CX	Y	
Penalty	00506	IN3	5	10	CM		0148
Pending Location	00172	PV1	42	80	PL		
Performed By Code	00372	FT1	20	120	XCN	Y	0084
Permitted Data Types	00588	OM1	3	12	ID	Y	0125
Person Performing Study Registration	01041	CSR	7	60	XCN	Y	
Personnel Resource ID	00913	AIP	3	80	XCN	Y	
Pharmacist/Treatment Supplier's Verifier ID	00306	RXO	15	60	XCN	Y	
Pharmacist/Treatment Supplier's Verifier ID	00306	RXE	14	60	XCN	Y	
Pharmacy/Treatment Supplier's Special Administration Instructions	00343	RXG	13	200	CE	Y	
Pharmacy/Treatment Supplier's Special Dispensing Instructions	00330	RXE	21	200	CE	Y	
Pharmacy/Treatment Supplier's Special Dispensing Instructions	00330	RXD	15	200	CE	Y	
Phone	00678	STF	10	40	XTN	Y	
Phone Number	00194	NK1	5	40	XTN	Y	
Phone Number - Business	00117	PID	14	40	XTN	Y	
Phone Number - Home	00116	PID	13	40	XTN	Y	
Phone Number of Outside Site	00614	OM1	29	400	XTN		
Physician Reviewer	00515	IN3	14	60	XCN	Y	0010
Placer Appointment ID	00860	ARQ	1	75	EI		
Placer Appointment ID	00860	SCH	1	75	EI		
Placer Contact Address	00876	ARQ	17	106	XAD	Y	
Placer Contact Address	00876	SCH	14	106	XAD	Y	
Placer Contact Location	00877	ARQ	18	80	PL		
Placer Contact Location	00877	SCH	15	80	PL		
Placer Contact Person	00874	ARQ	15	48	XCN	Y	

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Description	Item#	Seg	Seq#	Len	DT	Rep	Table
Placer Contact Person	00874	SCH	12	48	XCN	Y	
Placer Contact Phone Number	00875	ARQ	16	40	XTN	Y	
Placer Contact Phone Number	00875	SCH	13	40	XTN		
Placer Field 1	00251	OBR	18	60	ST		
Placer Field 2	00252	OBR	19	60	ST		
Placer Group Number	00218	ORC	4	22	EI		
Placer Group Number	00218	ARQ	4	22	EI		
Placer Group Number	00218	SCH	4	22	EI		
Placer Order Number	00216	ORC	2	22	EI		
Placer Order Number	00216	OBR	2	22	EI		
Placer Order Number	00216	TXA	14	22	EI	Y	
Plan Effective Date	00437	IN1	12	8	DT		
Plan Expiration Date	00438	IN1	13	8	DT		
Plan Type	00440	IN1	15	3	IS		0086
Planned Patient Transport Comment	01034	OBR	43	200	CE	Y	
Point Versus Interval	00938	OM1	43	60	CE		0255
Policy Deductible	00462	IN1	37	12	CP		
Policy Limit - Amount	00463	IN1	38	12	CP		
Policy Limit - Days	00464	IN1	39	4	NM		
Policy Number	00461	IN1	36	15	ST		
Policy Scope	00799	IN2	59	2	IS		0312
Policy Source	00800	IN2	60	2	IS		0313
Policy Type/Amount	00500	IN2	29	25	CM	Y	0147/ 0193
Portable	00600	OM1	15	1	ID		0136
Practitioner Category	00687	PRA	3	3	IS	Y	0186
Practitioner Group	00686	PRA	2	60	CE	Y	0358
Practitioner ID Numbers	00690	PRA	6	100	CM	Y	0338
Pre-Admit Cert (PAC)	00453	IN1	28	15	ST		
Preadmit Number	00135	PV1	5	20	CX		
Preadmit Test Indicator	00142	PV1	12	2	IS		0087
Pre-Certification Req/Window	00521	IN3	20	40	CM	Y	0150/ 0136
Preferred Coding System	00636	OM3	2	60	CE		
Preferred Long Name for the Observation	00596	OM1	11	200	ST		
Preferred Method Of Contact	00684	STF	16	200	CE		0185

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Description	Item#	Seg	Seq#	Len	DT	Rep	Table
Preferred Method of Contact	00684	PRD	6	200	CE		0185
Preferred Method of Contact	00684	CTD	6	200	CE		0185
Preferred Report Name for the Observation	00594	OM1	9	30	ST		
Preferred Short Name or Mnemonic for Observation	00595	OM1	10	8	ST		
Preparation	00648	OM4	8	10240	TX		
Prescription Number	00325	RXE	15	20	ST		
Prescription Number	00325	RXD	7	20	ST		
Previous Goal Review Date/Time	00830	GOL	14	26	TS		
Previous Service Date	00715	PV2	14	8	DT		
Previous Treatment Date	00727	PV2	26	8	DT		
Price	00998	PRC	5	12	CP	Y	
Price Override Flag	01006	PRC	13	1	IS		0268
Primary Activity Provider Code/Name	00918	TXA	5	60	XCN	Y	
Primary Key Value - CDM	01306	CDM	1	200	CE		0132
Primary Key Value - LCC	00979	LCC	1	200	PL		
Primary Key Value - LCH	01305	LCH	1	200	PL		
Primary Key Value - LDP	00963	LDP	1	200	PL		
Primary Key Value - LOC	01307	LOC	1	200	PL		
Primary Key Value - LRL	00943	LRL	1	200	PL		
Primary Key Value – MFA	01308	MFA	5	60	CE	Y	
Primary Key Value - MFE	00667	MFE	4	200	Varies	Y	
Primary Key Value - PRA	00685	PRA	1	60	CE		
Primary Key Value - PRC	00982	PRC	1	200	CE		0132
Primary Key Value - STF	00671	STF	1	60	CE		
Primary Key Value Type	01319	MFE	5	3	ID	Y	0355
Primary Key Value Type - MFA	01320	MFA	6	3	ID	Y	0355
Primary Language	00118	PID	15	60	CE		0296
Primary Language	00118	NK1	20	60	CE		0296
Primary Language	00118	GT1	36	60	CE		0296
Primary Language	00118	IN2	34	60	CE		0296
Primary Observer Address	01092	PEO	20	106	XAD	Y	
Primary Observer Aware Date/Time	01096	PEO	24	26	TS		
Primary Observer Name	01091	PEO	19	46	XPN	Y	
Primary Observer Telephone	01093	PEO	21	40	XTN	Y	
Primary Observer's identity May Be Divulged	01097	PEO	25	1	ID		0243

Appendix A: Data Definition Tables

Description	Item#	Seg	Seq#	Len	DT	Rep	Table
Primary Observer's Qualification	01094	PEO	22	1	ID		0242
Principal Language Of Message	00693	MSH	19	60	CE		
Principal Result Interpreter +	00264	OBR	32	200	CM		
Prior Alternate Patient ID	00212	MRG	2	20	CX	Y	
Prior Alternate Visit ID	01280	MRG	6	20	CX		
Prior Insurance Plan ID	00471	IN1	46	8	IS		0072
Prior Patient Account Number	00213	MRG	3	20	CX		
Prior Patient ID	00214	MRG	4	20	CX		
Prior Patient Identifier List	00211	MRG	1	20	CX	Y	
Prior Patient Location	00136	PV1	6	80	PL		
Prior Patient Name	01281	MRG	7	48	XPN	Y	
Prior Pending Location	00181	PV2	1	80	PL		
Prior Temporary Location	00173	PV1	43	80	PL		
Prior Visit Number	01279	MRG	5	20	CX		
Priority-ARQ	00871	ARQ	12	5	ST		
Priority-OBR	00239	OBR	5	2	ID		
Priority-OBR	00239	OBR	5	2	ID		
Privileges	00691	PRA	7	200	CM	Y	
Probability	00577	OBX	9	5	NM	Y/5	
Probability of Problem (0-1)	00855	PRB	20	5	NM		
Problem Classification	00845	PRB	10	80	CE		
Problem Confirmation Status	00848	PRB	13	80	CE		
Problem Date of Onset	00851	PRB	16	26	TS		
Problem Established Date/Time	00842	PRB	7	26	TS		
Problem ID	00838	PRB	3	80	CE		
Problem Instance ID	00839	PRB	4	60	EI		
Problem Life Cycle Status	00849	PRB	14	80	CE		
Problem Life Cycle Status Date/Time	00850	PRB	15	26	TS		
Problem List Priority	00841	PRB	6	60	NM		
Problem Management Discipline	00846	PRB	11	80	CE	Y	
Problem Onset Text	00852	PRB	17	80	ST		
Problem Persistence	00847	PRB	12	80	CE		
Problem Prognosis	00857	PRB	22	80	CE		
Problem Ranking	00853	PRB	18	80	CE		
Procedure Code	00393	FT1	25	80	CE		0088

Appendix A: Data Definition Tables

Description	Item#	Seg	Seq#	Len	DT	Rep	Table
Procedure Code	00393	PR1	3	80	CE		0088
Procedure Code	00393	OBR	44	80	CE		0088
Procedure Code	00393	CDM	7	80	CE	Y	0088
Procedure Code Modifier	01316	FT1	26	80	CE	Y	0340
Procedure Code Modifier	01316	PR1	16	80	CE	Y	0340
Procedure Code Modifier	01316	OBR	45	80	CE	Y	0340
Procedure Coding Method	00392	PR1	2	2	IS		0089
Procedure Date/Time	00395	PR1	5	26	TS		
Procedure Description	00394	PR1	4	40	ST		
Procedure Functional Type	00396	PR1	6	2	IS		0230
Procedure Medication	00623	OM1	38	200	CE		
Procedure Minutes	00397	PR1	7	4	NM		
Procedure Practitioner	00402	PR1	12	230	XCN	Y	0010
Procedure Priority	00404	PR1	14	2	NM		
Process Date	01145	RF1	9	26	TS		
Process Date	01145	AUT	10	26	TS		
Processing ID	00011	MSH	11	3	PT		
Processing Priority	00610	OM1	25	40	ID	Y	0168
Processing Time	00609	OM1	24	20	NM		
Producer ID	00590	OM1	5	200	CE		
Producer's ID	00583	OBX	15	60	CE		
Producer's Test/Observation ID	00587	OM1	2	200	CE		
Product Available For Inspection	01110	PCR	13	1	IS		0246
Product Class	01100	PCR	3	60	CE		
Product Code	01255	PDC	9	60	CE		
Product Evaluation Performed	01111	PCR	14	60	CE		
Product Evaluation Results	01113	PCR	16	60	CE		
Product Evaluation Status	01112	PCR	15	60	CE		0247
Product Expiration Date	01103	PCR	6	26	TS		
Product Explantation Date	01105	PCR	8	26	TS		
Product Implantation Date	01104	PCR	7	26	TS		
Product Manufacture Date	01102	PCR	5	26	TS		
Product Problem	01108	PCR	11	8	IS		0245
Product Serial/Lot Number	01109	PCR	12	30	ST	Y/3	
Protection Indicator	00744	NK1	23	1	ID		0136

Appendix A: Data Definition Tables

Description	Item#	Seg	Seq#	Len	DT	Rep	Table
Protection Indicator	00744	PD1	12	1	ID		0136
Protection Indicator	00744	GT1	39	1	ID		0136
Protection Indicator	00744	IN2	37	1	ID		0136
Provider Address	01157	PRD	3	60	XAD	Y	
Provider Billing	00688	PRA	4	1	ID		0187
Provider Communication Information	01159	PRD	5	100	XTN	Y	
Provider Identifiers	01162	PRD	7	100	CM	Y	
Provider Location	01158	PRD	4	60	PL		
Provider Name	01156	PRD	2	106	XPB	Y	
Provider Role	01155	PRD	1	200	CE	Y	0286
Provider's Administration Instructions	00298	RXO	7	200	CE	Y	
Provider's Administration Instructions	00298	RXE	7	200	CE	Y	
Provider's Pharmacy/Treatment Instructions	00297	RXO	6	200	CE	Y	
PSRO/UR Approval Indicator (87)	00542	UB1	13	60	CE		0349
PSRO/UR Approved Stay-Fm (88)	00543	UB1	14	8	DT		
PSRO/UR Approved Stay-To (89)	00544	UB1	15	8	DT		
Publicity Code	00743	NK1	22	80	CE		0215
Publicity Code	00743	PD1	11	80	CE		0215
Publicity Code	00743	GT1	38	80	CE		0215
Publicity Code	00743	IN2	36	80	CE		0215
Purge Status Code	00717	PV2	16	1	IS		0213
Purge Status Date	00718	PV2	17	8	DT		
Quantity Distributed	01239	PSH	7	12	CQ		
Quantity Distributed Comment	01241	PSH	9	600	FT		
Quantity Distributed Method	01240	PSH	8	1	ID		0329
Quantity in Use	01242	PSH	10	12	CQ		
Quantity in Use Comment	01244	PSH	12	600	FT		
Quantity in Use Method	01243	PSH	11	1	ID		0329
Quantity Limited Request	00031	QRD	7	10	CQ		0126
Quantity Manufactured	01238	PSH	6	12	CQ		
Quantity/Timing	00221	ORC	7	200	TQ		
Quantity/Timing	00221	OBR	27	200	TQ	Y	
Quantity/Timing	00221	RXE	1	200	TQ		
Quantity/Timing	00221	RXG	3	200	TQ		
Query Date/Time	00025	QRD	1	26	TS		

Appendix A: Data Definition Tables

Description	Item#	Seg	Seq#	Len	DT	Rep	Table
Query Format Code	00026	QRD	2	1	ID		0106
Query ID	00028	QRD	4	10	ST		
Query Priority	00027	QRD	3	1	ID		0091
Query Response Status	00708	QAK	2	2	ID		0208
Query Results Level	00036	QRD	12	1	ID		0108
Query Tag	00696	EQL	1	32	ST		
Query Tag	00696	VTQ	1	32	ST		
Query Tag	00696	SPR	1	32	ST		
Query Tag	00696	ERQ	1	32	ST		
Query Tag	00696	QAK	1	32	ST		
Query/ Response Format Code	00697	EQL	2	1	ID		0106
Query/ Response Format Code	00697	VTQ	2	1	ID		0106
Query/ Response Format Code	00697	SPR	2	1	ID		0106
R/U Date/Time	00045	URD	1	26	TS		
R/U Date/Time Selection Qualifier	00059	URS	8	12	ID	Y	0158
R/U Display/Print Locations	00050	URD	6	20	ST	Y	
R/U Other Results Subject Definition	00056	URS	5	20	ST	Y	
R/U Quantity/Timing Qualifier	00695	URS	9	60	TQ		
R/U Results Level	00051	URD	7	1	ID		0108
R/U What Department Code	00049	URD	5	60	CE	Y	
R/U What Subject Definition	00048	URD	4	60	CE	Y	0048
R/U What User Qualifier	00055	URS	4	20	ST	Y	
R/U When Data End Date/Time	00054	URS	3	26	TS		
R/U When Data Start Date/Time	00053	URS	2	26	TS		
R/U Where Subject Definition	00052	URS	1	20	ST	Y	
R/U Which Date/Time Qualifier	00057	URS	6	12	ID	Y	0156
R/U Which Date/Time Status Qualifier	00058	URS	7	12	ID	Y	0157
R/U Who Subject Definition	00047	URD	3	60	XCN	Y	
Race	00113	PID	10	80	CE	Y	0005
Race	00113	NK1	35	80	CE	Y	0005
Race	00113	IN2	71	80	CE	Y	0005
Randomized Study Arm	01046	CSR	12	200	CE	Y/3	
Range of Decimal Precision	00628	OM2	3	10	NM	Y	
Re-admission Indicator	00143	PV1	13	2	IS		0092
Reason Ended Study	01050	CSR	16	60	CE		

Appendix A: Data Definition Tables

Description	Item#	Seg	Seq#	Len	DT	Rep	Table
Reason for Study	00263	OBR	31	300	CE	Y	
Reason for Study	00263	OBR	31	300	CE	Y	
Receive Character Count	01178	NST	6	10	NM		
Receive Timeouts	01186	NST	14	10	NM		
Receiving Application	00005	MSH	5	180	HD		0361
Receiving Facility	00006	MSH	6	180	HD		0362
Recorded Date/Time	00100	EVN	2	26	TS		
Record-Level Event Code	00664	MFE	1	3	ID		0180
Record-Level Event Code	00664	MFA	1	3	ID		0180
Recurring Service Code	00732	PV2	31	2	IS		0219
Reference (Normal) Range - Ordinal & Continuous Obs	00631	OM2	6	200	CM		
Reference Batch Control ID	00092	BHS	12	20	ST		
Reference File Control ID	00078	FHS	12	20	ST		
References Range	00575	OBX	7	60	ST		
Referral Category	01141	RF1	5	200	CE		0284
Referral Disposition	01140	RF1	4	200	CE	Y	0282
Referral Priority	01138	RF1	2	200	CE		0280
Referral Reason	01228	RF1	10	200	CE	Y	0336
Referral Source Code	00714	PV2	13	90	XCN	Y	
Referral Status	01137	RF1	1	200	CE		0283
Referral Type	01139	RF1	3	200	CE		0281
Referring Doctor	00138	PV1	8	60	XCN	Y	0010
Reflex Tests/Observations	00619	OM1	34	200	CE	Y	
Reimbursement Limit	01152	AUT	7	25	CP		
Relatedness Assessment	01117	PCR	20	1	ID		0250
Relationship	00192	NK1	3	60	CE		0063
Relationship Modifier	00940	OM1	45	200	CE		0258
Relationship To The Patient Start Date	00795	IN2	55	8	DT		
Relationship To The Patient Stop Date	00796	IN2	56	8	DT	Y	
Release Information Code	00452	IN1	27	2	IS		0093
Relevant Clinical Info.	00247	OBR	13	300	ST		
Relevant Clinical Info.	00247	OBR	13	300	ST		
Religion	00120	PID	17	80	CE		0006
Religion	00120	NK1	25	80	CE		0006
Religion	00120	GT1	41	80	CE		0006

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Description	Item#	Seg	Seq#	Len	DT	Rep	Table
Religion	00120	IN2	39	80	CE		0006
Repeating Interval	00872	ARQ	13	100	RI		
Repeating Interval Duration	00873	ARQ	14	5	ST		
Report Date	01235	PSH	3	26	TS		
Report Display Order	00605	OM1	20	20	ST		
Report Form Identifier	01297	PSH	2	60	ST		
Report Interval End Date	01237	PSH	5	26	TS		
Report Interval Start Date	01236	PSH	4	26	TS		
Report Of Eligibility Date	00451	IN1	26	8	DT		
Report Of Eligibility Flag	00450	IN1	25	1	ID		0136
Report Priority	00046	URD	2	1	ID		0109
Report Subheader	00604	OM1	19	200	CE		
Report Type	01233	PSH	1	60	ST		
Reporting Priority	00611	OM1	26	5	ID		0169
Request Event Reason	00865	ARQ	6	200	CE		
Requested Date/time	00240	OBR	6	26	TS		
Requested Dispense Amount	00302	R XO	11	20	NM		
Requested Dispense Code	00301	R XO	10	100	CE		
Requested Dispense Units	00303	R XO	12	60	CE		
Requested Dosage Form	00296	R XO	5	60	CE		
Requested Give Amount - Maximum	00294	R XO	3	20	NM		
Requested Give Amount - Minimum	00293	R XO	2	20	NM		
Requested Give Code	00292	R XO	1	100	CE		
Requested Give Per (Time Unit)	00308	R XO	17	20	ST		
Requested Give Rate Amount	01218	R XO	21	6	ST		
Requested Give Rate Units	01219	R XO	22	60	CE		
Requested Give Strength	01121	R XO	18	20	NM		
Requested Give Strength Units	01122	R XO	19	60	CE		
Requested Give Units	00295	R XO	4	60	CE		
Requested Number of Treatments	01153	AUT	8	2	NM		
Requested Start Date/Time Range	00870	ARQ	11	53	DR	Y	
Requisition Line Number	00275	RQD	1	4	SI		
Requisition Quantity	00279	RQD	5	6	NM		
Requisition Unit of Measure	00280	RQD	6	60	CE		
Resource Group	00899	AIG	5	200	CE	Y	

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Description	Item#	Seg	Seq#	Len	DT	Rep	Table
Resource Group	00899	AIP	5	200	CE		
Resource Group ID	01204	RGS	3	200	CE		
Resource ID	00897	AIG	3	200	CE		
Resource Load	00991	CDM	10	12	NM		
Resource Quantity	00900	AIG	6	5	NM		
Resource Quantity Units	00901	AIG	7	200	CE		
Resource Role	00907	AIP	4	200	CE		
Resource Selection Criteria	00909	APR	2	80	SCV	Y	0294
Resource Type	00898	AIG	4	200	CE		
Response Flag	00220	ORC	6	1	ID		0121
Response Level Code	00663	MFI	6	2	ID		0179
Responsible Observer	00584	OBX	16	80	XCN	Y	
Result Copies To	00260	OBR	28	150	XCN	Y/5	
Result ID	00065	DSP	5	20	TX		
Result Status +	00258	OBR	25	1	ID		0123
Results Rpt/Status Chng - Date/Time +	00255	OBR	22	26	TS		
Retention Indicator	00720	PV2	19	1	ID		0136
Role Action Reason	01205	ROL	8	80	CE		
Role Begin Date/Time	01199	ROL	5	26	TS		
Role Duration	01201	ROL	7	80	CE		
Role End Date/Time	01200	ROL	6	26	TS		
Role Instance ID	01206	ROL	1	60	EI		
Role Person	01198	ROL	4	80	XCN	Y	
Role-ROL	01197	ROL	3	80	CE		
Room Coverage Type/Amount	00499	IN2	28	25	CM	Y	0145/ 0146
Room Fee Indicator	00994	CDM	13	1	ID		0136
Room Rate - Private	00466	IN1	41	12	CP		
Room Rate - Semi-Private	00465	IN1	40	12	CP		
Route	00309	RXR	1	60	CE		0162
Routing Instruction	01315	RXR	5	60	CE		
Rules that Trigger Reflex Testing	00620	OM1	35	80	TX		
RX Component Type	00313	RXC	1	1	ID		0166
Schedule ID	00864	ARQ	5	200	CE		
Schedule ID	00864	SCH	5	200	CE		
Scheduled Date/Time +	00268	OBR	36	26	TS		

Appendix A: Data Definition Tables

Description	Item#	Seg	Seq#	Len	DT	Rep	Table
Scheduled Time Point	01025	CM2	2	60	CE		
Second Opinion Date	00523	IN3	22	8	DT		
Second Opinion Documentation Received	00525	IN3	24	1	IS	Y	0152
Second Opinion Physician	00526	IN3	25	60	XCN	Y	0010
Second Opinion Status	00524	IN3	23	1	IS		0151
Security	00008	MSH	8	40	ST		
Security/Sensitivity	00823	PRB	25	80	CE		
Segment Action Code	00763	LCH	2	3	ID		0206
Segment Action Code	00763	LRL	2	3	ID		0206
Segment Action Code	00763	RGS	2	3	ID		0206
Segment Action Code	00763	AIS	2	3	ID		0206
Segment Action Code	00763	AIG	2	3	ID		0206
Segment Action Code	00763	AIL	2	3	ID		0206
Segment Action code	00763	AIP	2	3	ID		0206
Segment Unique Key	00764	LCH	3	80	EI		
Segment Unique Key	00764	LRL	3	80	EI		
Selection Criteria	00700	VTQ	5	256	QSC	Y	
Send Character Count	01179	NST	7	10	NM		
Sender Address	01062	PES	3	200	XAD	Y	
Sender Aware Date/Time	01068	PES	9	26	TS		
Sender Comment	01067	PES	8	600	FT		
Sender Event Description	01066	PES	7	600	FT	Y	
Sender Event Identifier	01064	PES	5	75	EI		
Sender Individual Name	01060	PES	2	60	XCN	Y	
Sender Organization Name	01059	PES	1	80	XON	Y	
Sender Sequence Number	01065	PES	6	2	NM		
Sender Telephone	01063	PES	4	44	XTN	Y	
Sending Application	00003	MSH	3	180	HD		0361
Sending Facility	00004	MSH	4	180	HD		0362
Separate Bill	00761	PD1	9	1	ID		0136
Sequence Number	00013	MSH	13	15	NM		
Sequence Number – Test/Observation Master File	00586	OM1	1	4	NM		
Sequence Number – Test/Observation Master File	00586	OM2	1	4	NM		
Sequence Number – Test/Observation Master File	00586	OM3	1	4	NM		

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Description	Item#	Seg	Seq#	Len	DT	Rep	Table
Sequence Number – Test/Observation Master File	00586	OM4	1	4	NM		
Sequence Number – Test/Observation Master File	00586	OM5	1	4	NM		
Sequence Number – Test/Observation Master File	00586	OM6	1	4	NM		
Service Period	00270	ODS	2	60	CE	Y/10	
Service Period	00270	ODT	2	60	CE	Y/10	
Servicing Facility	00169	PV1	39	2	IS		0115
Set ID - AIG	00896	AIG	1	4	SI		
Set ID - AIL	00902	AIL	1	4	SI		
Set ID - AIP	00906	AIP	1	4	SI		
Set ID - AIS	00890	AIS	1	4	SI		
Set ID - AL1	00203	AL1	1	4	SI		
Set ID - CM0	01010	CM0	1	4	SI		
Set ID - CM1	01021	CM1	1	4	SI		
Set ID - CM2	01024	CM2	1	4	SI		
Set ID - DB1	01283	DB1	1	4	SI		
Set ID - DG1	00375	DG1	1	4	SI		
Set ID - DSP	00061	DSP	1	4	SI		
Set ID - FT1	00355	FT1	1	4	SI		
Set ID - GT1	00405	GT1	1	4	SI		
Set ID - IN1	00426	IN1	1	4	SI		
Set ID - IN3	00502	IN3	1	4	SI		
Set ID - NK1	00190	NK1	1	4	SI		
Set ID - NTE	00096	NTE	1	4	SI		
Set ID - OBR	00237	OBR	1	4	SI		
Set ID - OBX	00569	OBX	1	4	SI		
Set ID - PID	00104	PID	1	4	SI		
Set ID - PR1	00391	PR1	1	4	SI		
Set ID - PV1	00131	PV1	1	4	SI		
Set ID - RGS	01203	RGS	1	4	SI		
Set ID - TXA	00914	TXA	1	4	SI		
Set ID - UB1	00530	UB1	1	4	SI		
Set ID - UB2	00553	UB2	1	4	SI		
Sex	00111	PID	8	1	IS		0001
Sex	00111	NK1	15	1	IS		0001

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Description	Item#	Seg	Seq#	Len	DT	Rep	Table
Sex	00111	STF	5	1	IS		0001
SI Conversion Factor	00630	OM2	5	60	TX		
Signature Authority	01270	FAC	9	60	XCN	Y	
Signature Authority Address	01272	FAC	11	200	XAD	Y	
Signature Authority Telecommunication	01273	FAC	12	44	XTN		
Signature Authority Title	01271	FAC	10	60	ST		
Signature on File Date	00729	PV2	28	8	DT		
Single Use Device	01106	PCR	9	8	IS		0244
Site	00310	RXR	2	60	CE		0163
Slot Spacing Criteria	00911	APR	4	5	NM		
Source Identifier	01174	NST	2	30	ST		
Source of Comment	00097	NTE	2	8	ID		0105
Source Type	01175	NST	3	3	ID		
Special Coverage Approval Name	00493	IN2	22	48	XPN	Y	
Special Coverage Approval Title	00494	IN2	23	30	ST		
Special Handling Requirements	00649	OM4	9	10240	TX		
Special Program Code	00719	PV2	18	2	IS		0214
Special Program Indicator (44)	00541	UB1	12	60	CE		0348
Special Visit Count	00815	UB2	17	3	NM		
Specialty	00689	PRA	5	100	CM	Y	0337
Specialty Type	00966	LDP	4	60	CE	Y	0265
Specimen	00646	OM4	6	60	CE		
Specimen Action Code *	00245	OBR	11	1	ID		0065
Specimen Priorities	00653	OM4	13	1	ID	Y	0027
Specimen Received Date/Time *	00248	OBR	14	26	TS		
Specimen Required	00589	OM1	4	1	ID		0136
Specimen Requirements	00652	OM4	12	10240	TX		
Specimen Retention Time	00654	OM4	14	20	CQ		
Specimen Source *	00249	OBR	15	300	CM		0070
Sponsor Patient ID	01038	CSR	4	30	CX		
Sponsor Study ID	01011	CSR	1	60	EI		
Sponsor Study ID	01011	CTI	1	60	EI		
Sponsor Study ID	01011	CM0	2	60	EI		
SSN Number - Patient	00122	PID	19	16	ST		
Staff ID Code	00672	STF	2	60	CX	Y	

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Description	Item#	Seg	Seq#	Len	DT	Rep	Table
Staff Name	00673	STF	3	48	XPN	Y	
Staff Type	00674	STF	4	2	IS	Y	0182
Start Date	00197	NK1	8	8	DT		
Start Date/Time	01202	AIS	4	26	TS		
Start Date/Time	01202	AIG	8	26	TS		
Start Date/Time	01202	AIL	6	26	TS		
Start Date/Time	01202	AIP	6	26	TS		
Start Date/Time Offset	00891	AIS	5	20	NM		
Start Date/Time Offset	00891	AIG	9	20	NM		
Start Date/Time Offset	00891	AIL	7	20	NM		
Start Date/Time Offset	00891	AIP	7	20	NM		
Start Date/Time Offset Units	00892	AIS	6	200	CE		
Start Date/Time Offset Units	00892	AIG	10	200	CE		
Start Date/Time Offset Units	00892	AIL	8	200	CE		
Start Date/Time Offset Units	00892	AIP	8	200	CE		
Stated Variance Date/Time	01214	VAR	3	26	TS		
Statistics Available	01173	NST	1	1	ID		0136
Statistics End	01177	NST	5	26	TS		
Statistics Start	01176	NST	4	26	TS		
Stoploss Limit Flag	00808	IN2	68	1	ID		0136
Stored Procedure Name	00704	SPR	3	60	CE		
Stratum for Study Randomization	01047	CSR	13	200	CE	Y/3	
Student Indicator	00745	NK1	24	2	IS		0231
Student Indicator	00745	PD1	5	2	IS		0231
Student Indicator	00745	GT1	40	2	IS		0231
Student Indicator	00745	IN2	38	2	IS		0231
Study Authorizing Provider	01042	CSR	8	60	XCN	Y	
Study Phase Evaluability	01054	CSP	4	60	CE		
Study Phase Identifier	01022	CSP	1	60	CE		
Study Phase Identifier	01022	CTI	2	60	CE		
Study Phase Identifier	01022	CM1	2	60	CE		
Study Quality Control Codes	01057	CSS	3	60	CE	Y/3	
Study Randomization Date/time	01045	CSR	11	26	TS	Y/3	
Study Scheduled Patient Time Point	01056	CSS	2	26	TS		
Study Scheduled Time Point	01055	CSS	1	60	CE		

Appendix A: Data Definition Tables

Description	Item#	Seg	Seq#	Len	DT	Rep	Table
Study Scheduled Time Point	01055	CTI	3	60	CE		
Substance Expiration Date	01130	RXD	19	26	TS	Y	
Substance Expiration Date	01130	RXG	20	26	TS	Y	
Substance Expiration Date	01130	RXA	16	26	TS	Y	
Substance Lot Number	01129	RXD	18	20	ST	Y	
Substance Lot Number	01129	RXG	19	20	ST	Y	
Substance Lot Number	01129	RXA	15	20	ST	Y	
Substance Manufacturer Name	01131	RXD	20	60	CE	Y	0227
Substance Manufacturer Name	01131	RXG	21	60	CE	Y	0227
Substance Manufacturer Name	01131	RXA	17	60	CE	Y	0227
Substance Refusal Reason	01136	RXA	18	200	CE	Y	
Substitute Allowed	00291	RQ1	7	1	ID		0136
Substitution Status	00322	RXE	9	1	ID		0167
Substitution Status	00322	RXD	11	1	ID		0167
Substitution Status	00322	RXG	10	1	ID		0167
Surgeon	00401	PR1	11	120	XCN	Y	0010
Suspend Flag	00806	IN2	66	1	ID		0136
System Date/Time	01172	NCK	1	26	TS		
System Entry Date/Time	01225	RXA	22	26	TS		
Target Anatomic Site Of Test	00941	OM1	46	200	CE		
Taxable	00290	RQ1	6	1	ID		0136
Technician +	00266	OBR	34	200	CM	Y	
Telephone Number of Section	00602	OM1	17	40	XTN		
Temporary Location	00141	PV1	11	80	PL		
Test/Observation Performance Schedule	00625	OM1	40	60	ST	Y	
Test/Observations Included within an Ordered Test Battery	00655	OM5	2	200	CE	Y	
Text Instruction	00272	ODS	4	80	ST	Y/2	
Text Instruction	00272	ODT	3	80	ST		
Text Message	00020	MSA	3	80	ST		
Time Selection Criteria	00908	APR	1	80	SCV	Y	0294
Title of Study	01013	CM0	4	300	ST		
Total Accrual to Date	01016	CM0	7	8	NM		
Total Adjustments	00178	PV1	48	12	NM		
Total Charges	00177	PV1	47	12	NM		
Total Daily Dose	00329	RXO	23	10	CQ		

Appendix A: Data Definition Tables

Description	Item#	Seg	Seq#	Len	DT	Rep	Table
Total Daily Dose	00329	RXE	19	10	CQ		
Total Daily Dose	00329	RXD	12	10	CQ		
Total Duration Of Therapy	01101	PCR	4	8	CQ		
Total Payments	00179	PV1	49	12	NM		
Transaction Amount - Extended	00365	FT1	11	12	CP		
Transaction Amount - Unit	00366	FT1	12	12	CP		
Transaction Batch ID	00357	FT1	3	10	ST		
Transaction Code	00361	FT1	7	80	CE		0132
Transaction Date	00358	FT1	4	26	TS		
Transaction Description	00362	FT1	8	40	ST		
Transaction Description - Alt	00363	FT1	9	40	ST		
Transaction ID	00356	FT1	2	12	ST		
Transaction Posting Date	00359	FT1	5	26	TS		
Transaction Quantity	00364	FT1	10	6	NM		
Transaction Type	00360	FT1	6	8	IS		0017
Transcription Date/Time	00920	TXA	7	26	TS		
Transcriptionist +	00267	OBR	35	200	CM	Y	
Transcriptionist Code/Name	00924	TXA	11	48	XCN	Y	
Transfer Reason	00184	PV2	4	60	CE		
Transfer to Bad Debt Code	00159	PV1	29	1	IS		0110
Transfer to Bad Debt Date	00160	PV1	30	8	DT		
Transport Arranged	01032	OBR	41	30	ID		0224
Transport Arrangement Responsibility	01031	OBR	40	60	CE		
Transport Logistics of Collected Sample *	01029	OBR	38	60	CE	Y	
Transportation Mode	00262	OBR	30	20	ID		0124
Tray Type	00273	ODT	1	60	CE		0160
Type	00269	ODS	1	1	ID		0159
Type Of Agreement Code	00456	IN1	31	2	IS		0098
Typical Turn-Around Time	00608	OM1	23	20	NM		
UB-82 Locator 2	00549	UB1	20	30	ST		
UB-82 Locator 27	00551	UB1	22	8	ST		
UB-82 Locator 45	00552	UB1	23	17	ST		
UB-82 Locator 9	00550	UB1	21	7	ST		
UB92 Locator 11 (State)	00562	UB2	10	12	ST	Y/2	
UB92 Locator 2 (State)	00561	UB2	9	29	ST	Y/2	

Appendix A: Data Definition Tables

Description	Item#	Seg	Seq#	Len	DT	Rep	Table
UB92 Locator 31 (National)	00563	UB2	11	5	ST		
UB92 Locator 49 (National)	00565	UB2	13	4	ST	Y/23	
UB92 Locator 56 (State)	00566	UB2	14	14	ST	Y/5	
UB92 Locator 57 (National)	00567	UB2	15	27	ST		
UB92 Locator 78 (State)	00568	UB2	16	2	ST	Y/2	
Unique Document File Name	00927	TXA	16	30	ST		
Unique Document Number	00925	TXA	12	30	EI		
Unit Cost	00374	FT1	22	12	CP		
Units	00574	OBX	6	60	CE		
Units of Measure	00627	OM2	2	60	CE		
Universal Service ID	00238	OBR	4	200	CE		
Universal Service ID	00238	AIS	3	200	CE		
User Defined Access Checks	00581	OBX	13	20	ST		
Valid Coded "Answers"	00637	OM3	3	60	CE		
Valid Patient Classes	00967	LDP	5	1	IS	Y	0004
Valid Patient Classes	00967	PRC	4	1	IS	Y	0004
Value Amount & Code	00558	UB2	6	11	CM	Y/12	0153
Value Amount & Code (46-49)	00539	UB1	10	12	CM	Y/8	0153
Value Type	00570	OM3	7	3	ID		0125
Value Type	00570	OBX	2	3	ID		0125
Variance Classification	01216	VAR	5	60	CE		
Variance Description	01217	VAR	6	512	ST	Y	
Variance Instance ID	01212	VAR	1	60	EI		
Variance Originator	01215	VAR	4	80	XCN	Y	
Vendor Catalog	00289	RQ1	5	16	ST		
Vendor ID	00288	RQ1	4	60	CE		
Verification By	00455	IN1	30	60	XCN	Y	
Verification Date/Time	00454	IN1	29	26	TS		
Verification Status	00470	IN1	45	2	ST		
Verified By	00225	ORC	11	120	XCN	Y	
Version ID	00012	MSH	12	60	VID		0104
Veterans Military Status	00130	PID	27	60	CE		0172
VIP Indicator	00146	PV1	16	2	IS		0099
Virtual Table Name	00699	VTQ	4	60	CE		
Visit Description	00713	PV2	12	50	ST		

Appendix A: Data Definition Tables

Description	Item#	Seg	Seq#	Len	DT	Rep	Table
Visit Indicator	01226	PV1	51	1	IS		0326
Visit Number	00149	PV1	19	20	CX		
Visit Priority Code	00726	PV2	25	1	IS		0217
Visit Protection Indicator	00723	PV2	22	1	ID		0136
Visit Publicity Code	00722	PV2	21	1	IS		0215
Visit User Code	00187	PV2	7	2	IS		0130
Visiting Hours	00976	LDP	10	80	VH	Y	0267
VT Query Name	00698	VTQ	3	60	CE		
What Data Code Value Qual.	00035	QRD	11	20	CM	Y	
What Department Data Code	00034	QRD	10	60	CE	Y	
What Subject Filter	00033	QRD	9	60	CE	Y	0048
What User Qualifier	00040	QRF	4	60	ST	Y	
When Data End Date/Time	00039	QRF	3	26	TS		
When Data Start Date/Time	00038	QRF	2	26	TS		
When Quantity/Timing Qualifier	00694	QRF	9	60	TQ		
When to Charge	00234	BLG	1	40	CM		0100
Where Subject Filter	00037	QRF	1	20	ST	Y	
Which Date/Time Qualifier	00042	QRF	6	12	ID	Y	0156
Which Date/Time Status Qualifier	00043	QRF	7	12	ID	Y	0157
Who Subject Filter	00032	QRD	8	60	XCN	Y	

B.

Lower Layer Protocols

The information formerly carried in Appendix B - Lower Layer Protocol (version 2.1) has been moved to the HL7 Implementation Guide. *This page serves as a placeholder for backward compatibility with HL7 version 2.1.*

C.

Network Management

Editor: Karen Van Hentenryck
Health Level Seven

C.1 TRIGGER EVENTS AND MESSAGE DEFINITIONS

C.1.1 NMQ - Network management query message

One system needs network information from another system:

The NMQ (Network Management Query) message is used by one system to make system-level requests for information or action to another system. It has three segments, the NCK segment (network clock), the NST segment (network statistics), and the NSC segment (network status change). An example of the last type, NSC (network status change) would be an application or system startup/shut down request. At least one of these three segments must be present in the NMQ message. If a segment is present in the NMQ message, the corresponding segment needs to be present in the NMR message to return the requested data or status.

- a) The purpose of the NCK segment is to allow the various systems on the network to synchronize their system clocks (system date and time).
- b) The purpose of the NST segment is to allow network statistical information to be passed between the various systems on the network. Although some of the fields in this segment refer to portions of lower level protocols, they contain information that can be used by network management applications monitoring the state of various network links. All the data fields in the NST (network statistics) are optional, and the fields maintained by any system are to be negotiated at a particular site.
- c) The NSC segment can be used to request the start-up, shut-down, and/or migration (to a different CPU or file-server/file-system) of a particular application. It can also be used in an unsolicited update from one system to another to announce the start-up, shut-down, or migration of an application.

<u>NMQ</u>	<u>Network Management Query</u>	<u>Chapter/ Appendix</u>
MSH	Message Header	2
[QRD	Query Definition	2
[QRF]]	Query Filter	2
{[NCK]	Network System Clock	C
[NST]	Network Statistics	C
[NSC]}	Network Status Change	C
<u>NMR</u>	<u>Network Management Response</u>	<u>Chapter/ Appendix</u>
MSH	Message Header	2
MSA	Message Acknowledgement	2
[ERR]	Error	2
[QRD]	Query Definition	2
{[NCK]	System Clock	C
[{NTE}]	Notes and Comments	2
[NST]	Statistics	C

Appendix C: Network Management

[{NTE}]	Notes and Comments	2
[NSC]	Network Status Change	C
[{NTE}] }	Notes and Comments	2

C.1.2 NMD - Network management data message

One system creates an unsolicited update (UU) Network Management Data message (NMD) to transmit network management information to another system. In this case, the initiating system sends an NMD message as an unsolicited update (UU) containing network management information to a receiving system, which responds with a generic acknowledgement message (ACK).

For example, a system going down for backups (or starting up again after backups) might issue such a message to one or more applications. A system switching to another CPU or file-server may also need to use this transaction to notify other systems.

<u>NMD</u>	<u>Network Management Data</u>	<u>Chapter/ Appendix</u>
MSH	Message Header	2
{		
[NCK	System Clock	C
[{NTE}]	Notes and Comments	2
]		
[NST	Statistics	C
[{NTE}]	Notes and Comments	2
]		
[NSC	Network Status Change	C
[{NTE}]	Notes and Comments	2
]		
}		

<u>ACK</u>	<u>Generic Acknowledgement</u>	<u>Chapter/ Appendix</u>
MSH	Message Header	2
MSA	Message Acknowledgement	2

C.2 NETWORK MANAGEMENT SEGMENTS

The following segments are needed by the network management messages.

C.2.1 NCK - system clock segment

The NCK segment is used to allow the various systems on the network to synchronize their system clocks (system date and time).

Figure C-1. NCK attributes

SEQ	LEN	DT	R/O	RP/#	TBL#	ITEM#	ELEMENT NAME
1	26	TS	R			01172	System Date/Time

C.2.1.0 NCK field definitions

C.2.1.1 System date/time (TS) 01172

Definition: This field contains an HL7 time stamp. It is strongly recommended that seconds be included. If the message contains an NST or NSC segment, the NCK segment is optional. If the NCK segment is present, this field is required. If present in the NMQ message, or the unsolicited NMD message, it contains the system date/time of the sending system. If present in the NMR response message, it contains the responding system's date/time.

C.2.1.2 NCK use notes

If this message is to be used to automatically reset/correct system clocks, it is recommended that the system or administrative personnel initiating the NMQ with the NCK segment have the authority to correct the clock (system date and time) for the other systems on the network. This is important in order to avoid the obvious confusion of multiple systems attempting to resynchronize each other's clocks.

If this message is used only to gather information on the various system's clocks, it is still important for an administrative procedure to be worked out to avoid conflicts when resetting clocks.

C.2.2 NST - statistics segment

The NST segment allows network statistical information to be passed between the various systems on the network. Some fields in this segment refer to portions of lower level protocols; they contain information that can be used by network management applications monitoring the state of various network links.

Figure C-2. NST attributes

SEQ	LEN	DT	R/O	RP/#	TBL#	ITEM#	ELEMENT NAME
1	1	ID	R		0136	01173	Statistics Available
2	30	ST				01174	Source Identifier
3	3	ID				01175	Source Type
4	26	TS				01176	Statistics Start
5	26	TS				01177	Statistics End
6	10	NM				01178	Receive Character Count
7	10	NM				01179	Send Character Count
8	10	NM				01180	Messages Received
9	10	NM				01181	Messages Sent
10	10	NM				01182	Checksum Errors Received
11	10	NM				01183	Length Errors Received
12	10	NM				01184	Other Errors Received
13	10	NM				01185	Connect Timeouts
14	10	NM				01186	Receive Timeouts
15	10	NM				01187	Network Errors

C.2.2.0 NST field definitions

C.2.2.1 Statistics available (ID) 01173

Definition: This field contains an indicator if statistics are available. Refer to *HL7 table 0136 - Yes/no indicator* for valid values.

Appendix C: Network Management

N - the responding system does not keep any statistics. If the value “N” is specified, the response message is used to signify to the initiating application that the particular link is operational (and fields 2-15 are empty in the response message).

Y - the responding system does keep statistics”, fields 4 and 5 are required, (and the response message contains one or more non-null fields in the range 2-3, 6-15).

C.2.2.2 Source identifier (ST) 01174

Definition: This field identifies a particular lower level link (e.g., a port number).

C.2.2.3 Source type (ID) 01175

Definition: This field identifies (in certain systems) whether a lower level source identifier is an initiate or accept type. Refer to *HL7 table 0332 - Network source type* for valid values.

HL7 Table 0332 – Network source type

Value	Description
I	Initiate
A	Accept

C.2.2.4 Statistics start (TS) 01176

Definition: This field contains the date/time stamp of the start of the collection of the statistics reported in fields 6-15 of this segment. It is strongly recommended that this value include seconds.

C.2.2.5 Statistics end (TS) 01177

Definition: This field contains the date/time stamp of the end of the statistics collection period reported in fields 6-15 of this segment. It is strongly recommended that this value include seconds.

C.2.2.6 Receive character count (NM) 01178

Definition: This field contains the number of characters received.

C.2.2.7 Send character count (NM) 01179

Definition: This field contains the number of characters sent.

C.2.2.8 Messages received (NM) 01180

Definition: This field contains the number of messages received.

C.2.2.9 Messages sent (NM) 01181

Definition: This field contains the number of messages sent.

C.2.2.10 Checksum errors received (NM) 01182

Definition: This field contains the number of messages received with checksum errors.

C.2.2.11 Length errors received (NM) 01183

Definition: This field contains the number of messages received with length errors.

C.2.2.12 Other errors received (NM) 01184

Definition: This field contains the number of “other” invalid messages received (excluding length and checksum errors).

C.2.2.13 Connect timeouts (NM) 01185

Definition: This field contains the number of connect timeout errors.

C.2.2.14 Receive timeouts (NM) 01186

Definition: This field contains the number of timeouts while waiting for a response to an initiated message.

C.2.2.15 Network errors (NM) 01187

Definition: This field contains the number of network errors in response to an initiated message.

C.2.2.16 NST use notes

Fields 2-15. These are all marked optional since the statistics kept on a particular link and negotiated between the two systems in question will vary. Not all values will apply to each system. Some values are concerned with the type of port, and some values pertain to the lower level protocol.

C.2.3 NSC - status change segment

The NSC segment can be used to request the start-up, shut-down, and/or migration (to a different cpu or file-server/file-system) of a particular application. It can also be used in an unsolicited update from one system to another to announce the start-up, shut-down, or migration of an application.

Figure C-3. NSC attributes

SEQ	LEN	DT	R/O	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	IS	R		0333	01188	Network Change Type
2	30	ST				01189	Current CPU
3	30	ST				01190	Current Fileserver
4	30	ST				01191	Current Application
5	30	ST				01192	Current Facility
6	30	ST				01193	New CPU
7	30	ST				01194	New Fileserver
8	30	ST				01195	New Application
9	30	ST				01196	New Facility

Appendix C: Network Management

C.2.3.0 NSC field definitions

C.2.3.1 Network change type (IS) 01188

Definition: This field contains the type of change being requested (if NMR query) or announced (if NMD unsolicited update). Refer to user-defined table 0333 - Network change type for suggested values. Implies that "new" version starts up with no loss or duplication of data as old one is shutting down (if possible).

User-defined Table 0333 - Network change type

Value	Description
SU	Start up
SD	Shut down
M	Migrates to different CPU

C.2.3.2 Current CPU (ST) 01189

Definition: This field contains a site-specific name for the current CPU.

C.2.3.3 Current fileserver (ST) 01190

Definition: This field contains a site-specific name for the current fileserver or file system used by this application.

C.2.3.4 Current application (ST) 01191

Definition: This field contains a site-specific name available to identify the "current" application process used for interfacing with lower level protocols. To be used in conjunction with the sending/receiving system and facility values in the MSH.

C.2.3.5 Current facility (ST) 01192

Definition: This field contains a site-specific name for the current facility used by this application. To be used in conjunction with the values for the sending/receiving system and facility values in the MSH.

C.2.3.6 New CPU (ST) 01193

Definition: This field contains a site-specific name for the new CPU.

C.2.3.7 New fileserver (ST) 01194

Definition: This field contains a site-specific name for the new fileserver or file system used by this application.

C.2.3.8 New application (ST) 01195

Definition: This field contains a site-specific name available to identify "new" application processes used for interfacing with lower level protocols. To be used in conjunction with the sending/receiving system and facility values in the MSH.

C.2.3.9 New facility (ST) 01196

Definition: This field contains a site-specific name for the new facility used by this application. To be used in conjunction with the values for the sending/receiving system and facility values in the MSH.

C.2.3.10 NSC use notes

Fields 2-9. These are not applicable ("n/a") when the type of change being requested or reported is start-up or shut-down. If the change is of type "M", at least one of fields 2-5 must be different from its corresponding field in range 6-9.

Fields 4-5, 8-9. See definitions for the MSH, message header segment, in Chapter 2, (Control Section), for fields 3-4, for system and facility. "Application" is available for interfacing with lower level protocols. "Facility" is entirely site-defined.

Fields 2-3, 6-7. Entirely site-defined.

C.2.4 QRD - query definition segment usage**C.2.4.1 QRD use notes**

This segment is defined in Chapter 2. It is optional in the NMQ message. If present, *QRD-1-query date/time*, *QRD-2-query format code*, *QRD-3-query priority*, *QRD-9-what subject filter*, and *QRD-12-what department data code* should be used.

Suggested values for *QRD-9-what subject filter* are NCK, NST, or NSC. If NSC is used, then suggested values for *QRD-12-what department data code* should be taken from the user-defined table for *NSC-1-network change type*.

Since these are network management transactions, *QRD-2-query format code* should be **R** (record oriented), *QRD-3-query priority* should be **I** (immediate).

The other fields in this segment are optional.

D.

Version 2.3.1 BNF Message Descriptions

Editor:

D.1 BNF DESCRIPTIONS OF HL7 VERSION 2.3.1 ABSTRACT MESSAGES

D.1.1 Overview

This appendix gives examples of BNF representations of abstract message definitions at the segment level for HL7, version 2.3.1. It does not specify the field-level or data-type definitions nor does it define the message exchange protocol. It is not the only possible set of BNF productions capable of describing these messages, since the choice of tokens for certain segments and messages is to some extent arbitrary (e.g., should the EVN segment have a single token, or many?), as are the forms used to define recursion.

In the definitions that follow an attempt has been made both to follow the general use of message definitions given in the various chapters and to resolve questions of ambiguity.

For more information on BNF, see *Compiler Design in C ; Allen I. Holub; Prentice Hall; Englewood Cliffs, New Jersey; 1990.*

D.1.2 Tokens

D.1.2.1 Terminators

EOM End of message. Not formally part of HL7 abstract message definition, nor of the encoding rules: hence optional from the point of view of the abstract message definitions and encoding rules. Included here to add to clarity and to the usefulness of the BNF descriptions in generating HL7 parsers.

ST Segment terminator.

SOM Start of Message. Not formally part of HL7 abstract message definition, nor of the encoding rules: hence optional from the point of view of the abstract message definitions and encoding rules. Included here to add to clarity and to the usefulness of the BNF descriptions in generating HL7 parsers.

D.1.2.2 Segments

D.1.2.2.1 Control/query

MSH MSA ERR NTE QRD QRF DSC URS URD DSP MSHmcf

Appendix D: BNF Message Descriptions

D.1.2.2.2 Master files

MFE MFI MFA

D.1.2.2.3 Patient administration

EVN EVNA01 EVNA02 EVNA03 EVNA04 EVNA05 EVNA06 EVNA07 EVNA08 EVNA0 EVNA10
EVNA11 EVNA12 EVNA13 EVNA14 EVNA15 EVNA16 EVNA17 EVNA18 EVNA19 EVNA20
EVNA21 EVNA22 EVNA23 EVNA24 EVNA25 EVNA26 EVNA27 EVNA28 EVNA29 EVNA30
EVNA31 EVNA32 EVNA33 EVNA34 EVNA35 EVNA36 EVNA37 PID PV1 DG1 PR1 NK1 PV2 ACC
AL1 IN1 IN2 IN3 UB1 UB2 NPU MRG

D.1.2.2.4 Financial information

GT1 FT1 BLG EVNP01 EVNP02 EVNP03

D.1.2.2.5 Orders/Observations

ORC OBR OBX RXA RXC RXO RXR RXG RXD RXE ODS ODT RQ1 RQD MSHorr1 MSHorr2

D.1.3 BNF Message Definitions

The following is a listing of the BNF message descriptions, using the tokens defined above. It includes the accompanying segment groups used in producing the messages. Comments within the file are delimited by "/" (comment start) and "/" (comment end).*

```
hl7Msgs: ack      /* General acknowledgment      */
|
| mcf             /* Delayed acknowledgment message. */
|
| qry             /* Query message.                  */
|
| dsr             /* Display response message.      */
|
| udm             /* Unsolicited display message.   */
|
| adt             /* Admissions, discharge, transfer.*/
|
| orm             /* Order message.                  */
|
| orr             /* Order message response.        */
|
| rxo             /* Pharmacy order.                */
|
| rde             /* Pharmacy order information.     */
|
| rds             /* Pharmacy dispense information.  */
|
| rgv             /* Pharmacy dose information.     */
|
| ras             /* Pharmacy administration information.*/
|
| rre             /* Pharmacy encoded order history report.*/
|
| rrd             /* Pharmacy dispense history report.*/
|
| rrg             /* Pharmacy give history report.   */
|
| rra             /* Pharmacy administration report. */
|
| orrRxo          /* Pharmacy order message response.*/
```

Appendix D: BNF Message Descriptions

```
|    orrRde    /* Pharmacy encoded order message response. */
|
|    orrRds    /* Pharmacy dispense message response. */
|
|    orrRgv    /* Pharmacy give message response. */
|
|    orrRas    /* Pharmacy administer message response. */
|
|    bar       /* Add or change billing account. */
|
|    dft       /* Detail financial transaction. */
|
|    oru       /* Observation result - unsolicited. */
|
|    orf       /* Observation result - solicited. */
|
|    mfn       /* Master Files Notification */
|
|    mfk       /* Master Files Acknowledgement */
|
|    mfd       /* Master File Update Delayed Application Acknowledgement */
|
|    mfq       /* Master Files Query */
|
|    mfr       /* Master Files Query Response */
|
;

/* Chapter II - Control Section */

/* ACK - General synchronous acknowledgement. */

ack:    SOM MSH ST MSA ST ERROpt EOM ;

/* Delayed Acknowledgement */

mcf:    SOM MSHmcf ST MSA ST EOM
|
|    SOM MSHmcf ST MSA ST ERROpt EOM ;

NoteOptGrp:
|
|    NoteGrp ;

NoteGrp: NTE ST
|
|    NTE ST NoteGrp ;

/* Chapter II - Query Section */

QueryHdr:  QRD ST QRFOpt PIDOpt ;

qry:      SOM MSH ST QRD ST QRFOpt DSCOpt EOM ;

dsr:      SOM MSH ST MSA ST ERROpt QRD ST QRFOpt DisplayGrp DSCOpt EOM
|
|    SOM MSH ST QRD ST QRFOpt DisplayGrp DSCOpt EOM ;

udm:      SOM MSH ST URD ST URSOpt DisplayGrp DSCOpt EOM ;
```

Appendix D: BNF Message Descriptions

DisplayGrp: DSP ST

| DSP ST DisplayGrp ;

/* Chapter III - ADT Messages: note that the EVNxxx tokens stand for identical segments except for the event type code values. This allows the BNF description for each ADT message to be unique, although the actual segment level definitions are non-unique. Thus the BNF is parallel to that used in the ADT chapter. */

```
adt:  a01  /* Admit a patient.      */
      |  a02  /* Transfer a patient. */
      |  a03  /* Discharge a patient. */
      |  a04  /* Register a patient. */
      |  a05  /* Pre-admit a patient. */
      |  a06  /* Transfer an outpatient to inpatient. */
      |  a07  /* Transfer an inpatient to outpatient. */
      |  a08  /* Update patient information. */
      |  a09  /* Patient departing.   */
      |  a10  /* Patient arriving.    */
      |  a11  /* Cancel admit.        */
      |  a12  /* Cancel transfer.     */
      |  a13  /* Cancel discharge.    */
      |  a14  /* Pending admit.       */
      |  a15  /* Pending transfer.    */
      |  a16  /* Pending discharge.   */
      |  a17  /* Swap a patient.      */
      |  a18  /* Merge patient information. */
      |  a19  /* Patient query.       */
      |  a20  /* Nursing - census application updates. */
      |  a21  /* Leave of absence - out (leaving). */
      |  a22  /* Leave of absence - in (returning). */
      |  a23  /* Delete a patient record. */
      |  a24  /* Link patient information. */
      |  a25  /* Cancel pending discharge. */
      |  a26  /* Cancel pending transfer. */
      |  a27  /* Cancel pending admit. */
      |  a28  /* Add person information. */
      |  a29  /* Delete person information. */
```

Appendix D: BNF Message Descriptions

```
|      a30  /* Merge person information.      */
|
|      a31  /* Update person information.      */
|
|      a32  /* Cancel patient arriving.        */
|
|      a33  /* Cancel patient departing.       */
|
|      a34  /* Merge patient information (PID only). */
|
|      a35  /* Merge patient information (Account # only). */
|
|      a36  /* Merge patient information (PID & Account #). */
|
|      a37 ; /* Unlink patient information.     */

a01:  SOM MSH ST EVNA01 ST PID ST NK1OptGrp PV1 ST PV2Opt OBXOptGrp
      AL1OptGrp DG1OptGrp PR1OptGrp GT1OptGrp InsOptGrp1
      ACCOpt UB1Opt UB2Opt EOM ;

a02:  SOM MSH ST EVNA02 ST PidGrp EOM ;

a03:  SOM MSH ST EVNA03 ST PidGrp EOM ;

a04:  SOM MSH ST EVNA04 ST PID ST NK1OptGrp PV1 ST PV2Opt OBXOptGrp
      AL1OptGrp DG1OptGrp PR1OptGrp GT1OptGrp InsOptGrp1
      ACCOpt UB1Opt UB2Opt EOM ;

a05:  SOM MSH ST EVNA05 ST PID ST NK1OptGrp PV1 ST PV2Opt OBXOptGrp
      AL1OptGrp DG1OptGrp PR1OptGrp GT1OptGrp InsOptGrp1
      ACCOpt UB1Opt UB2Opt EOM ;

a06:  SOM MSH ST EVNA06 ST PID ST MRGOpt NK1OptGrp PV1 ST PV2Opt OBXOptGrp
      AL1OptGrp DG1OptGrp PR1OptGrp GT1OptGrp InsOptGrp1
      ACCOpt UB1Opt UB2Opt EOM ;

a07:  SOM MSH ST EVNA07 ST PID ST MRGOpt NK1OptGrp PV1 ST PV2Opt OBXOptGrp
      AL1OptGrp DG1OptGrp PR1OptGrp GT1OptGrp InsOptGrp1
      ACCOpt UB1Opt UB2Opt EOM ;

a08:  SOM MSH ST EVNA08 ST PID ST NK1OptGrp PV1 ST PV2Opt OBXOptGrp
      AL1OptGrp DG1OptGrp PR1OptGrp GT1OptGrp InsOptGrp1
      ACCOpt UB1Opt UB2Opt EOM ;

a09:  SOM MSH ST EVNA09 ST PidGrp DG1OptGrp EOM ;

a10:  SOM MSH ST EVNA10 ST PidGrp DG1OptGrp EOM ;

a11:  SOM MSH ST EVNA11 ST PidGrp DG1OptGrp EOM ;

a12:  SOM MSH ST EVNA12 ST PidGrp DG1OptGrp EOM ;

a13:  SOM MSH ST EVNA13 ST PID ST NK1OptGrp PV1 ST PV2Opt OBXOptGrp
      AL1OptGrp DG1OptGrp PR1OptGrp GT1OptGrp InsOptGrp1
```

Appendix D: BNF Message Descriptions

```
        ACCOpt UB1Opt UB2Opt EOM ;

a14:  SOM MSH ST EVNA14 ST PID ST NK1OptGrp PV1 ST PV2Opt OBXOptGrp

        AL1OptGrp DG1OptGrp PR1OptGrp GT1OptGrp InsOptGrp1

        ACCOpt UB1Opt UB2Opt EOM ;

a15:  SOM MSH ST EVNA15 ST PidGrp DG1OptGrp EOM ;
a16:  SOM MSH ST EVNA16 ST PidGrp DG1OptGrp EOM ;
a17:  SOM MSH ST EVNA17 ST PidGrp PidGrp EOM ;
a18:  SOM MSH ST EVNA18 ST PID ST MRG ST PV1Opt EOM ;
a19:  SOM MSH ST MSA ST ERROpt QRD ST InfGrp DSCOpt EOM ;
a20:  SOM MSH ST EVNA20 ST NPU ST EOM ;
a21:  SOM MSH ST EVNA21 ST PidGrp EOM ;
a22:  SOM MSH ST EVNA22 ST PidGrp EOM ;
a23:  SOM MSH ST EVNA23 ST PidGrp EOM ;
a24:  SOM MSH ST EVNA24 ST PID ST PV1Opt PID ST EOM ;
a25:  SOM MSH ST EVNA25 ST PidGrp EOM ;
a26:  SOM MSH ST EVNA26 ST PidGrp EOM ;
a27:  SOM MSH ST EVNA27 ST PID ST NK1OptGrp PV1 ST PV2Opt OBXOptGrp EOM ;
a28:  SOM MSH ST EVNA28 ST PID ST NK1OptGrp PV1Opt PV2Opt OBXOptGrp

        AL1OptGrp DG1OptGrp PR1OptGrp GT1OptGrp InsOptGrp1

        ACCOpt UB1Opt UB2Opt EOM ;

a29:  SOM MSH ST EVNA29 ST PID ST PV1Opt PV2Opt OBXOptGrp EOM ;
a30:  SOM MSH ST EVNA30 ST PID ST MRG ST EOM ;
a31:  SOM MSH ST EVNA31 ST PID ST NK1OptGrp PV1Opt PV2Opt OBXOptGrp

        AL1OptGrp DG1OptGrp PR1OptGrp GT1OptGrp InsOptGrp1

        ACCOpt UB1Opt UB2Opt EOM ;

a32:  SOM MSH ST EVNA32 ST PidGrp EOM ;
a33:  SOM MSH ST EVNA33 ST PidGrp EOM ;
a34:  SOM MSH ST EVNA34 ST PID ST MRG ST EOM ;
a35:  SOM MSH ST EVNA35 ST PID ST MRG ST EOM ;
a36:  SOM MSH ST EVNA36 ST PID ST MRG ST EOM ;
a37:  SOM MSH ST EVNA37 ST PID ST PV1Opt PID ST PV1Opt EOM ;

/* Insurance group 1 requires an IN1 segment within a repeating insurance */

/* group while Insurance group 2 allows a repeating IN3 within the group */

/* of a single IN1-IN2 pair */
```

```

InsOptGrp1:
    |   InsGrp1 ;

InsGrp1: Ins1
    |   Ins1 InsGrp1 ;

Ins1:   IN1 ST IN2Opt IN3Opt ;

InsOptGrp2:
    |   InsGrp2 ;

InsGrp2: Ins2
    |   Ins2 InsGrp2 ;

Ins2:   IN1 ST IN2Opt IN3OptGrp ;

/* Inf is the patient information data that forms each member */
/* of a list of patient information segments in response to a query */

InfGrp: Inf
    |   Inf InfGrp ;

Inf:   EVNA19Opt PID ST NK1OptGrp PV1 ST PV2Opt OBXOptGrp
      AL1OptGrp DG1OptGrp PR1OptGrp GT1OptGrp InsOptGrp1
      ACCOpt UB1Opt UB2Opt;

PidGrp: PID ST PV1 ST PV2Opt OBXOptGrp ;

/* Chapter IV - ORDERS */
/* ORM - Order message. */

orm:   SOM MSH ST NoteOptGrp PidOptClause1 ORCGrp EOM ;

PidOptClause1:
    |   PID ST NoteOptGrp AL1OptGrp PV1Opt ;

ORCGrp:  ORC ST DetailOptClause
    |   ORC ST DetailOptClause ORCGrp ;

DetailOptClause:
    |   OrderSeg OBXDOptGrp BLGOpt ;

OBXDOptGrp:
    |   OBXDGrp ;

OBXDGrp:  OBX ST NoteOptGrp
    |   OBX ST NoteOptGrp OBXDGrp ;

OrderSeg: OBR ST NoteOptGrp
    |   Supplies NoteOptGrp

```

Appendix D: BNF Message Descriptions

```
|      ODSGrp NoteOptGrp

|      ODTGrp NoteOptGrp ;

Supplies: RQD ST

|      RQD ST RQ1 ST ;

/* ORR - Response message. */

orr:    Orr1

|      Orr2 ;

Orr1:    SOM MSHorr1 ST MSA ST ERROpt NoteOptGrp PidOptClause2 EOM ;

Orr2:    SOM MSHorr2 ST MSA ST ERROpt NoteOptGrp RxOptResponse EOM ;

RxOptResponse:

|      RxResponse ;

RxResponse: PIDOpt PrescriptionGrp ;

PrescriptionGrp:  ORC ST PrescriptionOpt

|      ORC ST PrescriptionOpt PrescriptionGrp ;

PrescriptionOpt:

|      Prescription;

Prescription:  RXO ST NoteOptGrp RXRGrp ST  RXCNOptGrp ;

PidOptClause2:

|      PIDOpt ORCGrp1 ;

ORCGrp1:  ORC ST OrderSegOpt

|      ORC ST OrderSegOpt ORCGrp1 ;

OrderSegOpt:

|      OrderSeg ;

/* Pharmacy. */

rxo:    SOM MSH ST NoteOptGrp PidOptClause1 RxOrderGrp EOM ;

rde:    SOM MSH ST NoteOptGrp PidOptClause1 RxEncOrdGrp EOM ;

rds:    SOM MSH ST NoteOptGrp PidOptClause1 DispenseGrp EOM ;

rgv:    SOM MSH ST NoteOptGrp PidOptClause1 RxGiveGrp EOM ;

ras:    SOM MSH ST NoteOptGrp PidOptClause1 RxAdminGrp EOM ;

rra:    SOM MSH ST MSA ST ERROpt AdminRptGrp DSCOpt EOM ;

rrd:    SOM MSH ST MSA ST ERROpt DispenseRptGrp DSCOpt EOM ;

rre:    SOM MSH ST MSA ST ERROpt RxOrderRptGrp DSCOpt EOM ;

rrg:    SOM MSH ST MSA ST ERROpt GiveRptGrp DSCOpt EOM ;
```

Appendix D: BNF Message Descriptions

```
orrRxo:  SOM MSH ST MSA ST ERROpt NoteOptGrp PidOptClause2 PrescriptionGrp EOM ;

orrRde:  SOM MSH ST MSA ST ERROpt NoteOptGrp PidOptClause2 RxOrdGrp2Opt EOM ;

orrRds:  SOM MSH ST MSA ST ERROpt NoteOptGrp PidOptClause2 RxdGrpOpt EOM ;

orrRgv:  SOM MSH ST MSA ST ERROpt NoteOptGrp PidOptClause2 RxgGrpOpt EOM ;

orrRas:  SOM MSH ST MSA ST ERROpt NoteOptGrp PidOptClause2 RxaGrpOpt EOM ;

RxAdmin:  ORC ST PrescriptionOpt RxEncOrdOpt RXAGrp RXR ST ;

RxGive:    ORC ST PrescriptionOpt RxEncOrdOpt RXG ST RXRGrp ST RXCOptGrp ;

RxEncOrd:  ORC ST PrescriptionOpt RXE ST RXRGrp ST RXCOptGrp ;

Dispense:  ORC ST PrescriptionOpt RxEncOrdOpt RXD ST RXRGrp ST RXCOptGrp ;

GiveRpt:   QueryHdr RxOrdGrp4 ;

AdminRpt:  QueryHdr RxOrdGrp1 ;

DispenseRpt: QueryHdr RxOrdGrp3 ;

RxOrderRptGrp: RxOrderRpt
    | RxOrderRpt RxOrderRptGrp ;

RxOrderRpt: QueryHdr RxOrdGrp2 ;

RxOrdGrp1: RxOrd1
    | RxOrd1 RxOrdGrp1 ;

RxOrd1:    ORC ST RXE ST RXRGrp ST RXCOptGrp RXAGrp RXR ST;

RxOrdGrp2: RxOrd2
    | RxOrd2 RxOrdGrp2 ;

RxOrd2:    ORC ST RXE ST RXRGrp ST RXCOptGrp ;

RxOrdGrp2Opt:
    | RxOrdGrp2 RxOrdGrp2Opt ;

RxOrdGrp3: RxOrd3
    | RxOrd3 RxOrdGrp3 ;

RxOrd3:    ORC ST RXE ST RXRGrp ST RXCOptGrp RXDGrp RXRGrp ST ;

RxOrdGrp4: RxOrd4
    | RxOrd4 RxOrdGrp4 ;

RxOrd4:    RXE St RXRGrp ST RXCOptGrp RXGGrp RXRGrp ST ;

RxdGrpOpt:
    | OrcRxdGrp RxdGrpOpt ;

OrcRxdGrp:
    | ORC ST RxdDsGrp OrcRxdGrp ;

RxdDsGrp:
```


Appendix D: BNF Message Descriptions

```
| RXD RXRGrp RXCOptGrp RxdDsGrp ;

RxgGrpOpt:

| OrcRxgGrp RxgGrpOpt ;

OrcRxgGrp:

| ORC ST RxgGvGrp OrcRxgGrp ;

RxgGvGrp:

| RXG RXRGrp RXCOptGrp RxgGvGrp ;

RxaGrpOpt:

| OrcRxaGrp RxaGrpOpt ;

OrcRxaGrp:

| ORC ST RxaRaGrp OrcRxaGrp ;

RxaRaGrp:

| RXA RXR RxaRaGrp ;

GiveRptGrp:    GiveRpt

|    GiveRpt GiveRptGrp ;

AdminRptGrp:    AdminRpt

|    AdminRpt AdminRptGrp ;

DispenseRptGrp:    DispenseRpt

|    DispenseRpt DispenseRptGrp ;

DispenseGrp:    Dispense

|    Dispense DispenseGrp ;

RxAdminGrp: RxAdmin

|    RxAdmin RxAdminGrp ;

RxOrderGrp: RxOrder

|    RxOrder RxOrderGrp ;

RxOrder:    ORC ST Prescription OBXDOptGrp BLGOpt ;

RxGiveGrp: RxGive

|    RxGive RxGiveGrp ;

RxEncOrdGrp: RxEncOrd

|    RxEncOrd RxEncOrdGrp ;

RxEncOrdOpt:

|    RxEncOrd ;

/* Chapter VI - Finance */

/* Finance: Patient accounting. The triggering events that follow are */
```

Appendix D: BNF Message Descriptions

```
/* served by the DFT, BAR and ACK messages. */

bar:    p01    /* Add and update patient account. */
      |
      p02 ; /* Purge patient account. */

dft:    p03 ; /* Post detail financial transaction. */

p01:    SOM MSH ST EVNP01 ST PID ST BillingGrp EOM ;

BillingGrp:  Billing
      |
      Billing BillingGrp ;

Billing:  PV1Opt PV2Opt OBXOptGrp AL1OptGrp DG1OptGrp PR1OptGrp
          GT1OptGrp NK1OptGrp InsOptGrp2 ACCOpt UB1Opt UB2Opt ;

p02:    SOM MSH ST EVNP02 ST VisitGrp EOM ;

VisitGrp: Visit
      |
      Visit VisitGrp ;

Visit:    PID ST PV1Opt PV2Opt OBXOptGrp ;

p03:    SOM MSH ST EVNP03 ST PID ST PV1Opt PV2Opt1 OBXOptGrp FT1Grp EOM ;

FT1Grp:  FT1 ST
      |
      FT1 ST FT1Grp ;

/* Chapter VII - Ancillary Reporting */

/* Ancillary Data Reporting. */

oru:    SOM MSH ST PidOptClause3 ObserveGrp DSCOpt EOM ;

orf:    SOM MSH ST MSA ST ERROpt QueryHdr ObserveGrp DSCOpt EOM ;

PidOptClause3:
      |
      PID ST NoteOptGrp PV1Opt ;

ObserveGrp: Observe
      |
      Observe ObserveGrp ;

Observe:  ORCOpt OBR ST NoteOptGrp OBXDGRPOpt ;

/* Master Files Messages...see note below... the segment level definition for the MFSGrp will vary
according to the master file entry being referenced in the MFI segment... hence a BNF form will need
to be generated for each master file ... */

mfn: SOM MSH ST MFI ST MFEGrp EOM ;

MFEGrp: MFE ST MFSGrpOpt
      |
      MFE ST MFSGrpOpt MFEGrp ;

MFSGrpOpt:
      |
      MFSGrp ;

MFSGrp: XXX ST
      |
      XXX ST MFSGrp ;
```

Appendix D: BNF Message Descriptions

```
/* XXX is then one or more HL7 and/or Z-segments carrying the data for the entry identified by the
MFI segment. */

/* Master File Delayed Acknowledgment */

mfd:      SOM MSH ST MFI ST MFAOptGrp EOM ;

MFAOptGrp:
    |      MFAGrp ;

MFAGrp:   MFA ST
    |      MFA ST MFAGrp ;

/* Response to Master Files Query */

mfr:      SOM MSH ST MSA ST ERROpt QRD ST QRFOpt MFI ST MFEGrp EOM ;

/* The segment level definition for the MFSGrp will vary according to the master file being
referenced by the MFI segment... hence a BNF form will need to be generated for each master file...
*/

/* This is the end of the message definition section */

/* The following are sets of segment options and groups needed above. */

ACCOpt:
    |      ACC ST ;

BLGOpt:
    |      BLG ST ;

ERROpt:
    |      ERR ST ;

AL1OptGrp:
    |      AL1 ST
    |      AL1 ST AL1Grp ;

AL1Grp:   AL1 ST
    |      AL1 ST AL1Grp ;

DSCOpt:
    |      DSC ST ;

DG1Grp:   DG1 ST
    |      DG1 ST DG1Grp ;

DG1OptGrp:
    |      DG1 ST
    |      DG1 ST DG1Grp ;

EVNOpt:
    |      EVN ST ;
```

```
EVNA19Opt:
    |      EVNA19 ST ;

GT1OptGrp:
    |      GT1 ST
    |      GT1 ST GT1Grp ;

GT1Grp:  GT1 ST
    |      GT1 ST GT1Grp ;

IN2Opt:
    |      IN2 ST ;

IN3Opt:
    |      IN3 ST ;

IN3OptGrp:
    |      IN3Grp ;

IN3Grp:  IN3 ST
    |      IN3 ST IN3Grp ;

MRGOpt:
    |      MRG ST ;

NK1OptGrp:
    |      NK1 ST
    |      NK1 ST NK1Grp ;

NK1Grp:  NK1 ST
    |      NK1 ST NK1Grp ;

OBXOptGrp:
    |      OBXGrp ;

OBXGrp:  OBX ST
    |      OBX ST OBXGrp ;

ODSGrp:  ODS ST
    |      ODS ST ODSGrp ;

ODTGrp:  ODT ST
    |      ODT ST ODTGrp ;

ORCOpt:
    |      ORC ST ;

PIDOpt:
    |      PID ST NoteOptGrp ;
```

Appendix D: BNF Message Descriptions

```
PR1OptGrp:
    | PR1 ST
    | PR1 ST PR1Grp ;
PR1Grp: PR1 ST
    | PR1 ST PR1Grp ;
PV1Opt:
    | PV1 ST ;
PV2Opt:
    | PV2 ST ;
UB1Opt:
    | UB1 ST ;
UB2Opt:
    | UB2 ST ;
QRFOpt: QRF ST
    | QRF ST QRFOpt ;
RXAGrp: RXA ST
    | RXA ST RXAGrp ;
RXDGrp: RXD ST
    | RXD ST RXDGrp ;
RXGGrp: RXG ST
    | RXG ST RXGGrp ;
RXCOpt:
    | RXC ST ;
RXCOptGrp:
    | RXCGrp ;
RXCGrp: RXC ST
    | RXC ST RXCGrp ;
RXCNOptGrp:
    | RXCNGrp ;
RXCNGrp: RXC ST NoteOptGrp
    | RXC ST NoteOptGrp RXCNGrp ;
RXRGrp: RXR ST
    | RXR ST RXRGrp ;
URSOpt:
```

| URS ST ;

E.

Glossary

Editor: Don A. Kruse, Atomic Moving Images™

A

Abstract Message

The basic level of definition within HL7 is that of the abstract message associated with a particular trigger event. The abstract message definition includes the data fields that will be sent within a message, the valid response messages, and the treatment of application level errors or the failure of the underlying communications system. An HL7 abstract message is defined in terms of HL7 segments and fields, as described in Section 2.4.8.

Abstract Syntax Notation One (ASN.1)

ASN.1 is a data definition language which allows formal definitions of information structures to be expressed in a manner which is independent of any implementation constraints. It may be used to create complex hierarchical structures from basic primitive types.

ACK

General Acknowledgment message. The ACK message is used to respond to a message where there has been an error that precludes application processing or where the application does not define a special message type for the response.

Acknowledgment - Accept Level

The receiving system commits the message to safe storage in a manner that releases the sending system from any obligation to resend the message. A response is returned to the initiator indicating successful receipt and secure storage of the information.

Appendix E: Glossary

Acknowledgment - Application Level	The appropriate application on the receiving system receives the transaction and processes it successfully. The receiving system returns an application-dependent response to the initiator.
ACR/NEMA	American College of Radiology and the National Electrical Manufacturers Association. The American College of Radiology formed a relationship with the National Electronic Manufacturers' Association in 1982 to develop a standard for Digital Imaging and Communications in Medicine (DICOM). The purpose of the standard was to promote a generic digital image communication format; facilitate the development and expansion of picturing archiving and communication systems (PACS); allow the creation of diagnostic information databases for remote access; and help assure the useability of new equipment with existing systems. The current standard (Version 3.0) defines image data as well as patient, study and visit information necessary to provide the context for the images. Approval of this document as an American National Standard may be pursued in the future by NEMA, which is accredited by ANSI.
AD	Address data type. The street or mailing address of a person or institution.
Addendum Document	An appendage to an existing document that contains supplemental information. The parent document remains in place and its content is unaltered.
Admission, Discharge and Transfer (ADT) Transaction Set	Provides for transmitting new or updated demographic and visit information about patients. Generally information will be entered into an ADT system and passed to the nursing, ancillary and financial systems either in the form of an unsolicited update or in response to a record-oriented query.
ADT	Admission, Discharge and Transfer (ADT) message.
Adverse Drug Reaction	<p>Pre-marketing: All noxious and unintended responses to a medicinal product related to any dose.</p> <p>Post-marketing/WHO: A response to a drug which is noxious and unintended, and which occurs at doses normally used in man for prophylaxis, diagnosis, or therapy of disease or for the modification of physiologic function</p>

WHO: Any untoward medical occurrence that may present during treatment with a pharmaceutical product but which does not necessarily have a causal relationship with this product.

Post-marketing/US: Any undesirable effect reasonably associated with the use of the drug, that may occur as part of the pharmacological action of the drug or may be unpredictable.

Post-marketing/European Union: A reaction which is harmful and unintended and which occurs at doses normally used in man for the prophylaxis, diagnosis, or treatment of disease or the modification of physiological function

Adverse Event/Adverse Experience

Pre-marketing: Any untoward medical occurrence in a patient or clinical investigation subject administered a pharmaceutical product and which does not necessarily have a causal relationship with this treatment.

Post-marketing/US: Any adverse event associated with the use of a drug in humans, whether or not considered drug related, including the following: An adverse event occurring in the course of the use of a drug product in professional practice; an adverse event occurring from drug overdose; an adverse event occurring from drug withdrawal; and any failure of expected pharmacologic action.

Post-marketing/European Union: Any undesirable experience occurring to a patient treated with a pharmaceutical product whether or not considered related to the medicinal product.

ANSI

American National Standards Institute. Founded in 1918, ANSI itself does not develop standards. ANSI's roles include serving as the coordinator for U.S. voluntary standards efforts, acting as the approval body to recognize documents developed by other national organizations as American National Standards, acting as the U.S. representative in international and regional standards efforts, and serving as a clearinghouse for national and international standards development information.

ANSI HISPP

See HISPP.

Application Layer	Layer 7 of the OSI Model. Responsible for information transfer between two network applications. This involves such functions as security checks, identification of the two participants, availability checks, negotiating exchange mechanisms and most importantly initiating the exchanges themselves. See OSI Model.
Appointment	An appointment represents a booked slot or group of slots on a schedule, relating to one or more services or resources. Two examples might include a patient visit scheduled at a clinic, and a reservation for a piece of equipment.
Archived Document	A status in which a document has been stored off-line for long-term access.
ASC X12	Accredited Standards Committee X12. ASC X12 develops standards for electronic data interchange, is administered by the Data Interchange Standards Association (DISA), and is accredited to submit its documents to ANSI for approval as American National Standards. X12 has developed a number of message standards for purchase order data, invoice data, and other commonly used business documents. The Insurance Subcommittee (X12N) has developed a group of documents related to providing medical insurance claims transmission, including enrollment/maintenance (834), disability insurance claim (837), and claim payment/advice (835). None of these documents are currently approved as American National Standards, although some are currently considered draft standards for trial use. X12 intends to pursue approval of them as American National Standards in the future,
ASC X3	Accredited Standards Committee X12. ASC X3 develops generic standards for information technology, is administered by the Computer and Business Equipment Manufacturers Association (CBEMA), and is accredited to submit its documents to ANSI for approval as American National Standards.
Assessment	A type of observations/result or observations/result set performed by a health care provider on the patient. An assessment represents a collection of data about the patient to evaluate a patient's current and ongoing condition. An assessment can be subjective or objective; initial or ongoing; clinical or non-clinical; formal or informal. Examples of assessment components include height and weight, body systems, I&O, and activities of daily living. Standards (e.g., Gordon's Functional Health Pattern) and rules are used to prepare an assessment.

ASTM American Society for Testing and Materials. ASTM was founded in 1898 and chartered in 1902 as a scientific and technical organization for the development of standards on characteristics and performance of materials. The charter was broadened in 1971 to include products, systems and services, as well as materials. ASTM is the largest non-government source of standards in the U.S., comprised of over 130 committees that published publishes 10,000 standards annually.

ASTM Committee E31 ASTM Committee E31 on Healthcare Informatics develops standards for health information and health information systems. E31 has 11 subcommittees in the healthcare area. In 1984, the AAMSI task force became subcommittee E31.11 and published E1238, Standard Specification for Transferring Clinical Observations Between Independent Systems, and is used by most of the referral clinical laboratories. Related data interchange standards include E1394 (Standard Specification for Transferring Information Between Clinical Instruments), and E1467 (Specification for Transferring Digital Neurophysiological Data Between Independent Computer Systems). Subcommittee E31.13 focuses on clinical laboratory result reporting standards. ASTM E31 is accredited by ANSI.

Authenticated Document A status in which a document or entry has been signed manually or electronically by one or more individuals who attest to its accuracy. No explicit determination is made that the assigned individual has performed the authentication. While the standard allows multiple instances of authentication, it would be typical to have a single instance of authentication, usually by the assigned individual.

Auxiliary Application An auxiliary application neither exerts control over, nor requests changes to a schedule. It is only concerned with gathering information about a particular schedule. It can be considered an “interested third-party,” in that it is interested in any changes to a particular schedule, but has no interest in changing it or controlling it in any way. It may gather information passively or actively. An auxiliary application passively collects information by receiving unsolicited updates from a filler application.

B

BAR Add/Change Billing Account message. The BAR message supports data sent from some application (usually a registration or ADT system) to the patient accounting system to establish an account for a patient’s billing/accounts

receivable record. Many of the segments associated with this message are optional. This optionality allows those systems needing these fields to set up transactions which fulfill their requirements yet satisfy the HL7 requirements.

Batteries of Appointments.

For example, an activity consisting of an appointment with Radiology, an appointment with a specialist, and an appointment with a primary care physician might be scheduled.

Battery

The word battery is used in this specification synonymously with the word profile or panel. The individual observation elements within a battery may be characteristic of a physiologic system (e.g., liver function tests), or many different physiologic systems.

Benefits

Are the services payable under a specific payor plan. They are also referred to as an insurance product, such as professional services, prescription drugs, etc.

Block

An indication that a slot or a set of slots is unavailable for reasons other than booking an appointment.

Book

The act of reserving a slot or set of slots on a schedule for a service or resource.

C

Canceled (Deleted) Document

A status in which a document has been “removed” from a patient’s record with no replacement. This is done when a document has been erroneously created or assigned to the incorrect patient.

Causal Relationship

When an event occurs a product may be suspected as causing the event but rarely can it be proven particularly at an early stage of the product’s life. Certain information about the relationship between the product and the event can reinforce the believe in a causal relationship between the product and the event while others can decrease the probability that there is a causal relationship.

Causation	An exposure which truly does increase or decrease the probability of a certain outcome.
CD	Chanel definition data type.
CE	Coded Element data type. This data type transmits codes and the text associated with the code. This type has six components, as follows: identifier, text, name of coding system, alternate identifier, alternate text, and name of alternate coding system.
CEN	The Comite Europeen de Normalisation (CEN) is the European Economic Community's (EEC) standards development organization (analogous to ANSI in the U.S.). Technical Committee 251 (TC 251) is CEN's committee to develop standards in Medical Informatics. CEN also sponsors TC 224 (Machine-readable cards, related device interfaces and operations).
CF	Coded Element with Formatted Values data type. This data type transmits codes and the formatted text associated with the code.
Child Appointment	A child appointment is an appointment subordinate to another appointment (called a parent appointment). For example, a single instance of an appointment in a group of recurring appointments is a child to the group. Child appointments can themselves be parent appointments. For example, if a battery of appointments is scheduled, then the atomic units of the battery are children to the battery request. If the battery is scheduled as a repeating appointment, then each instance of the battery of appointments (parent to each of the atomic units) is a child to the original repeating request.
CK	Composite with Check Digits data type. A composite consisting of four components: an ID number, a check digit, a code showing the check digit scheme employed, and an assigning facility ID.
Clinical Information	Refers to the data contained in the patient record. The data may include such things as problem lists, lab results, current medications, family history, etc. For the purposes of this chapter, clinical information is limited to diagnoses (DG1), results reported (OBX/OBR), and allergies (AL1).

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Clinical Pathway

A **clinical pathway** is a standardized plan of care against which progress towards health is measured. A clinical pathway is applied based upon the results of a patient assessment. A clinical pathway shows exact timing of all key patient care activities intended to achieve expected standard outcomes within designated time frames. A clinical pathway includes documentation of problems, expected outcomes/goals, and clinical interventions/orders.

Clinical Trial

A scientifically rigorous study of individual outcomes to some process of healthcare intervention. Clinical trials usually involve medical treatments so this document will use the term *treatment*, rather than the broader term *intervention*. A clinical trial design may randomly assign and compare one treatment approach with another, or generate safety and efficacy data on a single treatment approach. The clinical trial has a protocol for the patient's course of treatment and/or evaluation. There is usually a schedule for collection of data to measure compliance, safety, and outcomes.

CM

Composite data type. A field that is a combination of other meaningful data fields. Each portion is called a component.

CN

Composite Number and Name data type. A field identifying a person both as a coded value and with a text name. The first component is the coded ID according to a site-specific table. The second through the sixth components are the person's name as a PN field. The seventh component specifies the source table used for the first component.

Complex Appointments

For example, recurring batteries of appointments, or batteries of battery appointments.

Component Separator

The component separator is used to separate adjacent components of some data fields. Its use is described in the descriptions of the relevant data fields. The character that represents the component separator is specified for each message as the first character in the Encoding Characters data field of the MSH segment. Absent other considerations it is recommended that all sending applications use `^` as the component separator. However, all applications are required to accept whatever character is included in the Message Header and use it to parse the message.

Composite Document

A document which consists of an original document and one or more addenda.

Computer-Based Patient Record Institute, Inc. (CPRI) CPRI is an organization committed to initiating and coordinating urgently needed activities to facilitate and promote the routine use of computer-based patient records. CPRI was incorporated in January 1992 in response to the Institute of Medicine's Patient Record Study Committee report.

CP Composite price data type. In version 2.3, replaces the MO data type.

CQ Composite Quantity with Units data type. The first component is a quantity and the second is the units in which the quantity is expressed.

CQ Composite quantity with units data type.

D

Data Fields Appendix A, the data dictionary, provides an alphabetical listing of data elements, listings of recommended coded values, and a cross reference from data elements to segments.

Data Schedule The treatment, diagnostic, and procedural requirements, as well as data collection due dates, scheduled on a timeline for most clinical trials. As data are reported, they may need to reflect the scheduled time point that they satisfy. Clinical trials quality control requires attention to compliance between the protocol's schedule and patient data records.

The data schedule will be keyed by time points relative to the study. Some data may be due prior to and at the conclusion of the study and/or one or more of its phases. Some are interim within the study or its phases depending on protocol events such as administration of treatment, arbitrary time intervals instated to make and record assessments, or some clinical milestone such as relapse of disease. Often, multiple data parameters are scheduled at the same time point. Several examples follow:

Data Type HL7 provides a special set of HL7 data types. These are defined in Chapter 2.

Deferred Processing In this mode the responding system sends an acknowledgment to the initiating system that means the message has been placed in some type of

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secure environment and the receiving system commits to processing it within a “reasonable” amount of time, if (a) the message contains the necessary information, and (b) nothing causes the message’s request for action to be canceled before the responding system processes the request. Both of these conditions are checked at the time of processing, not at the time of the first acknowledgment.

Dependent

Refers to a person who is affiliated with a subscriber, such as spouse or child.

DFT

Detail Financial Transaction message. The DFT message is used to describe a financial transaction transmitted between systems.

DICOM

Digital Imaging and Communications in Medicine. Draft standard in development by ACR/NEMA for exchange of radiological images. Version 3 of DICOM defines image data as well as patient, study and visit information necessary to provide the context for the images. This version incorporates an object-oriented data model and adds support for ISO Standard communications.

Dictated

A status in which information has been orally recorded but not yet transcribed.

Diet

A diet consists of the diet codes, supplements, and preferences effective at a given time. These three specifications govern which foods a patient will receive. Diets generally do not have a stated ending time to ensure that the patient always receives food.

Diet Code

A diet code defines which foods a patient may receive; a patient must have at least one diet code to receive food.

Dietary Orders

An order for a patient diet. A patient may have only one effective diet order at a time.

Documented

A status in which document content, other than dictation, has been received but has not been translated into the final electronic format. Examples include paper documents, whether hand-written or typewritten, and intermediate electronic forms, such as voice to text.

Drug Any chemical compound that may be used on or administered to humans or animals as an aid in the diagnosis, treatment or prevention of disease or other abnormal condition, for the relief of pain or suffering, or to control or improve any physiologic condition (Dorland's Illustrated Medical Dictionary 27th edition).

DSR Display Response message.

DT Date data type. Always in the format YYYYMMDD.

E

ED Encapsulated data data type. Supports ASCII MIME-encoding of binary data.

EDIFACT The **E**lectronic **D**ata **I**nterchange **F**or **A**dministration, **C**ommerce and **T**ransport (EDIFACT) is a set of internationally agreed standards, directories, and guidelines for the electronic interchange of structured data related to trade in goods and services between independent computerized information systems.

The basic EDIFACT (ISO 9735) syntax standard was formally adopted in September 1987.

Edited Document A document that alters an existing document which had not been made available for patient care.

EI Entity identifier data type.

Eligibility/Coverage Refers to the period of time a subscriber or dependent is entitled to benefits.

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Encoding Rules	<p>To determine the exact representation of an abstract message, one applies the HL7 encoding rules defined in Chapter 2 to the abstract definition from the relevant transaction definition chapter. This level corresponds most closely to ISO layers 5 and 6. In effect, the encoding rules support an established session for each message and its reply.</p>
Encounter	<p>Refers to a face-to-face meeting between a covered person and a health care provider whose services are provided.</p>
Escape Character	<p>In text fields (Type TX or FT) another special character is allowed, the escape character. Any character allowed in a TX or FT field may serve as the escape character. The single character that represents the escape character is specified differently for each message as the third character in the Encoding Characters data field of the MSH segment. This field is optional. Applications that do not need to use an escape character may omit this character. Absent other considerations it is recommended that all sending applications use ‘\’ as the escape character. However, all applications are required to accept whatever character is included in this field and use it to parse text fields within the message.</p>
EUCLIDES	<p>EUCLIDES, an acronym derived from EUropean CLinical Data Exchange Standard, provides a standard for clinical laboratory data exchange between independent and heterogeneous medical information systems. EUCLIDES is supported by the Commission of the European Communities (CEC DGXIII) within the framework of the Advanced Informatics in Medicine (AIM) Program.</p>
Expected Adverse Product Reaction	<p>Expected events are those which prior experience has demonstrated to be probabilistically linked to the product and are generally included in product labeling.</p> <p>Pre-marketing: An adverse reaction, the nature or severity of which is not consistent with the applicable product information (e.g., Investigator’s Brochure for an unapproved investigational product).</p> <p>Post-marketing/US (current): Unexpected means an adverse drug experience that is not listed in the current labeling for the drug product and includes an event that may be symptomatically and pathophysiologically related to an event listed in the labeling but differs from the event because of greater severity or specificity.</p>

Post-marketing/US (proposed): The applicant's core safety data sheet shall be a document prepared by the applicant that contains all relevant safety information, including adverse drug experiences, which the applicant believes should be listed for the drug in all countries where the drug is marketed. It may be used by the applicant as the reference document by which an adverse drug experience is judged to be expected or unexpected for purposes of this post-marketing periodic report.

Post-marketing/European Union: This relates to an adverse reaction which is not mentioned in any EC summary of product characteristics (SPC). In the absence of any European SPC, an international document prepared by the marketing authorization holder containing all relevant safety information which the marketing authorization holder considers should be listed for the medicinal product in all countries where the medicinal product is marketed (Care Data Sheet).

Post-marketing/WHO: An adverse reaction, the nature or severity of which is not consistent with domestic labeling or market authorization, or expected from characteristics of the drug.

F

Field

An HL7 field is a string of characters defined by one of the HL7 data types.

Field Components

A field entry may also have discernable parts or components. For example, the patient's name is recorded as last name, first name, and middle initial, each of which is a distinct entity separated by a component delimiter (sub-subfield in ASTM E1238-94).

Field Separator

The HL7 field separator separates two adjacent data fields within an HL7 segment. It also separates the segment ID from the first data field in the segment. The value that represents the field separator may be defined differently for each message. Whatever character is the fourth character of the MSH segment serves as the field separator for all segments in the message. Absent other considerations, it is recommended that all sending applications use "|" as the field separator. However, all receiving applications are required to accept whatever character is included in this position and use it to parse the message.

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Filler	The application responding to, i.e., performing, a request for services (orders) or producing an observation. The fill can also originate requests for services (new orders), add additional services to existing orders, replace existing orders, put an order on hold, discontinue an order, release a held order, or cancel existing orders. Referred to as Producer in ASTM terminology.
<i>Filler</i>	<i>**Person, or service, who produces the observations (fills the order) requested by the requestor. The word is synonymous with "producer" and includes diagnostic services and clinical services and care providers who report observations about their patients. The clinical laboratory is a producer of lab test results (filler of a lab order), the nursing service is the producer of vital signs observations (the filler of orders to measure vital signs), and so on</i>
Filler Application	The filler application role in the scheduling model is very similar to the filler application concept presented in Chapter 4, Order Entry. A filler application, in the scheduling model, is one that “owns” one or more schedules for one or more services or resources. It fulfills requests to book slots for the services or resources over which it exerts control. It also notifies other applications of activity related to appointments, such as new bookings, modifications, cancellations, etc.
FT	Formatted Text data type. This data type is derived from the string data type by allowing the addition of embedded formatting instructions. These instructions are limited to those that are intrinsic and independent of the circumstances under which the field is to be displayed, FT supports width-independent and device-independent text display.
Goal	A goal refers to an objective to be achieved as a consequence of health care interventions applied to an individual. Goals are set in many areas of the health care system, and include educational, behavior modification, and clinical goals such as reduced discomfort, improved circulation. Goals are documented by a variety of health care professionals including physicians, nurses, and respiratory and other therapists. Goals are defined during patient visits and they may span one or multiple visits, encounters, or episodes of care.
Guarantor	Refers to a person who has financial responsibility for the payment of a patient account.

H

HD

Hierarchic designator data type.

Health Care Provider

Refers to a person licensed, certified or otherwise authorized or permitted by law to administer health care in the ordinary course of business or practice of a profession, including a health care facility.

HISB

The American National Standards Institute's Healthcare Informatics Standards Board (ANSI HISB) provides an open, public forum for the voluntary coordination of healthcare informatics standards among all United States' standard developing organizations. Every major developer of healthcare informatics standards in the United States participates in ANSI HISB. The ANSI HISB has 38 voting members and more than 100 participants, including ANSI-accredited and other standards developing organizations, professional societies, trade associations, private companies, federal agencies, and others.

HISPP

Healthcare Informatics Standards Planning Panel. HISPP was formed in early 1992. HISPP is charged with coordinating the work of the standards groups for healthcare data interchange and healthcare informatics (e.g., HL7), and other relevant standards groups (e.g., ASC X12) toward achieving the evolution of a unified set of non-redundant, non-conflicting standards that are compatible with ISO and non-ISO communications environments. HISPP also interacts with and provides input to CEN/TC251 in a coordinated fashion and explores avenues of international standards development (e.g., ISO).

HL7

Health Level Seven (HL7) is an application protocol for electronic data exchange in health care environments. The HL7 protocol is a collection of standard formats which specify the implementation of interfaces between computer applications from different vendors. This communication protocol allows healthcare institutions to exchange key sets of data amount different application systems. Flexibility is built into the protocol to allow compatibility for specialized data sets that have facility-specific needs.

HL7 Batch Protocol

Protocol utilized to transmit a batch of HL7 messages. The protocol uses FHS, BHS, BTS and FTS segments to delineate the batch.

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Holder of Marketing Authorization (HMA)

The organization which holds the authority to market a product. This will often be the organization which manufactures the product.

I

ID

Coded Value data type. The value of such a field follows the formatting rules for a ST field except that it is drawn from a table of legal values. Examples of ID fields include religion and sex.

IEEE

Institute of Electrical and Electronics Engineers. IEEE is accredited by ANSI to submit its documents for approval as American National Standards. IEEE subcommittee P1073 develops standards for healthcare informatics: MEDIX (P1157) and MIB (P1073).

IEEE MEDIX

IEEE P1157 Medical Data Interchange (MEDIX) Committee. MEDIX was organized in 1987 to draft a standard for the exchange of data between hospital computer systems. The MEDIX committee, is committed to developing a standard set of hospital system interface transactions based on the ISO standards for all seven layers of the OSI reference model. The committee proposes to use the ASN.1 standard to specify message content as well as encode standard messages. IEEE is also developing the standard medical information bus (MIB; IEEE P1073) for communicating among critical care devices and computers.

IEEE MIB

IEEE Medical Information Bus Committee. IEEE subcommittee (P1073) to develop standards for communications between patient monitoring devices and computer systems.

In Progress/Assigned Document

A workflow status change in which the recipient has assigned the material to personnel to perform the task of transcription. The document remains in this state until the document is transcribed.

Incomplete Document

A status in which information is known to be missing from a transcribed document.

IS

Coded value for user defined tables data type.

ISO International Standards Organization. A voluntary, non-treaty organization established in 1949 to promote international standards. Developers of the ISO Reference Model for Open Systems Interconnection (OSI Model), a standard approach to network design which introduces modularity by dividing the complex set of functions into more manageable, self-contained, functional slices (layers).

L

Legally Authenticated Document A status in which a document or entry has been signed manually or electronically by the individual who is legally responsible for that document or entry. This is the most mature state in the workflow process.

Level Seven Level Seven refers to the highest level of International Standards Organizations (ISO) communications model for Open Systems Interconnection (OSI)—the application level. Issues within the application level include definition of the data to be exchanged, the timing of the interchange, and communication of certain errors to the application.

The seventh level supports such functions as security checks, identification of the participants, availability checks, negotiating exchange mechanisms and, most importantly, structuring the data exchanges themselves.

Local-Area Network (LAN) A user-owned, user-operated, high-volume data transmission facility connecting a number of communicating devices (e.g., computers, terminals, word processor, printers, and mass storage units) within a single building or campus of buildings.

M

MA Multiplexed array data type.

Master Files A set of common reference files used by one or more application systems. These common reference files need to be synchronized across the various applications at a given site. The Master Files Notification transactions

provide a way of maintaining this synchronization.

Master Files Notification transactions

The Master Files Notification transactions support the distribution of changes to various master files between systems in either on-line or batch modes, and allow the use of either original or enhanced acknowledgment modes, as well as providing for a delayed application acknowledgment mode.

MCF

Delayed Acknowledgment message. This message remains in the specification only for reasons of backwards compatibility. It is used as a part of the protocol which creates a generic form of an asynchronous application level acknowledgment.

Medical Device:

Something contrived for or used in the diagnosis (vascular catheters), treatment (thermotherapy units) or prevention of disease or other abnormal condition, for the relief of pain or suffering or to control or improve any physiologic condition, including instrumentation and implanted devices (prosthetic cardiac valves, pacemakers, hip prostheses).

MEDIX

See IEEE MEDIX

Message

A message is the atomic unit of data transferred between systems. It is comprised of a group of segments in a defined sequence. Each message has a message type that defines its purpose. For example, the ADT Message type is used to transmit portions of a patient's ADT data from one system to another. A three character code contained within each message identifies its type.

Message Delimiters

In constructing a message certain characters are used. These include the Segment Terminator, the Field Separator, the Component Separator, the Sub-Component Separator, Repetition Character, and the Escape Character.

Message Type

Each message has a message type that defines its purpose. For example, the ADT Message Type is used to transmit portions of a patient's ADT data from one system to another. A 3-character code contained within each message identifies its type.

MFD

Master Files Delayed Application Acknowledgment message.

MFN	Master Files Change Notification message.
MFQ	Master Files Query message allows a system to query for a particular record in a particular master file.
MIB	See IEEE MIB
MO	Money data type. The first component is a quantity and the second is the denomination in which quantity is expressed. See also CP data type.
MSDS	Message Standards Developers Subcommittee of the ANSI HISPP.
N	
NA	Numeric array data type.
NCPDP	National Council for Prescription Drug Programs. The Standardization Committee within the NCPDP developed a standard format for the electronic submission of third party drug claims. The standard was developed to accommodate the eligibility verification process at the point-of-sale and to provide a consistent format for electronic claims processing. The standard is used primarily by pharmacy providers, insurance carriers, third-party administrators and other responsible parties. The NCPDP communication standard is used by more than 60% of the nation's prescription volume.
New or Original Document	The first version of a document. The original may or may not be final or authenticated. An original document should have a set of associated statuses to define its current condition.
NM	Numeric data type. A number represented as a series of ASCII numeric characters consisting of an optional leading sign (+ or -), the digits and an optional decimal point.

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NMD	Network Management Data message. One system creates an unsolicited update (UU) Network Management Data message (NMD) to transmit network management information to another system.
NMQ	Network Management Query message. One system needs network information from another system. The NMQ is used by one system to make system-level requests for information or action to another system.
Non-Proprietary (Generic) Name	Drug name that are not protected by a trademark, usually descriptive of its chemical structure; sometimes called a public name. In the US, most generic drug names are assigned by the US adopted name council (USAN). Other generic names in common use are the national formulary (NF) and the us pharmacopoeia (USP) names. <i>Figure 2-3</i> (chapter 2) lists other available drug coding systems.

O

Observation	<p>An observation is a measurement of a single variable or a single value derived logically and/or algebraically from other measured or derived values.</p> <p>A test result, a diastolic blood pressure, and a single chest x-ray impression are examples of observations.</p>
Observation	A measurement of a single variable or a single value derived logically and/or algebraically from other measured or derived values. A test result, a diastolic blood pressure, and a single chest xray impression are examples of observations. In certain circumstances, tracings and images may be treated by HL7 as individual observations and sent as a single OBX. These include waveform data described in Section 7.14 and encapsulated data aggregates using the ED data type described in 2.4.5.12 (which can represent actual images, audio data, etc.).
Obsolete Document	A status in which a document has been replaced by a document which contains revised content.
OBX	Observation/result message. OBX is intended to cover all types of patient specific observation reports except pharmacy.

ODS	(New with Version 2.2) Dietary orders, supplements and preferences segment.
ODT	(New with Version 2.2) Diet tray instructions segment.
Order	An order is a request for a service from one application to a second application. The second application may in some cases be the same, i.e., an application is allowed to place orders with itself. Usually orders are associated with a particular patient.
Order Detail Segment	One of several segments that can carry order information. Examples are OBR and RXO.
Order Group	See Placer Order Group.
ORM	General Order message. The function of this message is to initiate the transmission of information about an order. This includes placing new orders, cancellation of existing orders, discontinuation, holding, etc. ORM messages can originate also with a placer, filler or an interested third party.
ORR	General Order Response message. The function of this message is to respond to an ORM message.
ORU	Unsolicited Transmission of an Observation. For each patient order (OBR segment) more results may be transmitted depending upon the number of observations generated by the order.
OSI Model	<p>Open Systems Interconnection Model. A standard approach to network design developed by the International Standards Organization (ISO) that introduces modularity by dividing the complex set of functions into more manageable, self-contained, functional slices. The seven layers, from the innermost layer, are:</p> <ol style="list-style-type: none">1. Physical Layer - concerned with the mechanical and electrical means by which devices are physically connected and data is transmitted.2. Link Layer - concerned with moving data reliably across the physical data link.3. Network Layer - provides the means to establish, maintain and terminate connections between systems; concerned with information switching and

routing.

4. Transport Layer - concerned with end-to-end data integrity and quality of service.

5. Session Layer - standardizes the task of setting up and terminating a session; it coordinates interaction between end application processes.

6. Presentation Layer - relates to the character set and data code used, and to the way data is displayed on a screen or printer.

7. Application Layer - concerned with the higher-level functions that provide support to the application or system activities.

P

Parent Appointment

A parent appointment is an appointment that consists of one or more subordinate appointments (called child appointments). A parent appointment is used to relate or group multiple appointments together in various ways. Examples of kinds of parent scheduled activities include, but are not limited to, the following.

Parent appointments can themselves be children to other appointments.

Patient Accounting Message Set

The Patient Accounting message set provides for the entry and manipulation of charge, payment, adjustment, demographic, insurance, and other related patient billing and accounts receivable information. The specification includes all the data defined in the National Uniform Billing Data Element Specifications (UB-82 and UB-92).

Payor

Indicates a third party entity who pays for or underwrites coverage for health care expenses. A payor may be an insurance company, a health maintenance organization (HMO), a preferred provider organization (PPO), a government agency or an agency such as a third party administrator (TPA).

Pharmacy Order Messages

A series of messages used to convey pharmacy order information. Messages include ORM (general order; proposed as RDO), RDE (pharmacy encoded order), RDS (pharmacy dispensing information), RGV (pharmacy give) and RAS (pharmacy administration).

Phase of a Clinical Trial	The phase structure serves several purposes in the clinical trials messages. Other computer systems may need to know that the patient has begun a phase with a particular treatment regimen or diagnostic schedule, such as the pharmacy or order entry systems. When reporting study data, observations and variables often describe particular phase instances. For example, each course of treatment may have its own values for the same set of observations or variables. Phase instances may also have distinct data schedules that need to be linked to submitted data.
PL	Patient location data type.
Placer	The application (system or individual) originating a request for services (order).
Placer	<i>**Person or service that requests (places order for) an observation battery, e.g., the physician, the practice, clinic, or ward service, that orders a lab test, xray, vital signs, etc. The meaning is synonymous with, and used interchangeably with, requestor</i>
Placer Application	The role of the placer application in the scheduling model is also very similar to its counterpart in the Order Entry chapter. A placer application must request the booking, modification, cancellation, etc., of an appointment for a service or resource because it cannot exert any control over that service or resource on the schedule. In requesting that these appointments be booked or modified in some way, the placer application is asking the filler application to exert its control over the schedule on the placer application's behalf.
Placer Order Group	A list of associated orders coming from a single location regarding a single patient; usually representing a single session by an ordering provider. A group is established when the placer supplies a placer group number with the original order.
PN	Person Name data type. A name includes multiple free text components: family name, given name, middle initial or name, suffix, prefix, and degree.
Pre-Authenticated Document	A status in which a document is transcribed but not authenticated.

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Pre-Authorization	Refers to the process of obtaining prior approval as to the appropriateness of a service. Pre-authorization does not guarantee coverage.
Preferences	(related to Dietary Orders) Preferences consist of likes, dislikes, substitutions, and complementary foods. Preferences are diet orders, effectively from the patient, but transmitted from the ward. They are subject to change. Preferences are independent of the diet order and do not change when the order changes.
Primary Care Provider	Indicates the provider responsible for delivering care as well as authorizing and channeling care to specialists and other providers in a gatekeeper system. The provider is also referred to as a case manager or a gatekeeper.
Problem	A problem of a given individual can be described by formal diagnosis coding systems (such as DRG's, NANDA Nursing Diagnosis, ICD9, DSM, etc.) or by other professional descriptions of health care issues affecting an individual. Problems can be short or long term in nature, chronic or acute, and have a status. In a longitudinal record, all problems may be of importance in the overall long term care of an individual, and may undergo changes in status repeatedly. Problems are identified during patient visits, and may span multiple visits, encounters, or episodes of care.
Product	A drug or medical device.
Product Manufacturer	The organization which is responsible for the manufacture of a product. This will usually be the entity which hold the marketing authorization for the product.
Protocol	A set of procedures for establishing and controlling data transmission.
Protocol Conversion	The process of translating the protocol native to an end-user device (e.g., a terminal) into a different protocol (e.g., ASCII to BSC), enabling that device to communicate with another device (e.g., a computer) with which it would otherwise be incompatible. Protocol conversion

Purged Document A status in which a document is no longer available in this system.

Q

QRY Query message.

Querying Application A querying application neither exerts control over, nor requests changes to a schedule. Rather than accepting unsolicited information about schedules, as does an auxiliary application, the querying application actively solicits this information using a query mechanism. It will be driven by a person wanting information about schedules, and may be part of an application filling the placer application role as defined in this chapter. The information that the querying application receives is valid only at the exact time that the query results are generated by the filler application. Changes made to the schedule after the query results have been returned are not communicated to the querying application until it issues another query transaction.

R

RAS Pharmacy Administration message.

RDE Pharmacy Encoded Order message.

RDO Pharmacy Prescription message.

RDS Pharmacy Dispense message. The RDS message may be created by the Pharmacy application for each instance of dispensing drugs to fill an existing order(s).

Recurring (Repeating) Appointments. For example, a physical therapy appointment may be scheduled every Tuesday at 4:00 PM for three months.

Referral Means a provider's recommendation that a covered person receive care from

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	a different provider.
Referred-to-Provider	Typically indicates a specialty care provider who provides services at the request of a primary care provider or another specialty care provider .
Referring Provider	Indicates the provider who requests services from a specialist or another primary care provider. A referring provider may, in fact, be a specialist who is referring a patient to another specialist.
Regulatory Agency	Many geopolitical entities have established agencies/authority responsible for regulating products used in health care. The agencies are collectively referred to as regulatory agencies.
Repeated Value	Some fields may contain many repeat fields. For example, the diagnoses field may contain many different diagnoses.
Repetition Separator	The repetition separator is used in some data fields to separate multiple occurrences of a field. It is used only where specifically authorized in the descriptions of the relevant data fields. The character that represents the repetition separator is specified for each message as the second character in the Encoding Characters data field of the MSH segment. Absent other considerations it is recommended that all sending applications use “~” as the repetition separator. However, all applications are required to accept whatever character is included in the Message Header and use it to parse the message.
Replacement Document	A document that replaces an existing document. The original document becomes obsolete, but is still retained in the system for historical reference.
Resource	A resource is any person, place or thing that must be reserved prior to its use.
Restricted Document	A status in which access to a document has institutionally assigned limitations.

Revised Document	This is not a supported trigger event. When a document has not been made available for patient care, the "Edit" trigger event (T07) may be used to accomplish this function. Once a document has been made available, revision is not allowed. Instead, a replacement is issued (T010) which contains the revised content, together with a notice that the original document (which it supersedes) remains but is now obsolete.
RGV	Pharmacy Give message. The RGV message can communicate drug administration instructions and/or dispensing information.
Role	A role refers to the function or responsibility assumed by a person in the context of a health care event. Role information documents a person's association with an identified healthcare activity. Examples include primary care provider, transcriptionist, reviewer, and consulting physician.
RP	Reference Pointer data type. This data type transmits information about data stored on another system.
RQ1	One of several segments related to supply orders. Contains additional information of detail for each requisitioned item. It is required for all non-stock orders (and is paired with the RQD in this case).
RQD	One of several segments related to supply orders. Contains the detail for each requisitioned item. It is required for all stock orders. It is assumed that this is enough information for the application receiving the message to identify the item.
RS-232C	A technical specification published by the Electronic Industries Association (EIA) that establishes mechanical and electrical interface requirements among computers, terminals and communications lines.

S

Schedule	A schedule is the sum of all of the slots related to a service or resource.
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Appendix E: Glossary

Segment	<p>An HL7 segment is a logical grouping of data fields. Segments of a message may be required or optional. They may occur only once in a message or they may be allowed to repeat. Each segment is identified by a unique three character code known as the Segment ID.</p>
Segment (Record)	<p>A typed aggregate of fields (fields) describing one complete aspect of a message. For example, the information about one order is sent as type of segment (OBR), the information related to an observation is sent as another segment (OBX).</p> <p>The segment in a message is analogous to a record in a database, and in previous versions of the standard we used record in place of the word segment. We have changed the nomenclature to be consistent with HL7 and other standards organizations in this version.</p>
Segment Terminator	<p>The segment terminator is the last character of every segment. It is always the ASCII CR character (hex 0D).</p>
Sequence Number Protocol	<p>An extension to the basic HL7 message protocol used for certain types of data transactions between systems where the issue of keeping the data bases synchronized is critical. Although the sequence number protocol is limited to the use of sequence numbers on a single transaction stream between two applications, this sequencing protocol is sufficiently robust to allow the design of HL7-compatible store-and-forward applications.</p>
Serious Adverse Product Reaction	<p>An adverse product reaction which:</p> <ul style="list-style-type: none">• is fatal (results in death)• is life threatening• requires hospitalization or prolongation of a hospitalization• results in persistent or significant disability/incapacity• results in a congenital anomaly/birth defect. <p>Medical and scientific judgment should be exercised in deciding whether expedited reporting is appropriate in other situations, such as important</p>

medical events that may not be immediately life-threatening or result in hospitalization but may jeopardize the patient or may require intervention to prevent one of the other outcomes listed in the definition above. These should also be considered serious.

Service A service is any activity that must be scheduled prior to its performance.

SI Sequence ID data type. A positive integer in the form of a NM field.

Slot A slot is one unit on a schedule. A slot represents the smallest unit of time or quantity that a service or resource may be booked. Depending on the nature of the service or resource, there may be more than one defined slot at a given instant of time. For example, if a service is an open group therapy session with twelve available seats, then there are twelve slots for the given block of time.

SN Structured numeric data type.

Specialist Means a provider of services which are beyond the capabilities or resources of the primary care provider. A specialist is also known as a specialty care provider who provides services at the request of a primary care provider or another specialty care provider.

ST String data type. String Data is left justified with trailing blanks optional. Any printable ASCII characters are allowed.

Subcomponent Separator The subcomponent separator is used to separate adjacent subcomponents of some data fields. Its use is described in the descriptions of the relevant data fields. The character that represents the subcomponent separator is specified for each message as the fourth character in the Encoding Characters data field of the MSH segment. Absent other considerations it is recommended that all sending applications use "&" as the subcomponent separator. However, all applications are required to accept whatever character is included in the Message Header and use it to parse the message.

Subscriber Refers to a person who elects benefits and is affiliated with an employer or insurer.

Supplements	Supplements provide a mechanism for giving any additional desired foods to a patient. Supplements are foods given to a patient regardless of their diet codes. These foods are part of the patient's diet without being restricted by any other part of the order.
Supply Order Segment	One of several segments that can carry supply order information. Supply order segments include RQD (stock orders) and RQ1 (non-stock orders)
Supply Orders	Supply Orders are used to order medical and surgical supplies, both stock and non-stock. Stock Orders are supplies stocked in the hospital in designated areas, such as the warehouse, central supply, nursing floors, or operating room. Nonstock Orders are supplies are not stocked anywhere in the hospital that must be ordered from an industry distributor or manufacturer. A supply order may or may not be associated with a patient.
T	
TC 224	Technical Committee 224. Established by the European Committee for Standardization (CEN), TC 224 focuses on the development of standards for machine-readable cards, related device interfaces and operations.
TC 251	Technical Committee 251. Established by the European Committee for Standardization (CEN), TC 251 focuses on the development of standards for healthcare informatics. A major goal of this committee is to develop standards for communication among independent medical information systems so that clinical and management data produced by one computer system could be transmitted to another system.
TCP/IP	Transaction Control Protocol/Internet Protocol. A set of protocols for Layers 3 (Network) and 4 (Transfer) of the OSI network model. TCP/IP has been developed over a period of 15 years under the auspices of the Department of Defense. It is a de facto standard, particularly as higher-level layers over ethernet. Although it builds upon the OSI model, TCP/IP is not OSI-compliant.
Test	Observations/results that are done on specimens and those that are standard measurements are typically referred to as tests.

TM	Time data type. Always in the format HHMM[SS[.SSSS]] using a 24 hour clock notation.
TN	Telephone Number data type. For use in the U.S. and conforming countries.
TQ	Timing/Quantity data type. Describes when a service should be performed and how frequently.
Trade (Brand) Name	Proprietary names that are registered to protect the name for the sole use of the manufacturer holding the trademark.
Transcription	A process of transforming dictated or otherwise documented information into an electronic format.
Trigger Event	The event that initiates an exchange of messages is called a trigger event. The HL7 Standard is written from the assumption that an event in the real world of health care creates the need for data to flow among systems. The real-world event is called the trigger event. For example, the trigger event “a patient is admitted” may cause the need for data about that patient to be sent to a number of other systems. There is a one-to-many relationship between message types and trigger event codes. The same trigger event code may not be associated with more than one message type.
TS	Time Stamp data type. Contains the exact time of an event, including the date and time.
TX	Text data type. String data meant for user display on a terminal or printer.
U	
UDM	Unsolicited Display Message. The UDM describes a display oriented message. It is the unsolicited version of the generalized Response display message. It is acknowledged by a generic ACK message.

Appendix E: Glossary

UI Universal identifier data type.

Unsolicited Update When the transfer of information is initiated by the application system that deals with the triggering event, the transaction is termed an unsolicited update.

V

Variance **Variances** are documented deviations, either positive or negative from a pre-defined standard. Variances are documented against expected outcomes, orders, or the patient's progress in general.

W

WEDI Workgroup for Electronic Data Interchange.

X

X12 See ASC X12.

XAD Extended address data type. In version 2.3, replaces the AD data type.

XCEN Extended composite ID number and name data type. In version 2.3, use instead of the CN datatype.

XON Extended composite name and ID number for organizations data type.

XPN Extended person name data type. In version 2.3, replaces the PN data type.

XTN Extended telecommunications number data type. In version 2.3, replaces the TN data type.

Z

Z Segment All message type and trigger event codes beginning with Z are reserved for locally defined messages. No such codes will be defined within the HL7 Standard.

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