Digital Imaging and Communications in Medicine (DICOM)

Supplement 155:

Imaging Reports using HL7 Clinical Document Architecture

(revision and replacement of PS3.20)

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# Introduction to Supplement 155

This Supplement to the DICOM Standard introduces a new mechanism for specifying templates for imaging reports, as well as a set of specific templates for radiology diagnostic and screening reports. Such reports are intended to be encoded using the HL7 Clinical Document Architecture Release 2 (CDA R2, or simply CDA) Standard[[1]](#footnote-2), and to support professional society content specifications, such as the Radiological Society of North America (RSNA) Radiology Reporting Initiative.

The nature of radiology reporting is evolving from purely text based reports to incorporate more discrete data elements (measurements, categorical findings, etc.). It is the purpose of this Supplement to support current and evolving practice. This Supplement therefore focuses on primarily narrative text reports, but also supports incorporation of discrete data and image references.

It is envisioned that this Supplement is just the first step in DICOM specification of imaging report templates for CDA. Its content is therefore limited primarily to radiology diagnostic imaging (including screening exams), and some interventional radiology and cardiology (where clinicans may deem the templates appropriate). Future work may include anatomic pathology or other imaging procedures, as well as templates with more required discrete data element content.

## DICOM and Reporting

Reporting has been a significant part of the DICOM standards development program since work on Supplement 23: Structured Reporting began in 1995. That Supplement defined a report encoding based on the classical DICOM attributes and data elements specified in DICOM Part 5, with templates specified in Part 16. There was substantial discussion during the development of Supplement 23 as to whether reports should be encoded using XML, at that time not yet a widely deployed technology.

While DICOM Structured Reporting has an established place in the encoding of image analysis results, or “evidence documents”, it has seen only limited use for clinical reports. The clinical report production and distribution environment has not been amenable to the use of classical DICOM object and data element encoding.

The DICOM Standards Committee in 2010 decided to approve a Work Item for an approach to reporting based on CDA, an XML document format specified by HL7. The DICOM Standards Committee, as the premier worldwide collaboration between imaging-related professional societies and the imaging industry, was agreed as an appropriate organization to produce CDA Implementation Guides and Templates for specific clinical imaging use cases, without precluding other work in organizations such as HL7 and IHE.

## CDA and Implementation Guides

The HL7 Clinical Document Architecture has emerged as the industry consensus standard for the formatting of clinical reports across all medical disciplines. DICOM currently provides for both encapsulation of CDA documents within DICOM SOP Instances, and for direct reference to native (unencapsulated) CDA document instances (equivalent to direct reference of DICOM SOP Instances). Native and encapsulated CDA documents may be managed on DICOM exchange media through the DICOMDIR Basic Directory Information Object.

The generic CDA format is typically constrained for specific document types by implementation guides in support of specific use cases. Two such implementation guides are the Basic Diagnostic Imaging Report, published as an informative HL7 specification and based on DICOM Structured Reporting Templates 2000 and 2005, and Procedure Notes, published as an HL7 Draft Standard for Trial Use and applicable to interventional imaging procedures (interventional radiology, endoscopy, cardiology). Both of these implementation guides were developed with participation from DICOM WG-20 / HL7 Imaging Integration Work Group, and were used as input for the development of this Supplement. Those two guides were also subsequently adapted for use under the US Meaningful Use of Electronic Health Records incentive program, and the adaptation was published in the Consolidated CDA Implementation Guide - US Realm (C-CDA). The implementation guide of Supplement 155 is intended for worldwide use, while the C-CDA is a US specific guide; however, this Supplement shares some templates with C-CDA, and ongoing harmonization is a goal of DICOM and HL7.

There are actually multiple layers of constraint and implementation guidance that go into a CDA imaging report. First, CDA itself is a constraint (a Refined Message Information Model, or R‑MIM) applied to the HL7 v3 Reference Information Model (v3 RIM) and Implementation Technology Specification for XML (v3 XMLITS). This Supplement defines several report document structures that further constrain CDA through defined or required header elements, sections, and structured entries. Further, professional societies or healthcare providers may define even more detailed constraints and guidance for use in reporting on specific sub-specialty procedures.

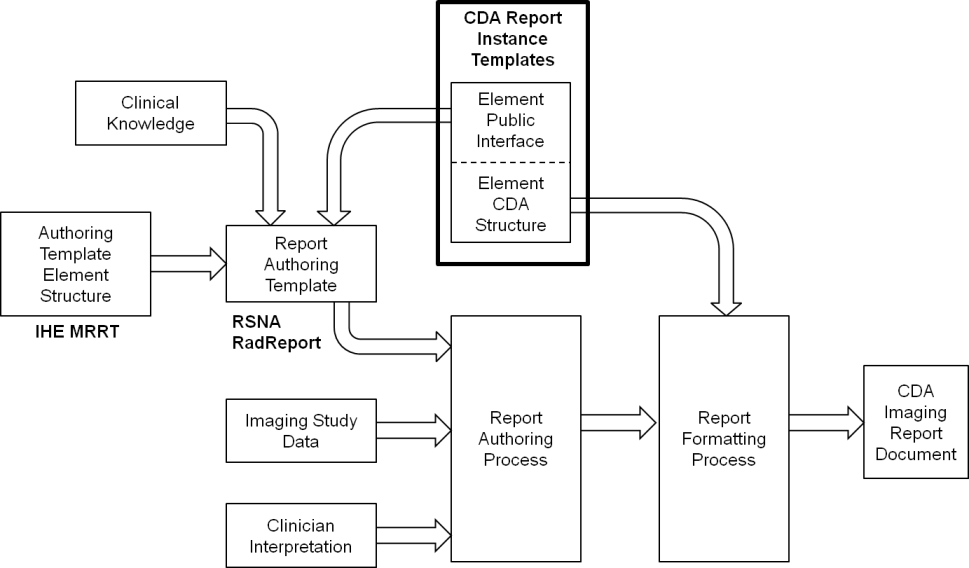
## Templates

The constraints specified in implementation guides take the form of templates. Templates are formally described patterns that specify the *structure* and *content* of a document (or a portion thereof). *Structure* includes the relationships among portions of the document; *content* includes concepts and vocabularies used for a particular application. Templates may impose mandatory constraints on structure and content (e.g., minimum data sets), and/or may specify recommended or optional features.

Templates have several purposes:

* They improve interoperability by limiting the variability of unconstrained (idiosyncratic or arbitrary) structures and content.
* The specification of templates allows a professional society or healthcare provider to normalize best practice for reports with content appropriate for their use cases, including foreseeable secondary uses such as research or quality improvement.
* A template may be used operationally in the creation of reports; an application may use the template to guide authoring of the report, ensuring the entry or composition of essential reporting elements, and structuring that data into the target encoded format.
* Ultimately, templates provide a conformance validation for instances of reports against the purposes (use case) of the template.

## Imaging Report Templates for CDA

This Supplement defines the CDA format structures and technical constraints, i.e., templates, for documents, sections, and entries to be used in imaging report instances. These *report instance templates* are thus a set of conformance criteria for such report instances.

However, these templates may also be viewed as providing high level structures that can hide the details of implementation. For example, by defining a Findings section or an Impression section, users can discuss the content of those sections without needing to know how it is represented in the CDA instance. For this purpose, the Supplement specifies a public implementation-independent specification, denoted *Business Names*, for each variable element; this allows applications to deal with abstract report constructs (such as sections or entries) and their logical data content.

This standard therefore also has the goal of facilitating, through these public interfaces, the creation of *report authoring templates* by professional societies or healthcare providers for use in reporting on imaging procedures. The templates defined in this Supplement provide canonical documentation categories (e.g., sections, numerical measurements, categorical observations, etc.) that map into specific CDA structures. It specifies names of data element “slots” that may be used to link data collected by the report authoring application into the CDA structural templates of this Implementation Guide. Each name is specified with the type of data elements that will populate the CDA. A similar concept is utilized by the HL7 greenCDA[[2]](#footnote-3) informative specification.

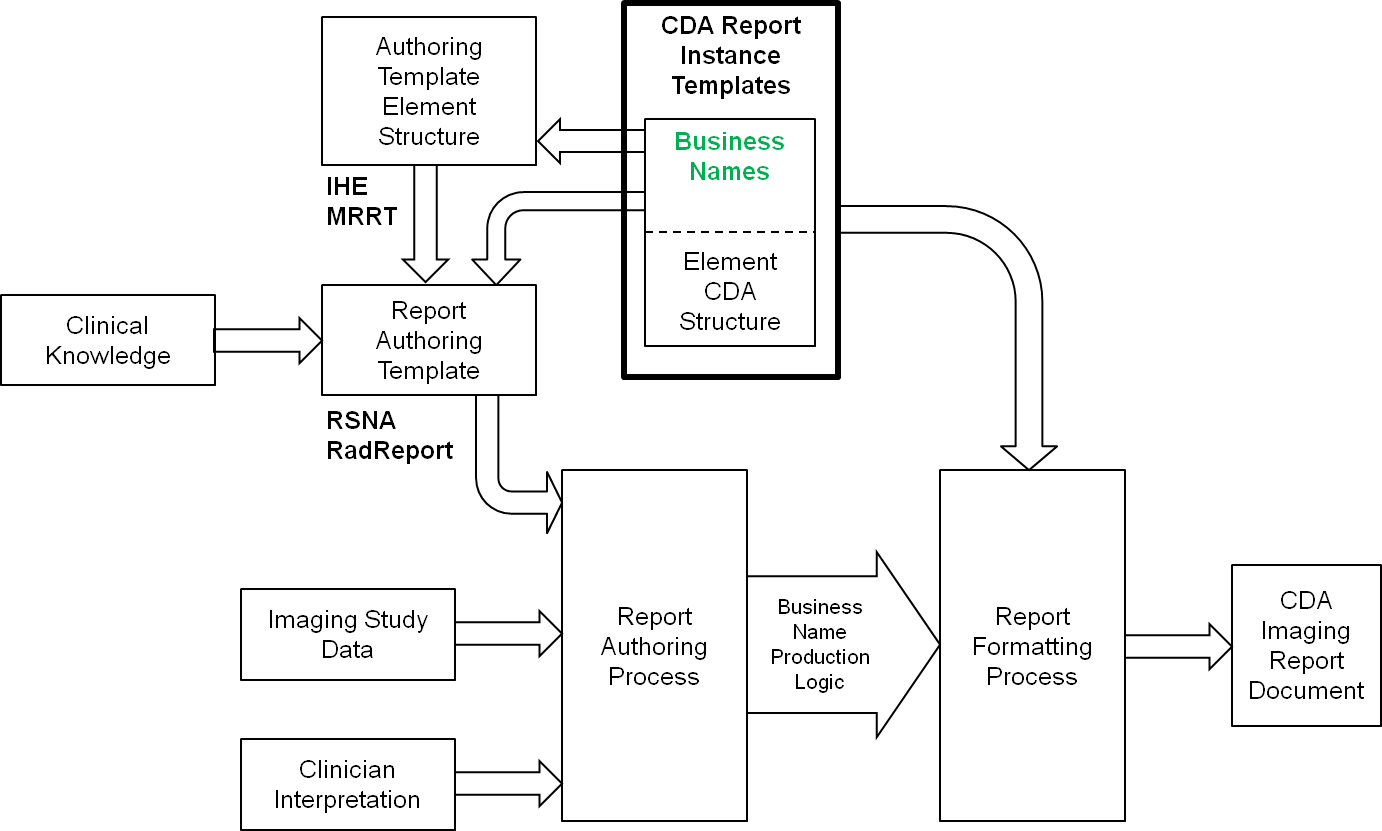


Figure 1 - Process flow using CDA Report Templates, MRRT, and RSNA Templates

## Use with RSNA RadReport and IHE MRRT

This work is complementary to and coordinated with the RSNA Radiology Reporting (RadReport) initiative[[3]](#footnote-4) and the IHE Management of Radiology Report Templates (MRRT) Profile[[4]](#footnote-5). RadReport is focused on developing best practice clinical content templates for authoring radiology reports; MRRT specifies an XML-based encoding for those report authoring templates that can be used by a report authoring application.

RadReport and MRRT thus provide a standardized platform for the front end authoring of a report; this Supplement specifies the back end encoding of that report content into CDA structures in accordance with defined templates. These are independent activities – the RadReport and MRRT authored content could be encoded into a simple text or PDF document, rather than CDA, and mechanisms other than RadReport and MRRT could provide the content authoring for CDA imaging reports to produce CDA documents conformant to the templates defined in this Supplement.

## CDA Structures defined by Templates in this Supplement

CDA documents include a header and a body. The header contains structured data that allows management and exchange of clinical documents by generic document handling systems and interfaces, e.g., as specified in the IHE Cross-Enterprise Document Sharing (XDS) Profile. This Supplement specifies templates for header elements of particular interest for imaging reports, such as the order and the service event and performer.

For the CDA body, the principal structures provided by this Supplement are the narrative sections for reports. The RSNA RadReport initiative has specified five canonical top level narrative sections, which are supported by specific templates: Procedure Description, Clinical Information, Comparison Study, Findings, and Impression. This Supplement also specifies predefined subsection templates for some of those primary sections, e.g., Radiation Exposure within the Procedure Description section. Each section may also have defined Structured Entries (discrete data elements), usually optional in the context of a primarily narrative radiology report. This Supplement defines templates for each of these Structured Entries.

This Supplement also allows user-titled subsections that might be used for a particular reporting focus, e.g., “Liver” or “Tumor 1” within Findings. Note that while the subsection title may impart informal scoping semantics to the human-readable narrative block (i.e., the title “Liver” implies that all the narrative text is about the liver), there is no formal semantic post-coordination of the title with the concept code of a structured entry in that subsection (a measurement of “length” cannot be formally inferred to mean “length of liver”). This is deemed to be acceptable for the first generation of reports produced under this Supplement, and is a potential area for future development.

One exception to this non-semantic subsection user titles is for subsections in obstetric ultrasound reports whose theme is “Fetus”, or “Fetus *n*”.  LOINC specifies a section code and CDA explicitly defines a Subject section participation that formally convey scoping context to the content of that subsection. The OBUS (obstetric ultrasound) Fetus Findings has explicitly modeled the use of Subject participation for fetus.

## Relationship to DICOM SR

A key requirement for radiology reporting, especially in areas such as ultrasound, is to incorporate observations (e.g., measurements) recorded in DICOM Structured Report instances. It is highly desirable to also include any references to the primary evidence, e.g., links to images and regions of interest, that are recorded in the SR.

Previous related work, as standardized in DICOM Part 20 Annexes A and B, and revised herein, provides a mechanism for transcoding DICOM SR observations into CDA entries. However, it assumes that the CDA report formatting process is an application aware of DICOM SR constructs, and could preserve such measurements or observations with full fidelity into the clinical report.

However, the main part of this Supplement does not assume that the report formatting process has any cognizance of SR. While there is a need to import observations (measurements, assessments) from SR evidence documents into the CDA format final report, this Supplement assumes an indirect method of such data import. The report authoring process, and any associated report authoring templates, are responsible for identifying SR content to be included in the report, thus allowing the clinician to review those observations in the context of the report narrative, and to modify or exclude any of those SR observations. This Supplement defines CDA templates for coded/numeric observations whose ultimate source might or might not be a DICOM SR observation.

## Relationship to Consolidated CDA

In the United States, regulations under the Meaningful Use of Electronic Health Record Systems programrequire certified EHR technology to be able to exchange CDA documents in accordance with templates specified in Consolidated CDA (HL7 Implementation Guide for CDA® Release 2: IHE Health Story Consolidation, Release 1.1 - US Realm, Draft Standard for Trial Use). The Imaging Report specified in this Supplement is closely aligned with the Consolidated CDA Diagnostic Imaging Report template. However, there are some differences:

* Consolidated CDA has requirements for the US Realm Header that are not part of the Sup155 Imaging Report template, but are compatible with it.
* Consolidated CDA requires Accession Number to be placed in the Order id element, while Sup155 Imaging Report places it in a specific accession number extension element.
* Consolidated CDA specifies the DICOM Object Catalog section at the top level, and in the first position (CONF:9408), while Sup155 Imaging Report specifies the DICOM Object Catalog as a subsection of the Imaging Procedure Description section.
* Consolidated CDA specifies all defined sections as top level sections (<CONF:9411>), while Sup155 Imaging Report specifies six top level sections, and all others are subsections subsidiary to one of those six (see Annex C Table C.3-1).
* Sup155 Imaging Report section and entry templates have many additional constraints and requirements, which are compatible with Consolidated CDA.

It is expected that prior to its Normative publication the Consolidated CDA Diagnostic Imaging Report template will be harmonized to conform to DICOM Supplement 155.

## Summary of Sup155 Changes to the DICOM Standard

PS3.20

* Complete replacement – Expansion of scope from transformation of SR Instances to CDA, to creation of CDA from imaging evidence (with or without an intermediate SR SOP Instance)
* General rules for specification of CDA templates
* 2 document level templates (imaging report, addendum), 3 header templates, 18 section/subsection templates, 9 entry templates
* Revision of transformation of SR to CDA for documentation consistency, leveraging new templates and business names, adding TID 2005 Key Images section transformation

PS3.1

* Replacement of description of PS3.20

PS3.2

* Deletion of conformance claim specification for PS3.20

PS3.6

* Addition of template and context group UIDs

PS3.16

* Update of coding schemes, including HL7v3 vocabulary
* Addition of Content Items to TID 2000, 2005, and 2006
* Addition of Context Groups
* Addition of SNOMED CT mapping for additional context groups

PS3.20 - Imaging Reports using HL7 Clinical Document Architecture

*Replace entire PS3.20 with this content*

# Scope and Field of Application

This part of the DICOM Standard specifies templates for the encoding of imaging reports using the HL7 Clinical Document Architecture Release 2 (CDA R2, or simply CDA) Standard[[5]](#footnote-6). Within this scope are clinical procedure reports for specialties that use imaging for screening, diagnostic, or therapeutic purposes.

This Part constitutes an implementation guide for CDA, and is harmonized with the approach to standardized templates for CDA implementation guides developed by HL7. It also provides Business Names for data elements that link data in user terminology, e.g., collected by a report authoring application, to specific CDA encoded elements.

As an implementation guide for imaging reports, particular attention is given to the use and reference of data collected in imaging procedures as explicit evidence within reports. This data includes images, waveforms, measurements, annotations, and other analytic results managed as DICOM SOP Instances. Specifically, this Part includes a specification for transformation of certain DICOM Structured Report instances into CDA documents.

# Normative References

The following standards contain provisions that, through reference in this text, constitute provisions of this Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this Standard are encouraged to investigate the possibilities of applying the most recent editions of the standards indicated below.

ISO/IEC Directives, Part 2 ISO/IEC Directives, Part 2 - Rules for the structure and drafting of International Standards - Sixth edition, 2011

ANSI/HL7 CDA®, R2-2005 HL7 Version 3 Standard: Clinical Document Architecture (CDA) Release 2, 2005 (<http://www.hl7.org/implement/standards/product_brief.cfm?product_id=7>)

CDA® is a registered trademark of HL7 International.

ANSI/HL7 V3 CPPV3MODELS, R1-2012 HL7 Version 3 Standard: Core Principles and Properties of Version 3 Models, Release 1 (http://www.hl7.org/implement/standards/product\_brief.cfm?product\_id=58)

ANSI/HL7 V3 CMET, R2-2009 Health Level Seven Version 3 Standard: Common Message Element Types, Release 2, 2009.

ANSI/HL7 V3 DT, R1-2004 HL7 Version 3 Data Types Abstract Specification, Release 1 – November 2004. [Note: this specific release version is required by CDA R2]

ANSI/HL7 V3 XMLITSDT, R1-2004 HL7 Version 3 XML Implementation Technology Specification - Data Types, Release 1 – April 2004. [Note: this specific release version is required by CDA R2]

HL7 CDA R2 DIR IG, R1-2009 Health Level Seven Implementation Guide for CDA Release 2: Imaging Integration, Basic Imaging Reports in CDA and DICOM, Diagnostic Imaging Reports (DIR) Release 1.0 – Informative, 2009 (http://www.hl7.org/implement/standards/product\_brief.cfm?product\_id=13)

HL7 CDAR2\_IG\_IHE\_CONSOL HL7 Implementation Guide for CDA® Release 2: IHE Health Story Consolidation, Release 1.1 - US Realm, Draft Standard for Trial Use, July 2012 (<http://www.hl7.org/implement/standards/product_brief.cfm?product_id=258>)

HL7 CDAR2\_IG\_CCDA\_CLINNOTES\_R2 HL7 Implementation Guide for CDA® Release 2: Consolidated CDA Templates for Clinical Notes, Release 2 - US Realm, Draft Standard for Trial Use, November 2014 (<http://www.hl7.org/implement/standards/product_brief.cfm?product_id=379>)

HL7 CDAR2\_IG\_GREENMOD4CCD HL7 Implementation Guides for CDA® R2: greenCDA Modules for CCD®, Release 1 – Informative, April 2011 (<http://www.hl7.org/implement/standards/product_brief.cfm?product_id=136>)

HL7 Templates HL7 Templates Standard: Specification and Use of Reusable Information Constraint Templates, Release 1 – DSTU, October 2014 (<http://www.hl7.org/implement/standards/product_brief.cfm?product_id=377>)

HL7 CDA Digital Signatures HL7 Implementation Guide for CDA® Release 2: Digital Signatures and Delegation of Rights, Release 1 – DSTU, October 2014 (<http://www.hl7.org/implement/standards/product_brief.cfm?product_id=375>)

HL7 v3-2014 HL7 Version 3 Interoperability Standards, Normative Edition 2014 (<http://www.hl7.org/implement/standards/product_brief.cfm?product_id=362>]

IHE Card Sup CIRC IHE Cardiology Technical Framework Supplement, Cardiac Imaging Report Content, Trial Implementation, July 2011 (<http://www.ihe.net/Technical_Frameworks/#cardiology>)

IHE ITI TF IHE IT Infrastructure Technical Framework, Revision 11.0, September 2014 (<http://www.ihe.net/Technical_Frameworks/#IT>)

IHE PCC TF IHE Patient Care Coordination Technical Framework, Revision 10.0, November 2014 (<http://www.ihe.net/Technical_Frameworks/#pcc>)

IHE RAD TF IHE Radiology Technical Framework, Revision 13.0, July 2014 (<http://www.ihe.net/Technical_Frameworks/#radiology>)

LOINC Logical Observation Identifier Names and Codes, Regenstrief Institute, Indianapolis 2013.

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RFC 4646 Tags for Identifying Languages, The Internet Society, 2005

SNOMED CT® Systematized Nomenclature of Medicine - Clinical Terms, International Release, International Health Terminology Standards Development Organisation (IHTSDO), January 2015

SNOMED CT is a registered trademark of the International Health Terminology Standard Development Organisation (IHTSDO).

UCUM Unified Code for Units of Measure, Regenstrief Institute, Indianapolis 2013.

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XML Extensible Markup Language (XML) 1.0 (Fifth Edition), World Wide Web Consortium, 2008 (<http://www.w3.org/TR/REC-xml/>)

XML Schema Datatypes XML Schema Part 2: Datatypes Second Edition, World Wide Web Consortium, 2004 (<http://www.w3.org/TR/xmlschema-2/>)

xml:id xml:id Version 1.0, World Wide Web Consortium, 2005 (<http://www.w3.org/TR/xml-id>)

XPath XML Path Language (XPath), Version 1.0, World Wide Web Consortium, 1999 (<http://www.w3.org/TR/xpath/>)

# Definitions

For the purposes of this Standard the following definitions apply.

## Codes and Controlled Terminology Definitions

The following terms used in this Part of the DICOM Standard are defined in PS3.16 for use with DICOM Structured Reporting:

**Context Group** A set of coded concepts defined by a Mapping Resource forming a set appropriate to use in a particular context.

**Context ID (CID)** Identifier of a Context Group.

**Template** A pattern that describes the Content Items, Value Types, Relationship Types and Value Sets that may be used in part of a Structured Report content tree, or in other Content Item constructs, such as Acquisition Context or Protocol Context. Analogous to a Module of an Information Object Definition.

**Template ID (TID)** Identifier of a Template.

**Coding Schemes** Dictionaries (lexicons) of concepts (terms) with assigned codes and well defined meanings.

## Vocabulary Model Definitions

The following terms used in this Part of the DICOM Standard are defined in HL7 Core Principles and Properties of Version 3 Models:

**Concept Domain** A named category of like concepts (a semantic type) that is specified in the vocabulary declaration of an attribute in a information model. It constrains the intent of the coded element while deferring the binding of the element to a specific set of codes until later in the specification process

**Vocabulary Binding** The mechanism of identifying specific codes to be used to express the semantics of coded model elements in information models or coded data type properties. Vocabulary Binding may bind the coded element or data type property to a single fixed value code, or may bind it to a Value Set Assertion.

## Template Definitions

The following term used in this Part of the DICOM Standard is defined in the HL7 Templates Standard:, and applies to CDA template specifications:

**Template** A set of conformance statements which further constrain an existing information model..

## Imaging Report Definitions

The following definitions apply to to terms used in this Part of the Standard:

**Business Name** Identifier for a CDA Data Element, Attribute, or structure of Data Elements that corresponds to a business requirement for information exchange.

# Symbols and Abbreviations

The following symbols and abbreviations are used in this Part of the Standard.

**ANSI** American National Standards Institute

**CDA** Clinical Document Architecture (HL7)

**DICOM** Digital Imaging and Communications in Medicine

**HL7** Health Level 7

**HMD** Hierarchical Message Description (HL7)

**IHE** Integrating the Healthcare Enterprise

**IOD** Information Object Definition

**ISO** International Standards Organization

**LOINC** Logical Observation Identifiers Names and Codes

**MRRT** IHE Management of Radiology Report Templates Profile

**NEMA** National Electrical Manufacturers Association

**OID** Object Identifier (ISO 8824)

**RSNA** Radiological Society of North America

**SNOMED** Systematized Nomenclature of Medicine

**SR** Structured Reporting

**UCUM** Unified Code for Units of Measure

**UID** Unique Identifier

**XML** Extensible Markup Language

The following symbols and abbreviations for HL7 v3 Data Types are used in this Part of the Standard.

**AD** Postal Address

**CE** Coded With Equivalents

**CD** Concept Descriptor

**CS** Coded Simple Value

**ED** Encapsulated Data

**EN** Entity Name

**II** Instance Identifier

**INT** Integer Number

**IVL<>** Interval

**LIST<>** List

**OID** ISO Object Identifier

**ON** Organization Name

**PN** Person Name

**PQ** Physical Quantity

**REAL** Real Number

**ST** Character String

**TEL** Telecommunication Address

**TS** Point in Time

**UID** Unique Identifier String

**URL** Universal Resource Identifier

# Conventions

## Template metadata

Each template has a set of metadata, as specified in the HL7 Templates Specification. The metadata is presented as a table, as shown below.

Figure 1: Template metadata table format

|  |  |
| --- | --- |
| **Template ID** | OID (see section 5.1.1) |
| **Name** |  |
| **Effective Date** |  |
| **Version Label** | (see section 5.1.1) |
| **Status** | “draft”, “active”, “review” or “retired” |
| **Description** |  |
| **Classification** | type of the template, e.g. CDA Section Level |
| **Relationships** | relationships to other templates or model artifacts |
| **Context** | “parent node”, “sibling node” (see section 5.1.2) |
| **Open/Closed** | “open”, “closed” (see section 5.1.3) |
| **Revision History** |  |

### Template IDs and Version

Template identifiers (templateId) are assigned for each document, section, and entry level template. When valued in an instance, the template identifier signals the imposition of a set of template-defined constraints. The value of this attribute (e.g., @root="2.16.840.1.113883.10.20.22.4.8") provides a unique identifier for the template in question.

A template may be further qualified by a version label. This label may be used as the extension attribute of the templateId (e.g., @extension="20150309"). All versions of a template, regardless of the version label, must be compatible; i.e., they may vary only by optional content conformance requirements. Thus the version label is typically not used as a conformance constraint.

Within this Standard, template versions are identified by the string “DICOM” and the date of adoption (represented as “YYYYMMDD”), separated by a hyphen (e.g., DICOM-20150523).

### Context

As described in the HL7 Template specification section 2.9.9.4, the context identifies whether the template applies to the parent node in which the templateID is an element, or applies to its sibling nodes in the template table. These typically are applied respectively to templates with a single parent element with child element structure, and to templates with flat list of sibling elements (see Section 5.2.8).

### Open and Closed Templates

Each templates is defined as being either “open” or “closed”. In “open” templates, all of the features of the CDA Specification are allowed except as constrained by the templates. By contrast, a “closed” template specifies everything that is allowed and nothing further may be included.

## Template Table Structure

Each template is specified in tabular form, as shown below.

Figure 2: Template table format

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Business Name** | **Nest Level** | **Element/ Attribute** | **Card** | **Elem/ Attr Conf** | **Data Type** | **Value Conf** | **Value** | **Subsidiary Template** |
| **ScopingBusinessName** |  |  |  |  |  |  |  |  |
| ElementBusinessName |  |  |  |  |  |  |  |  |
| *ReferencedBusinessName* |  |  |  |  |  |  |  |  |

### Business Name

This Part uses Business Names to identify and map common data elements from clinical imaging reports into the proper context-specific CDA/XML structure.

A Business Name is assigned to each element or attribute that may have a user-specified value assigned in the production of the clinical document instance. Business Names are specified to facilitate the implementation of production logic for clinical report authoring applications. The benefit is that developers of clinical report authoring applications are not required to have an in depth knowledge of CDA, the HL7 v3 R-MIM data model, or the XML structures. The use of readable and intuitive Business Names provides a method of direct access to insert data that is specific to each clinical report instance.

Notes: Business Names are also described in the HL7 greenCDAModules for CCD specification, but that specification implies the use of a specific XML structure for production logic that is not required by this Part. The specification of production logic using Business Names is outside the scope of this Part.

Business Names are not specified for elements that are expected to receive an automatically generated value, e.g., the id element for each document, section, and entry.

As a convention, Business Names are represented in CamelCase (alternating upper and lower case, no spaces, initial letter in upper case) in the Business Name column of the template tables.

Business Names are hierarchically organized, and contextually scoped by higher level Business Names.

* Data element/attribute level Business Names are shown in normal font
* Business Names that provide scoping for subsidiary Business Names are shown in bold font.
* Referenced Business Names from included templates are shown in italic (see section 5.2.9)
* As a convention, hierarchical relationship between Business Names is shown with the : character.

Scoping Business Names scope all attributes and elements subsidiary to the element to which the name is assigned.

Examples:

* The top level scoping Business Name for an Imaging Report is “ImagingReport”, and it scopes all attributes and elements in the document, i.e., including and subsidiary to the <ClinicalDocument> XML element
* The Business Name for the Clinical Information report section is “ImagingReport:ClinicalInformation”, and it scopes all attributes and elements including and subsidiary to the <section> XML element in template 1.2.840.10008.20.x2.x1
* The Business Name for the text element of the Clinical Information report section is “ImagingReport:ClinicalInformation:Text”
* The Business Name for the text element of the Impression section is “ImagingReport:Impression:Text”

Note that both Clinical Information and Impression define a Business Name “Text”, but these are distinguished by their hierarchical location under the scoping Business Names of their respective sections.

#### Multiple Instantiations

Some templates may be invoked multiple times in a document instance; for example, the Quantity Measurement template is instantiated for each numeric measurement in a report. Each instantiation shall have an identifying string, unique within the document, used as a discriminator between those multiple instantiations. The Business Name for each element that may have multiple instantiations has a suffix [\*], indicating the use of a discriminator string. This allows Business Name based production logic for authoring applications to identify specific instances of an element.

Figure 3: Example Business Name based production logic with discriminators for two measurements

-- "Q21a" is the discriminator for the first measurement

-- "Q21b" is the discriminator for the second measurement

ImagingReport:Findings:QuantityMeasurement[Q21a]:MeasurementName = ("112058", "DCM", "Calcium score")

ImagingReport:Findings:QuantityMeasurement[Q21a]:MeasurementValue = "8"

ImagingReport:Findings:QuantityMeasurement[Q21a]:MeasurementUnits = "[arb’U]"

ImagingReport:Findings:QuantityMeasurement[Q21b]:MeasurementName = ("408716009", "SNOMED", "Stenotic lesion length")

ImagingReport:Findings:QuantityMeasurement[Q21b]:MeasurementValue = "14"

ImagingReport:Findings:QuantityMeasurement[Q21b]:MeasurementUnits = "mm"

The discriminator string shall be conformant to XML Name production requirements, as used for the XML ID attribute. (See  [Section 5.3.4](#_XML_ID_and) on the use of XML ID.)

Elements that may have multiple instantiations in the same document, and which might need to be individually referenced, typically include an XML ID attribute. This attribute is identified by ‘\*’ (asterisk) as its Business Name, and its value shall be the discriminator string.

Note: Some elements that have multiple instantiations do not specify a XML ID attribute if there is no expected intra-document reference to that element. See for instance the <linkHtml>, <renderMultimedia>, and <paragraph> elements of section/text described in [Section 9.1.1.1](#_Section_Text).

### Nesting Level

CDA documents are encoded using the Extensible Markup Language (XML), and are marked up through hierarchically nested XML elements (tags). The Nesting Level column of the template tables identifies the hierarchical level of each element relative to the other elements in the table using the character right angle bracket ‘>’. Multiple levels of nesting are identified by multiple > characters.

XML elements may have attributes, encoded as “<name>=<value>” pairs within the element tag. Such attributes are identified using the character at sign ‘@’.

### Element /Attribute Names and XPath Notation

The name of each XML element and attribute used in a CDA document for which specific constraints are applied is shown in the Element/Attribute column of the template tables. Optional elements whose use is not specified nor constrained are not shown.

Elements and attributes that use the default value specified in CDA Specification are not shown. For example, the Section element has default attributes classCode='DOCSECT' and moodCode='EVN'; these are not listed in the templates. In accordance with the HL7 v3 specification, attributes with default values need not be included in instances, and their absence implies the default value.

XML Path Language (XPath) notation is used to identify the XML elements and attributes within the CDA document instance to which various constraints are applied. The implicit context of these expressions is the root node of the document, and traversing the path to the root node of the relvant teplate. This notation provides a mechanism that will be familiar to developers for identifying parts of an XML document.

XPath statements appear in this Part in a monospace font.

XPath syntax selects nodes from an XML document using a path containing the context of the node(s). The path is constructed from node names and attribute names (prefixed by a ‘@’) and catenated with a ‘/’ symbol.

Following is an example of a fragment of a CDA document.

Figure 4: XML document example

<author>

<assignedAuthor>

...

<code codeSystem='2.16.840.1.113883.6.96' codeSystemName='SNOMED CT'

code='17561000' displayName='Cardiologist' />

...

</assignedAuthor>

</author>

Following is an example of a fragment of a template specification table.

Figure 5: Template element and attribute example

|  |  |  |  |
| --- | --- | --- | --- |
| **…** | **Nest Level** | **Element/ Attribute** | **…** |
|  |  | author |  |
|  | > | assignedAuthor |  |
| … |  |  |  |
|  | >> | code |  |
|  | >>@ | @codeSystem |  |
|  | >>@ | @codeSystemName |  |
|  | >>@ | @code |  |
|  | >>@ | @displayName |  |
| … |  |  |  |

In the above example, the code attribute of the code element could be selected with the XPath expression author/assignedAuthor/code/@code.

### Cardinality

Each element / attribute has a cardinality indicator that specifies the number of allowable occurrences within a template instance. The cardinality indicators are interpreted with the following format “m…n” where m represents the least and n the most:

* 0..1 zero or one
* 1..1 exactly one
* 1..\* at least one
* 0..\* zero or more
* 1..n at least one and not more than n
* 0..0 none [SHALL NOT]

### Element / Attribute Conformance

Each element / attribute has a conformance verb (keyword) in addition to the cardinality constraint.

The keywords shall, should, may, should not, shall not, and NEED not in this document are to be interpreted as described in ISO/IEC Directives, Part 2, Annex H “Verbal forms for the expression of provisions”:

* shall: an absolute requirement
* shall not: an absolute prohibition against inclusion
* should/should not: a best practice or recommendation. There may be valid reasons to ignore a recommendation, but the full implications must be understood and carefully weighed before choosing to not adhere to the best practice.
* may/NEED NOT: truly optional; can be included or omitted at the discretion of the content creator with no conformance implications

The keyword shall is associated with a minimum cardinality of 1; other keywords have a minimum cardinality of 0. If an element is required by SHALL, but is not known (and would otherwise be omitted without the SHALL requirement), it must be represented by a [nullFlavor](#_Null_Flavor_2). SHALL allows the use of nullFlavor unless the requirement is on an attribute (nullFlavor does not apply to attributes), or the use of nullFlavor is explicitly precluded (see [section 5.2.7.1 Value Conformance](#_Value_/_Vocabulary)  and [section 5.3.2 Null Flavor](#_Null_Flavor)).

Within the template, the keyword COND (conditional) may be present. In this case, the specification of the condition, and the conformance verbs associated with the condition being true or false, are described below the table in a paragraph flagged with the COND keyword.

In an open template, additional elements and attributes allowed by the CDA Specification are not precluded by template constraints, unless there are applicable shall not template specifications.

### Data Type

The data type associated with each element / attribute is specified, as described in the CDA Specification and its referenced HL7v3 Data Types Release 1. Elements that are simply tags with subsidiary content only of nested elements, e.g., RIM class clone names, have the Data Type column empty.

Many data types are non-primitive, and may include constituent component elements and/or attributes. Such subsidiary components are not specified in the templates unless specific constraints are to be applied to them.

### Value Conformance

The template table may constrain values or vocabularies to be used with an element or attribute. Value constraints include a conformance verb (shall, should, may, etc.) as defined in [Section 5.2.5](#_Conformance_Verbs), and specified in the Value Conformance column of the template tables.

Elements for which nullFlavor is forbidden are indicated with an additional constraint keyword **noNull.**

Additionally, constraints specifying Value Sets include a coding strength conformance CWE (Coded With Extensibility) or CNE (Coded with No Extensibility), as defined in Core Principles and Properties of HL7 Version 3 Models, Release 1.

Further, Value Set constraints can be static, meaning that they are bound to a specified version of a Value Set, or dynamic, meaning that they are bound to the most current version of the Value Set. By default, Value Sets have dynamic binding, unless explicitly specified with an additional constraint keyword static.

### Value Specification

The template table may constrain values a single fixed value, to a Value Set from which the value is to be drawn, to a named Concept Domain, or to a mapping from a DICOM SOP Instance.

#### Coded Simple Value

Values of Data Type CS (Coded Simple Value) have a fixed code system defined in the CDA Specification, and are simple strings. The template tables identify only the constraint on the code value, and do not specify the fixed code system nor the code meaning (display name), which are not encoded in the CDA instance.

#### Concept Descriptor and Coded With Equivalents

Single values of Data Type CD (Concept Descriptor) or CE (Coded With Equivalents) are specified in the template tables with the triplet notation specified in PS3.16:

(CodeValue, Coding Scheme Designator, "Code Meaning")

The Coding Scheme Designator is a simple human readable identifier of the code system, and corresponds to the optional codeSystemName attribute of the CD or CE element. The CDA Specification requires the Code System OID to be encoded in the codeSystem attribute of the CD or CE element. The corresponding OID for each Coding Scheme Designator is provided in the PS3.16 Section titled “Coding Schemes”. The Code Meaning is encoded in the displayName attribute of the CD or CE element.

#### Value Set

Elements whose value may be drawn from a Value Set will have that Value Set identified in the Value column introduced by the keyword **ValueSet** in bold font.

#### Concept Domains

Concept Domains (see definition in [section 3.2](#_Vocabulary_Model_Definitions)) are used to provide a named category in a structural template that can be bound to a specific value or value set by an invoking template, thus specializing the structural template for a particular use case. Concept Domain names are introduced by the Keyword **ConceptDomain** in bold font in the Value column. For example, the Quantity Measurement template “observationType” Concept Domain can be bound to a value set of fetal ultrasound measurements in one invoking template, or to a value set of cardiac CT measurements in another invoking template.

Concept Domain names are similar to element Business Names in that they provide a public interface that is bound to specific values later in the document specification and production process. Concept Domains do not have a Value Conformance verb; the conformance verb is specified when the Concept Domain is bound to a specific value or value set (see Section 5.2.9.1).

#### Mapping from DICOM SOP Instances

Elements whose value may be mapped from a DICOM SOP Instance have the source attribute name and tag identified in the Value column in italic font. Note that many of these values have their origin in IT systems outside the imaging department, there may be alternate routes for these values to be accessed by the reporting application, e.g., from an HL7 standard message or service.

### Subsidiary Templates

A template may invoke (include) subsidiary templates. Templates typically have one of two styles, a single parent element with child element structure, or a flat list of sibling elements.

The single parent element style is typical for the top level Document, Section, and Entry templates, and the parent element is of the HL7 v3 RIM act class. Invocation of such a template therefore involves an actRelationship element; that actRelationship element is specified in the invoking template.

The sibling elements style is typical for sets of elements and attributes aggregated for editorial convenience.

Invocation of a subsidiary template includes the name of invoked template and its templateID, specified in the Subsidiary Template column of the invoking template table.

For an invoked template of the single parent element style, the scoping business name and top level element are provided in italics in the invoking template table. This indicates this is data copied from the specification in the invoked template for the reader’s convenience.

#### Vocabulary Binding And Constraints

A template invocation may provide Concept Domain Vocabulary Binding or other vocabulary constraints, e.g., limiting an element in the invoked template to a specific value from its defined Value Set. These vocabulary constraints are specified in tabular form, as shown below. The table is included in the additional requirements for the template, with a reference in the Value column of the template entry invoking the subsiary template. The Value Conformance and Value specification columns are interpreted as in the templates tables.

Figure 6: Vocabulary Binding table format

| Concept Domain or Element | Value Conf | Value |
| --- | --- | --- |
|  |  |  |

### Additional Requirements

Each template may be accompanied by additional requirements and usage explanations in narrative specification language.

## Encoding

A full discussion of the representation of data types and vocabulary is outside the scope of this document; for more information, see the HL7 V3 specifications on Abstract Data Types R1 and XML Data Types R1 referenced in the CDA Specification.

Notes: 1. Many Data Types encode their values in attributes, rather than character data. For example, the URL Data Type encodes its value in the **value** attribute within the element tag, e.g., <reference value="http://xyz.org">. Within this specification, the attribute(s) that hold the value are not identified, except where specific constraints apply.

2. The Consolidated CDA specification includes extensive examples of valid and invalid encodings, which may be useful for implementers.

3. The specification of a representation of Data Types for use in Business Name-based report production logic is outside the scope of this Standard.

### Translation code element

Data Type CD (Concept Descriptor) and CE (Coded With Equivalents) allow a translation code element, which allows the encoding of the same concept in an alternate coding system. This supports the encoding of both an originally entered (local) code, and a code specified for cross-system interoperability.

This Part follows the convention used in the Consolidated CDA Implementation Guide specification, which specifies the standard interoperable code in the root, whether it is original or a translation. The HL7v3 Data Types R1 standard invoked by CDA formally specifies the original code (as initially entered in an information system application) to be placed in the root.

Note: This discrepancy is resolved in HL7v3 Data Types R2 to follow the convention used here, and the HL7 Structured Documents Working Group has approved the “pre-adoption” of the Data Types R2 approach in CDA implementations.

Figure 7: Translation code example

<code code='206525008'

displayName='neonatal necrotizing enterocolitis'  
 codeSystem='2.16.840.1.113883.6.96'

codeSystemName='SNOMED CT'>

<translation code='NEC-1'

displayName='necrotizing enterocolitis'

codeSystem='2.16.840.1.113883.19'/>

</code>

### Null Flavor

Information technology solutions store and manage data, but sometimes data are not available: an item may be unknown, not relevant, or not computable or measureable. In HL7 v3, a *flavor* of null, or nullFlavor, describes the reason for missing data.

For example, if a patient arrives at an Emergency Department unconscious and with no identification, a null flavor is used to represent the lack of information. The patient’s birth date could be represented with a null flavor of “NAV”, which is the code for “temporarily unavailable”. When the patient regains consciousness or a relative arrives, we expect to be able to obtain the patient’s birth date.

Figure 8: nullFlavor example

<birthTime nullFlavor="NAV"/> <!--coding an unknown birthdate-->

Use null flavors for unknown, required, or optional attributes:

NI No information. This is the most general and default null flavor.

NA Not applicable. Known to have no proper value (e.g., last menstrual period for a male).

UNK Unknown. A proper value is applicable, but is not known.

ASKU Asked, but not known. Information was sought, but not found (e.g., the patient was asked but did not know).

NAV Temporarily unavailable. The information is not available, but is expected to be available later.

NASK Not asked. The patient was not asked.

MSK Masked. There is information on this item available but it has not been provided by the sender due to security, privacy, or other reasons. There may be an alternate mechanism for gaining access to this information.

OTH Other. The actual value is not an element in the value domain of a variable. (e.g., concept not provided by required code system).

The above null flavors are commonly used in clinical documents. For the full list and descriptions, see the [nullFlavor](#_NullFlavor_Value_Set) vocabulary domain in the HL7 v3 Vocabulary referenced by the CDA specification.

Any SHALLconformance requirement on an element may use nullFlavor, unless nullFlavor is explicitly disallowed (as indicated by **noNull**, see [Section 5.2.7.1 Value / Vocabulary Conformance Terms](#_Value_/_Vocabulary)). SHOULD and MAY conformance requirements may also use nullFlavor. nullFlavor does not apply to conformance requirements on attributes.

The encoding of nullFlavor as an attribute of the data type element is not shown in the templates, hence there is no business name associated with the attribute.

Note: Production logic based on Business Names needs to provide a mechanism for assignment of a value to the nullFlavor attribute as an alternative for a value for the element. Specification of such production logic is outside the scope of this Standard.

Figure 9: XML example of allowed nullFlavors when element is required

<entry>

<observation classCode="OBS" moodCode="EVN">

<id nullFlavor="**NI**"/>

<code nullFlavor="**OTH**">

<originalText>New Grading system</originalText>

</code>

<statusCode code="completed"/>

<effectiveTime nullFlavor="**UNK**"/>

<value xsi:type="CD" nullFlavor="**NAV**">

<originalText>Spiculated mass grade 5</originalText>

</value>

</observation>

</entry>

### Unknown Information

If a document creator wants to state that a piece of information is unknown, the following principles apply:

1. If the creator doesn’t know an attribute of an act, that attribute can be null.

Figure 10: Unknown medication example

**<text>patient was given a medication but I do not know what it was</text>**

<entry>

<substanceAdministration moodCode="EVN" classCode="SBADM">

<consumable>

<manufacturedProduct>

<manufacturedLabeledDrug>

<code **nullFlavor="NI"**/>

</manufacturedLabeledDrug>

</manufacturedProduct>

</consumable>

</substanceAdministration>

</entry>

2. If the creator doesn’t know if an act occurred, the nullFlavor is on the act (detail could include specific allergy, drug, etc.).

Figure 11: Unkown medication use of anticoagulant drug example

**<text>I do not know whether or not patient received an anticoagulant drug</text>**

<entry>

<substanceAdministration moodCode="EVN" classCode="SBADM" **nullFlavor="NI">**

<consumable>

<manufacturedProduct>

<manufacturedLabeledDrug>

**<code code="81839001" displayName="anticoagulant drug"**

**codeSystem="2.16.840.1.113883.6.96"**

**codeSystemName="SNOMED CT"/>**

</manufacturedLabeledDrug>  
 </manufacturedProduct>  
 </consumable>  
 </substanceAdministration>  
</entry>

3. If the sender wants to state ‘no known’, a negationInd can be used on the corresponding act (substanceAdministration, Procedure, etc.)

Figure 12: No known medications example

**<text>No known medications</text>**

<entry>

<substanceAdministration moodCode="EVN" classCode="SBADM" **negationInd=”true”>**

<consumable>

<manufacturedProduct>

<manufacturedLabeledDrug>

**<code code="410942007" displayName="drug or medication"**

**codeSystem="2.16.840.1.113883.6.96"**

**codeSystemName="SNOMED CT"/>**

</manufacturedLabeledDrug>

</manufacturedProduct>

</consumable>

</substanceAdministration>

</entry>

Other implementation guides recommended using specific codes to assert no known content, for example SNOMED CT 160244002 "No known allergies" or 160245001 "No current problems or disability". Specific codes are still allowed; however, use of negationInd is an alternative, and the specific approach for each use will be specified in the associated template.

### XML ID

The XML Specification allows each markup tag to have an attribute of type ID, whose value is unique within the document, that allows reference to that markup. The CDA schema defines such attributes with attribute name ID.

Notes: 1. Thus the attribute named ID is of XML attribute type ID. This must further be distinguished from the element named id of HL7v3 Data Type UID that is part of most RIM classes. The attribute name is always upper case, the element name is always lower case.

2. The actual CDA schema specification uses the XML Schema Datatypes definition of XML ID (xs:ID). Readers may also be familiar with the xml:id specification, which is not formally used by CDA as it was published after the CDA specification.

In the CDA R2 Specification, the XML ID attribute capability is used to provide linkage between structured entries and the corresponding narrative text, and more generally to marked-up content (see [section 9.1.1 Text](#_text_1)).

The ID attribute may be required or recommended for template elements that may have multiple instantiations in the same document. Each instantiation has a discriminator which is used as the XML ID attribute value. (See [Section 5.2.1.1](#_Multiple_Instantiations))

## Extension and Namespace

In accordance with CDA R2 (and HL7 v3 XML) extensibility rules, as described in CDA R2 Section 1.4, “locally-defined” XML markup may be specified where there is a need to communicate information for which there is no suitable representation in CDA R2. These extensions are described in the context of the templates where they are used. All such extensions use HL7 v3 Data Types used by CDA R2.

Note: The HL7 Structured Documents Working Group coordinates markup extensions that have been defined for implementation guides published by HL7, IHE, DICOM, and other organizations. See <http://wiki.hl7.org/index.php?title=CDA_R2_Extensions>

The namespace for extensions defined in this standard is "urn:dicom-org:PS3-20", which is aliased in this standard as "ps3-20". Extensions created for this standard are:

* + ps3-20:accessionNumber - The accessionNumber extension allows for the clear identification of the imaging department identifier for a service request (order). While this identifier could be conveyed as another id for the inFulfillmentOf/Order element, there is no reliable way in that context to distinguish it from the Placer Order Number. As this is a primary management identifier in departmental workflows, a distinct local markup is defined. This extension uses the II Data Type.

The namespace for extensions defined by HL7 is “urn:hl7-org:sdtc”. which is aliased in this standard as "sdtc". Extensions used in this standard are:

* + sdtc:signatureText - Provides a location for a textual or multimedia depiction of the signature by which the participant endorses and accepts responsibility for his or her participation in the Act as specified in the Participation.typeCode. Details of the element content are described in the HL7 CDA Digital Signature Standard. This extension uses the ED Data Type.

# Conformance

The CDA specification section 1.3 provides conformance requirements for Document Originators and Document Recipients.

Notes: 1. Consolidated CDA Implementation Guide Section 2.8 includes recommended best practices for Document Recipients displaying CDA documents.

2. There may be other CDA-related standards to which an application may claim conformance. For example, IHE Patient Care Coordination Technical Framework specifies a Document Consumer actor with four options for conformance.

.

A CDA document in accordance with this Standard asserts its conformance to a template by inclusion of the specified templateID elements in the document, sections, and entries.

# Document-Level Templates

Document-level templates describe the purpose and rules for constructing a conforming CDA document. Document templates include constraints on the CDA header and sections by refering to templates, and constraints on the vocabulary used in those templates.

## Imaging Report

|  |  |
| --- | --- |
| **Template ID** | 1.2.840.10008.20.x1.x1 |
| **Name** | Imaging Report |
| **Effective Date** | *(Date of Final Text adoption)* |
| **Version Label** | DICOM-*yyyymmdd* |
| **Status** | Draft *(will change to Active on Final Text adoption)* |
| **Description** | This CDA Imaging Report document template defines the report content and technical constraints for top level elements, attributes, sections, and entries to be used in imaging report instances. This template may apply to screening, diagnostic, or therapeutic radiology, cardiology, or other imaging reports.  The body of an Imaging Report may contain five main imaging report sections:   * Clinical information (optionally); * Current imaging procedure description; * Comparison studies (optionally); * Findings (optionally); * Impression; * plus potentially an Addendum(s)   The report templates sponsored by the RSNA Radiology Reporting Initiative (radreport.org) adhere to this general section outline. |
| **Classification** | CDA Document Level |
| **Relationships** |  |
| **Context** |  |
| **Open/Closed** | Open |
| **Revision History** | DICOM-*yyyymmdd*: Initial version |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Business Name** | **Nest Level** | **Element/ Attribute** | **Card** | **Elem/ Attr Conf** | **Data Type** | **Value Conf** | **Value** | **Subsidiary Template** |
| **ImagingReport** |  | ClinicalDocument |  |  |  |  |  |  |
|  | > | templateId | 1..1 | SHALL | II |  |  |  |
|  | >@ | @root | 1..1 | SHALL | UID | SHALL | 1.2.840.10008.20.x1.x1 |  |
| DocType | > | code | 1..1 | SHALL | CD | SHALL CWE noNull | **ValueSet** [LOINC Imaging Document Codes](#_LOINC_Imaging_Document) 1.3.6.1.4.1.12009.10.2.5 |  |
|  | > |  | 1..1 | SHALL |  |  |  | [General Header](#_General_Header_Constraints) 1.2.840.10008.20.x4.x1 |
|  | > |  | 1..1 | SHALL |  |  |  | [Imaging Header](#_Imaging_Header) 1.2.840.10008.20.x4.x2 |
|  | > |  | 0..1 | MAY |  |  |  | [Parent Document](#_Parent_Document) 1.2.840.10008.20.x4.x3 |
|  | > | component | 1..1 | SHALL |  |  |  |  |
|  | >> | structuredBody | 1..1 | SHALL |  |  |  |  |
|  | >>> | component | 0..1 | MAY |  |  |  |  |
| *ClinicalInformation* | >>>> | *section* |  |  |  |  |  | [Clinical Information](#_Clinical_Information_1) 1.2.840.10008.20.x2.x1 |
|  | >>> | component | 1..1 | SHALL |  |  |  |  |
| *ProcedureDescription* | >>>> | *section* |  |  |  |  |  | [Imaging Procedure Description](#_Current_Imaging_Procedure) 1.2.840.10008.20.x2.x2 |
|  | >>> | component | 0..1 | MAY |  |  |  |  |
| *ComparisonStudy* | >>>> | *section* |  |  |  |  |  | [Comparison Study](#_Comparison_Study) 1.2.840.10008.20.x2.x3 |
|  | >>> | component | 0..1 | MAY |  |  |  |  |
| *Findings* | >>>> | *section* |  |  |  |  |  | [Findings](#_Findings) 2.16.840.1.113883.10.20.6.1.2 |
|  | >>> | component | 1..1 | SHALL |  |  |  |  |
| *Impression* | >>>> | *section* |  |  |  |  |  | [Impression](#_Impression) 1.2.840.10008.20.x2.x4 |
|  | >>> | component | 0..\* | [COND](#_DICOM_Object_Catalog_1) |  |  |  |  |
| *Addendum[\*]* | >>>> | *section* |  |  |  |  |  | [Addendum](#_Addendum_2) 1.2.840.10008.20.x2.x5 |

### clinicalDocument/code

Most of the codes in Value Set LOINC Imaging Document Codes are pre-coordinated with the imaging modality, body part examined, and/or specific imaging method. When pre-coordinated codes are used, any coded values elsewhere in the document describing the modality, body part, etc., must be consistent with the document type code. Local codes used for report types may be included as a translation element in the code.

Note: Use of Value Set LOINC Imaging Document Codes is harmonized with HL7 Consolidated CDA Templates for Clinical Notes, Release 2. DICOM CID 7001 Diagnostic Imaging Report Headings, used in TID 2000 Basic Diagnostic Imaging Report, is a subset of the LOINC Imaging Document Codes.

Figure 13: ClinicalDocument/code example with translation element forlocal code

<code code="18748-4"

displayName="Diagnostic Imaging Report"

codeSystem="2.16.840.1.113883.6.1"

codeSystemName="LOINC" >

<translation code="XRPEDS"

displayName="Pediatric Radiography Report"

codeSystem="2.16.840.1.123456.78.9" />

</code>

### Addendum

If the header includes a relatedDocument element with typeCode RPLC, and the replaced document had a legalAuthenticator element (i.e., was signed), the component/structuredBody **SHALL** contain at least one Addendum Section.

## Imaging Addendum Report

|  |  |
| --- | --- |
| **Template ID** | 1.2.840.10008.20.x1.x2 |
| **Name** | Imaging Addendum Report |
| **Effective Date** | *(Date of Final Text adoption)* |
| **Version Label** | DICOM-*yyyymmdd* |
| **Status** | Draft *(will change to Active on Final Text adoption)* |
| **Description** | Document structure for an Imaging Addendum Report, i.e., an appendage to an existing report document that contains supplemental information. The parent document content remains unaltered. The Addendum Report must be read together with its parent document for full context. Some institutions may have policies that forbid the use of Addendum Reports, and require revised reports with a complete restatement of the original documentation. |
| **Classification** | CDA Document Level |
| **Relationships** |  |
| **Context** |  |
| **Open/Closed** | Open |
| **Revision History** | DICOM-*yyyymmdd*: Initial version |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Business Name** | **Nest Level** | **Element/ Attribute** | **Card** | **Elem/ Attr Conf** | **Data Type** | **Value Conf** | **Value** | **Subsidiary Template** |
| **ImagingAddendum** |  | ClinicalDocument |  |  |  |  |  |  |
|  | > | templateId | 1..1 | SHALL | II |  |  |  |
|  | >@ | @root | 1..1 | SHALL | UID | SHALL | 1.2.840.10008.20.x1.x1 |  |
| DocType | > | code | 1..1 | SHALL | CD | SHALL CWE noNull | **ValueSet** [LOINC Imaging Document Codes](#_LOINC_Imaging_Document) 1.3.6.1.4.1.12009.10.2.5 |  |
|  | > |  | 1..1 | SHALL |  |  |  | [General Header](#_General_Header_Constraints) 1.2.840.10008.20.x4.x1 |
|  | > |  | 1..1 | SHALL |  |  |  | [Imaging Header](#_Imaging_Header) 1.2.840.10008.20.x4.x2 |
|  | > | relatedDocument | 1..1 | SHALL |  |  |  |  |
|  | >@ | @typecode | 1.1 | SHALL | CS | SHALL | APND |  |
|  | >> | parentDocument | 1..1 | SHALL |  |  |  |  |
| AmendedDocumentID | >>> | id | 1..1 | SHALL | II |  |  |  |
|  | > | component | 1..1 | SHALL |  |  |  |  |
|  | >> | structuredBody | 1..1 | SHALL |  |  |  |  |
|  | >>> | component | 1..\* | SHALL |  |  |  |  |
| *Addendum[\*]* | >>>> | *section* |  |  |  |  |  | [Addendum](#_Addendum_2) 1.2.840.10008.20.x2.x5 |

# Header Content Templates

## General Header Elements

|  |  |
| --- | --- |
| **Template ID** | 1.2.840.10008.20.x4.x1 |
| **Name** | General Header Elements |
| **Effective Date** |  |
| **Version Label** | DICOM-*yyyymmdd* |
| **Status** | draft |
| **Description** | CDA Header Elements for all documents, including primary participations |
| **Classification** | CDA Header Elements |
| **Relationships** | Invoked from all document level templates |
| **Context** | sibling node |
| **Open/Closed** | Open |
| **Revision History** | DICOM-*yyyymmdd*: Initial version |

| **Business Name** | **Nest Level** | **Element/ Attribute** | **Card** | **Elem/ Attr Conf** | **Data Type** | **Value Conf** | **Value** | **Subsidiary Template** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | templateId | 1..1 | SHALL | II |  |  |  |
|  | @ | @root | 1..1 | SHALL | UID | SHALL | 1.2.840.10008.20.x4.x1 |  |
| ContentTemplate |  | templateId | 0..\* | MAY | II |  |  |  |
|  |  | typeId | 1..1 | SHALL | II |  |  |  |
|  | @ | @root | 1..1 | SHALL | UID | SHALL | 2.16.840.1.113883.1.3 |  |
|  | @ | @extension | 1..1 | SHALL | ST | SHALL | POCD\_HD000040 |  |
|  |  | id | 1..1 | SHALL | II |  |  |  |
| Title |  | title | 1..1 | SHALL | ST |  |  |  |
| CreationTime |  | effectiveTime | 1..1 | SHALL | TS |  |  |  |
| Confidentiality |  | confidentialityCode | 1..1 | SHALL | CE | SHALL CNE **STATIC** 2010-04-21 | **ValueSet** [x\_BasicConfidentialityKind](#_x__BasicConfidentialityKind_Value) 2.16.840.1.113883.11.16926 |  |
| LanguageCode |  | languageCode | 1..1 | SHALL | CS | SHALL CNE | **ValueSet** [CID 5000](#_CID_5000_Languages) Languages |  |
| SetId |  | setId | 0..1 | MAY | II |  |  |  |
| VersionNumber |  | versionNumber | 1..1 | COND | INT |  |  |  |
| **Patient[\*]** |  | recordTarget | 1..\* | SHALL |  |  |  |  |
|  | > | patientRole | 1..1 | SHALL |  |  |  |  |
| **\*** | >@ | @ID | 1..1 | [COND](#multiPat) | XML ID |  |  |  |
|  | >> | id | 1..\* | SHALL | II |  |  |  |
| IDIssuer | >>@ | root | 1..1 | SHALL | UID |  | *Issuer of Patient ID Qualifiers Sequence (0010,0024) > Universal Entity ID (0040,0032)* |  |
| ID | >>@ | extension | 1..1 | SHALL | ST |  | *Patient ID (0010,0020)* |  |
| Addr | >> | addr | 1..\* | SHALL | AD |  |  |  |
| Tele | >> | telecom | 1..\* | SHALL | TEL |  |  |  |
|  | >> | patient | 1..1 | SHALL |  |  |  |  |
| Name | >>> | name | 1..1 | SHALL | PN |  | *Patient’s Name (0010,0010)* |  |
| Gender | >>> | administrativeGenderCode | 1..1 | SHALL | CE | SHALL CNE | **ValueSet** [AdministrativeGender](#_AdministrativeGender_Value_Set) 2.16.840.1.113883.11.1  *Patient’s Sex (0010,0040)*  Map value “O” to nullFlavor UNK |  |
| BirthTime | >>> | birthTime | 1..1 | SHALL | TS |  | *Patient’s Birth Date (0010,0030) + Patient’s Birth Time (0010,0032)* |  |
|  | >> | providerOrganization | 0..1 | MAY |  |  |  |  |
| ProviderOrgName | >>> | name | 1..\* | SHALL | ON |  | *Issuer of Patient ID (0010,0021)* |  |
| ProviderOrgTel | >>> | telecom | 0..\* | SHOULD | TEL |  |  |  |
| ProviderOrgAddr | >>> | addr | 0..\* | SHOULD | AD |  |  |  |
|  |  | legalAuthenticator | 0..1 | MAY |  |  |  |  |
| SigningTime | > | time | 1..1 | SHALL | TS |  |  |  |
|  | > | signatureCode | 1..1 | SHALL | CS | SHALL | S |  |
|  | > | assignedEntity | 1..1 | SHALL |  |  |  |  |
| SignerID | >> | id | 1.\* | SHALL | II |  |  |  |
| SignerAddr | >> | addr | 1.\* | SHALL | AD |  |  |  |
| SignerTel | >> | telecom | 1..\* | SHALL | TEL |  |  |  |
|  | >> | assignedPerson | 1..1 | SHALL |  |  |  |  |
| SignerName | >>> | name | 1..1 | SHALL | PN |  |  |  |
| SignatureBlock | > | sdtc:signatureText | 0..1 | MAY | ED |  |  |  |
| **Author[\*]** |  | author | 1..\* | SHALL |  |  |  |  |
| AuthoringTime | > | time | 1..1 | SHALL | TS |  |  |  |
|  | > | assignedAuthor | 1..1 | SHALL |  |  |  |  |
| **\*** | >@ | @ID | 1..1 | COND | XML ID |  |  |  |
|  | >> | id | 1.\* | SHALL | II |  |  |  |
| Addr | >> | addr | 1.\* | SHALL | AD |  |  |  |
| Tel | >> | telecom | 1..\* | SHALL | TEL |  |  |  |
|  | >> | assignedPerson | 1..1 | SHALL |  |  |  |  |
| Name | >>> | name | 1..1 | SHALL | PN |  |  |  |
| **Recipient[\*]** |  | informationRecipient | 0..\* | MAY |  |  |  |  |
|  | > | intendedRecipient | 1..1 | SHALL |  |  |  |  |
|  | >@ | @classCode | 1..1 | SHALL | CS | SHALL | ASSIGNED |  |
| **\*** | >@ | @ID | 1..1 | [COND](#multiRecip) | XML ID |  |  |  |
| Addr | >> | addr | 0.\* | MAY | AD |  |  |  |
| Tel | >> | telecom | 0..\* | MAY | TEL |  |  |  |
|  | >> | informationRecipient | 0..1 | MAY |  |  |  |  |
| Name | >>> | name | 1..1 | SHALL | PN |  |  |  |
|  | >> | receivedOrganization | 0..1 | MAY |  |  |  |  |
| Org | >>> | name | 1..1 | SHALL | ON |  |  |  |
|  |  | custodian | 1..1 | SHALL |  |  |  |  |
|  | > | assignedCustodian | 1..1 | SHALL |  |  |  |  |
|  | >> | representedCustodianOrganization | 1..1 | SHALL |  |  |  |  |
| CustodianOrgID | >>> | id | 1.\* | SHALL | II |  |  |  |
| CustodianOrgName | >>> | name | 1..1 | SHALL | ON |  |  |  |
| CustodianOrgAddr | >>> | addr | 1..1 | SHALL | AD |  |  |  |
| CustodianOrgTel | >>> | telecom | 1..1 | SHALL | TEL |  |  |  |

Note that there is no business name associated with this template. Rather, this template is an editorial convenience for template specification, and the Business Names for the elements of this template are logically part of the business name scope of the invoking template.

### templateId - contentTemplate

This templateId may be used to identify the template(s) used to generate/constrain the content of the report. This element is in addition to the templateId of the document level template, and typically represents clinical subspecialty requirements. See [Section 5.1.1](#_Template_IDs_and) on the structure and use of the templateId.

Notes: The IHE MRRT profile defines a "dcterms.identifier" that may be used for this templateId.

### title

The title may include the title of the report template used.

Note: The IHE MRRT profile defines a “dcterms.title” that may be used in this element.

### effectiveTime

Signifies the document creation time, when the document first came into being. Where the CDA document is a transform from an original document in some other format, the ClinicalDocument.effectiveTime is the time the original document is created. The time when the transform occurred is not represented in CDA

### setID and versionNumber

The setID and versionNumber elements may be used by the document creation system to manage document revisions, in accordance with the CDA specification sections 4.2.1.7 and 4.2.1.8.

**COND:** If and only if the setID element is present, the versionNumber element SHALL be present.

### recordTarget/patientRole and @ID

The recordTarget records the patient whose health information is described by the clinical document; it must contain at least one patientRole element.

Multiple recordTarget elements should be used only in the case of conjoined twins/triplets who are the subject of a single imaging procedure, or for special cases (e.g., pre-natal surgery, where a medical record has been established for the fetus).

**COND:** If there are multiple recordTarget elements, each patientRole element SHALL include an XML ID attribute that serves as the business name discriminator associated with the instance of the element.

Figure 14: Header example

<typeId root="2.16.840.1.113883.1.3" extension="POCD\_HD000040"/>

<!— DICOM Imaging Report Template -->

<templateId root="1.2.840.10008.20.x1.x1"/>

<!-- General Header Template -->

<templateId root="1.2.840.10008.20.x4.x1"/>

<id extension="999021" root="2.16.840.1.113883.19"/>

<code codeSystem="2.16.840.1.113883.6.1"

codeSystemName="LOINC" code="18748-4"

displayName="Diagnostic Imaging Report"/>

<title>Radiology Report</title>

<effectiveTime value="20150329171504+0500"/>

<confidentialityCode code="N" codeSystem="2.16.840.1.113883.5.25"/>

<languageCode code="en-US" codeSystem="2.16.840.1.113883.6.121"/>

<setId extension="111199021" root="2.16.840.1.113883.19"/>

<versionNumber value="1"/>

### legalAuthenticator

The legalAuthenticator identifies the single person legally responsible for the correctness of the content of the document and SHALL be present if the document has been legally authenticated. In the context of an imaging report, this means the radiologist, cardiologist, or other profesional who signed or validated the report.

Based on local practice, clinical documents may be released before legal authentication. This implies that a clinical document that does not contain this element has not been legally authenticated.

The act of legal authentication requires a certain privilege be granted to the legal authenticator depending upon local policy. All clinical documents have the potential for legal authentication, given the appropriate credentials.

Note that the legal authenticator, if present, must be a person.

The legalAuthenticator SHALL contain exactly one [1..1] time representing the time of signature.

The legalAuthenticator MAY contain zero or one [0..1] **sdtc:signatureText** extension element. This provides a textual or multimedia depiction of the signature by which the participant endorses and accepts responsibility for his or her participation in the Act. The element is described in the HL7 CDA Digital Signature Standard.

Figure 15: legalAuthenticator example

<legalAuthenticator>

<time value="20050329224411+0500"/>

<signatureCode code="S"/>

<assignedEntity>

<id extension="KP00017" root="2.16.840.1.113883.19"/>

<addr>

<streetAddressLine>21 North Ave.</streetAddressLine>

<city>Burlington</city>

<state>MA</state>

<postalCode>02368</postalCode>

<country>US</country>

</addr>

<telecom use="WP" value="tel:(555)555-1003"/>

<assignedPerson>

<name>

<given>Henry</given>

<family>Seven</family>

</name>

</assignedPerson>

</assignedEntity>

</legalAuthenticator>

### recordTarget/patientRole/Patient/birthTime

Patient birthTime SHALL be precise to year, SHOULD be precise to day.

Figure 16: recordTarget example

<recordTarget>

<patientRole>

<id extension="12345" root="2.16.840.1.113883.19"/>

<!—Fake ID using HL7 example OID. ->

<id extension="111-00-1234" root="2.16.840.1.113883.4.1"/>

<!—Fake Social Security Number using the actual SSN OID. ->

<addr use="HP">

<!—HP is "primary home" from codeSystem 2.16.840.1.113883.5.1119 ->

<streetAddressLine>17 Daws Rd.</streetAddressLine>

<city>Blue Bell</city>

<state>MA</state>

<postalCode>02368</postalCode>

<country>US</country>

<!—US is "United States" from ISO 3166-1 Country Codes: 1.0.3166.1 ->

</addr>

<telecom value="tel:(781)555-1212" use="HP"/>

<!—HP is "primary home" from AddressUse 2.16.840.1.113883.5.1119 ->

<patient>

<name use="L">

<!—L is "Legal" from EntityNameUse 2.16.840.1.113883.5.45 ->

<prefix>Mr.</prefix>

<given>Adam</given>

<given qualifier="CL">Frankie</given>

<!—CL is "Call me" from EntityNamePartQualifier

2.16.840.1.113883.5.43 ->

<family>Everyman</family>

</name>

<administrativeGenderCode code="M"

codeSystem="2.16.840.1.113883.5.1" displayName="Male"/>

<birthTime value="19541125"/>

</patient>

<providerOrganization>

<id root="2.16.840.1.113883.19"/>

<name>Good Health Clinic</name>

<telecom use="WP" value="tel:(781)555-1212"/>

<addr>

<streetAddressLine>21 North Ave</streetAddressLine>

<city>Burlington</city>

<state>MA</state>

<postalCode>02368</postalCode>

<country>US</country>

</addr>

</providerOrganization>

</patientRole>

</recordTarget>

### author/assignedAuthor and @ID (Person)

The author element represents the creator of the clinical document. This template restricts the author to be a person.

Such author **SHALL** contain exactly one [1..1] **time** representing the start time of the author’s participation in the creation of the content of the clinical document.

**COND:** If there are multiple author elements, each assignedAuthor element SHALL include an XML ID attribute that serves as the business name discriminator associated with the instance of the element.

Figure 17: Person author example

<author>

<time value="20050329224411+0500"/>

<assignedAuthor>

<id extension="KP00017" root="2.16.840.1.113883.19.5"/>

<addr>

<streetAddressLine>21 North Ave.</streetAddressLine>

<city>Burlington</city>

<state>MA</state>

<postalCode>02368</postalCode>

<country>US</country>

</addr>

<telecom use="WP" value="tel:(555)555-1003"/>

<assignedPerson>

<name>

<given>Henry</given>

<family>Seven</family>

</name>

</assignedPerson>

</assignedAuthor>

</author>

### InformationRecipient/intendedRecipient and @ID

The informationRecipient participation elements record the intended recipients of the information at the time the document is created. An intended recipient may be a person (an informationRecipient entity), with or without an organization affiliation (receivedOrganization scoping entity), or simply an organization. If an organization, the document is expected to be incorporated into an information system of that organization (e.g., the electronic medical record for the patient).

**COND:** If there are multiple informationRecipient elements, each intendedRecipient element SHALL include an XML ID attribute that serves as the business name discriminator associated with the instance of the element.

Figure 18: informationRecipient example

<informationRecipient>

<intendedRecipient classCode="ASSIGNED">

<informationRecipient>

<name>

<given>Henry</given>

<family>Seven</family>

</name>

</informationRecipient>

<receivedOrganization>

<name>Good Health Clinic</name>

</receivedOrganization>

</intendedRecipient>

</informationRecipient>

## Imaging Header Elements

|  |  |
| --- | --- |
| **Template ID** | 1.2.840.10008.20.x4.x2 |
| **Name** | Imaging Header Elements |
| **Effective Date** |  |
| **Version Label** | DICOM-*yyyymmdd* |
| **Status** | draft |
| **Description** | CDA Header Elements for imaging reports, including encounter, order, and study context |
| **Classification** | CDA Header Elements |
| **Relationships** | Invoked from Imaging Report |
| **Context** | sibling node |
| **Open/Closed** | Open |
| **Revision History** | DICOM-*yyyymmdd*: Initial version |

| **Business Name** | **Nest Level** | **Element/ Attribute** | **Card** | **Elem/ Attr Conf** | **Data Type** | **Value Conf** | **Value** | **Subsidiary Template** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | templateId | 1..1 | SHALL | II |  |  |  |
|  | @ | @root | 1..1 | SHALL | UID | SHALL | 1.2.840.10008.20.x4.x2 |  |
|  |  | componentOf | 1..1 | SHALL |  |  |  |  |
|  | > | encompassingEncounter | 1..1 | SHALL |  |  |  |  |
|  | >> | id | 0..1 | SHOULD | II |  |  |  |
| EncounterIDIssuer | >>@ | @root | 1..1 | SHALL | UID |  | *Issuer of Admission ID Sequence (0038;0014) > Universal Entity ID (0040,0032)* |  |
| EncounterID | >>@ | @extension | 1..1 | SHALL | ST |  | *Admission Id (0038,0010)* |  |
| EncounterTime | >> | effectiveTime | 1..1 | SHALL |  |  |  |  |
|  | >> | location | 0..1 | MAY |  |  |  |  |
|  | >>> | healthCareFacility | 1..1 | SHALL |  |  |  |  |
|  | >>>> | location | 0..1 | SHOULD |  |  |  |  |
| HealthcareFacilityName | >>>>> | name | 1..1 | SHALL | EN |  |  |  |
| HealthcareFacilityAddress | >>>>> | addr | 1..1 | SHALL | AD |  |  |  |
|  | >>>> | serviceProviderOrganization | 0..1 | SHOULD |  |  |  |  |
| HealthcareProviderOrganizationName | >>>>> | name | 1..1 | SHALL | ON |  |  |  |
|  | >> | encounterParticipant | 0..\* | MAY |  |  |  |  |
|  | >>@ | @typeCode | 1..1 | SHALL |  |  | ATND |  |
|  | >>> | assignedEntity | 1..1 | SHALL |  |  |  |  |
|  | >>>> | assignedPerson | 1..1 | SHALL |  |  |  |  |
| AttendingPhysicianName | >>>>> | name | 1..1 | SHALL | EN |  |  |  |
|  |  | inFulfillmentOf | 1..\* | SHALL |  |  |  |  |
| **Order[\*]** | > | order | 1..1 | SHALL |  |  |  |  |
| **\*** | >@ | @ID | 1..1 | [COND](#multiOrder) | XML ID |  |  |  |
|  | >> | id | 1..1 | SHALL | II |  |  |  |
| OrderAssigningAuthority | >>@ | @root | 1..1 | SHALL | UID |  | *Order Placer Identifier Sequence (0040,0026) > Universal Entity ID (0040,0032)* |  |
| OrderPlacerNumber | >>@ | @extension | 1..1 | SHALL | ST |  | *Placer Order Number/Imaging Service Request (0040,2016)* |  |
|  | >> | ps3‑20:accessionNumber | 1..1 | SHALL | II |  |  |  |
| AccessionAssigningAuthority | >>@ | @root | 1..1 | SHALL | UID |  | *Issuer of Accession Number Sequence (0008,0051) > Universal Entity ID (0040,0032)* |  |
| AccessionNumber | >>@ | @extension | 1..1 | SHALL | ST |  | *Accession Number (0008,0050)* |  |
| OrderedProcedureCode | >> | code | 0..1 | SHOULD | CE |  | *Requested Procedure Code Sequence (0032,1064)* |  |
| OrderPriority | >> | priorityCode | 0..1 | SHOULD | CE |  | **ValueSet** [ActPriority](#_ActPriority_Value_Set) 2.16.840.1.113883.11.16866 |  |
|  |  | documentationOf | 1..\* | SHALL |  |  |  |  |
| **Study[\*]** | > | serviceEvent | 1..1 | SHALL |  |  |  |  |
| **\*** | >@ | @ID | 1..1 | [COND](#multiStudy) | XML ID |  |  |  |
| StudyUID | >> | id | 1..1 | SHALL | II |  | *Study Instance UID* *(0020,000D)* |  |
| ProcedureCode | >> | code | 1..1 | SHALL | CE |  | *Procedure Code Sequence (0008,1032)* |  |
| Modality | >>> | translation | 1..\* | SHALL | CD | SHALL CNE | *Modality (0008,0060)* |  |
| AnatomicRegionCode | >>> | translation | 0..1 | SHOULD | CD |  | **ConceptDomain** AnatomicRegion |  |
|  | >> | effectiveTime | 1..1 | SHALL | IVL <TS> |  |  |  |
| StudyTime | >>> | low | 1..1 | SHALL | TS |  | *Study Date (0008,0020) + Study Time (0008,0030) +* *Timezone Offset From UTC (0008,0201)* |  |
| **Performer[\*]** | >> | performer | 0..\* | MAY |  |  |  |  |
| Type | >>@ | @typeCode | 1..1 | SHALL | CS | SHALL | **ValueSet** [x\_serviceEventPerformer](#_x_serviceEventPerformer_Value_Set) |  |
|  | >>> | assignedEntity | 1..1 | SHALL |  |  |  |  |
| **\*** | >>>@ | @ID | 1..1 | [COND](#multiPerf) | XML ID |  |  |  |
| ID | >>>> | id | 1..1 | SHALL | II |  |  |  |
|  | >>>> | assignedPerson | 1..1 | SHALL |  |  |  |  |
| Name | >>>>> | name | 1..1 | SHALL | PN |  |  |  |
|  |  | participant | 1..1 | SHALL |  |  |  |  |
|  | @ | @typeCode | 1..1 | SHALL | CS | SHALL | REF |  |
|  | > | assignedEntity | 1..1 | SHALL |  |  |  |  |
|  | >@ | @classCode | 1..1 | SHALL | CS | SHALL | PROV |  |
| ReferrerAddr | >> | addr | 0.\* | SHOULD | AD |  |  |  |
| ReferrerTel | >> | telecom | 0..\* | SHOULD | TEL |  |  |  |
|  | >> | associatedPerson | 1..1 | SHALL |  |  |  |  |
| ReferrerName | >>> | name | 1..1 | SHALL | PN |  | *Referring Physician's Name (0008,0090)* |  |
|  |  | dataEnterer | 0..1 | MAY |  |  |  |  |
|  | @ | @typeCode | 1..1 | SHALL | CS | SHALL | ENT |  |
|  | > | assignedEntity | 1..1 | SHALL |  |  |  |  |
| TranscriptionistID | >> | id | 0..1 | SHOULD | II |  |  |  |
|  | >> | assignedPerson | 0..1 | SHOULD |  |  |  |  |
| TranscriptionistName | >>> | name | 1..1 | SHALL | PN |  |  |  |

Note that there is no business name associated with this template. Rather, this template is an editorial convenience for template specification, and the Business Names for the elements of this template are logically part of the Business Name scope of the invoking template.

### componentOf/encompassingEncounter

The id element of the encompassingEncounter represents the identifier for the encounter. When the diagnostic imaging procedure is performed in the context of a hospital stay or an outpatient visit for which there is an Encounter Number, Visit Number, or Admission ID, equivalent to DICOM attribute (0038,0010), that number should be present as the ID of the encompassingEncounter.

The effectiveTime represents the time interval or point in time in which the encounter took place. The encompassing encounter might be that of the hospital or office visit in which the imaging procedure was performed. If the effective time is unknown, a nullFlavor attribute can be used.

Figure 19: componentOf example

<componentOf>

<encompassingEncounter>

<id extension="9937012" root="1.3.6.4.1.4.1.2835.12"/>

<effectiveTime value="20060828170821"/>

<encounterParticipant typeCode="ATND">

<assignedEntity>

<id extension="4" root="2.16.840.1.113883.19"/>

<code code="208M00000X" codeSystem="2.16.840.1.113883.6.101"

codeSystemName="NUCC"

displayName="Hospitalist"/>

<addr nullFlavor="NI"/>

<telecom nullFlavor="NI"/>

<assignedPerson>

<name>

<prefix>Dr.</prefix>

<given>Fay </given>

<family>Family</family>

</name>

</assignedPerson>

</assignedEntity>

</encounterParticipant>

</encompassingEncounter>

</componentOf>

### Physician of Record Participant

This encounterParticipant with typeCode="ATND" Attender is the attending physician and is usually different from the Physician Reading Study Performer defined in documentationOf/serviceEvent.

Figure 20: Physician of record participant example

<encounterParticipant typeCode="ATND">

<assignedEntity>

<id extension="44444444" root="2.16.840.1.113883.4.6"/>

<code code="208M00000X"

codeSystem="2.16.840.1.113883.6.101"

codeSystemName="NUCC"

displayName="Hospitalist"/>

<addr nullFlavor="NI"/>

<telecom nullFlavor="NI"/>

<assignedPerson>

<name>

<prefix>Dr.</prefix>

<given>Fay</given>

<family>Family</family>

</name>

</assignedPerson>

</assignedEntity>

</encounterParticipant>

### inFulfillmentOf/Order and @ID

An inFulfillmentOf element represents the Placer Order. There may be more than one inFulfillmentOf element in the case where a single report is fulfilling multiple orders. There SHALL be one inFulfillmentOf/order for each distinct Order associated with the report.

**COND:** If there are multiple order elements, each order element SHALL include an XML ID attribute (not to be confused with the id element of the act class) that serves as the business name discriminator associated with an instance of the element.

In each inFulfillmentOf/order there SHALL be one order/id for the Placer Order Number (0040,2016). There SHALL be one order/ps3-20:accessionNumber for the DICOM Accession Number (0008,0050) associated with the order. The ps3-20:accessionNumber SHALL be Data Type II; it SHALL have a UID root attribute identifying its assigning authority, and the DICOM Accession Number SHALL be in the extension attribute.

Figure 21: inFulfillmentOf example

<xs:schema ...

xmlns:ps3-20="urn:dicom-org:ps3-20"

...

</xs:schema>

<inFulfillmentOf>

<order>

<id extension="089-927851" root="2.16.840.1.113883.19.4.33"/>

<!-- {extension}= *Placer Order Number/Imaging Service Request (0040,2016)* {root}*=Order Placer Identifier Sequence (0040,0026) > Universal Entity ID (0040,0032)*->

<ps3-20:accessionNumber extension="10523475" root="2.16.840.1.113883.19.4.27" />

<!-- {extension}= *Accession Number (0008,0050)* {root}= *Issuer of Accession Number Sequence (0008,0051) > Universal Entity ID (0040,0032)*->

<code code="RPID24"

displayName="CT HEAD WITH IV CONTRAST"

codeSystem="2.16.840.1.113883.6.256"

codeSystemName="RadLex Playbook">

<!—Ordered Procedure Code is *Requested Procedure Code Sequence (0032,1064)/>*

</order>

</inFulfillmentOf>

### documentationOf/serviceEvent

Each documentationOf/serviceEvent indicates an imaging procedure that the provider describes and interprets in the content of the report. The main activity being described by this document is both the performance of the imaging procedure and the interpretation of the imaging procedure.

There may be more than one documentationOf/serviceEvent elements if the report is interpreting multiple DICOM Studies. There may also be multiple reports for a single DICOM Study.

**COND:** If there are multiple serviceEvent elements, each serviceEvent element SHALL include an XML ID attribute (not to be confused with the id element of the act class) that serves as the business name discriminator associated with an instance of the element.

The serviceEvent/id element contains the DICOM Study Instance UID.

The date and time of the imaging procedure is indicated in the serviceEvent/effectiveTime element; the date and time of the interpretation is in the clinicalDocument/effectiveTime.

#### code and translation

Within each documentationOf element, there is one serviceEvent element. The type of imaging procedure may be further described in the serviceEvent/code element. This guide makes no specific recommendations about the primary vocabulary to use for describing this event, identified as Procedure Code.

The serviceEvent/code/translation elements include codes representing the modality using DICOM (DCM) terminology, and target anatomic region (for which SNOMED terminology is recommended).

Notes: 1. These codes may be used as health information exchange search metadata in accordance with the IHE Radiology Technical Framework Cross-Enterprise Document Sharing for Imaging (XDS-I) Profile.

2. Binding of the Concept Domains ProcedureCode and AnatomicRegion to specific Value Sets may be done in a further profiling of the use of this Template.

Figure 22: documentationOf example

<documentationOf>

<serviceEvent classCode="ACT" moodCode="EVN">

<id root="1.2.840.113619.2.62.994044785528.114289542805"/>

<!-- study instance UID (0020,000D)-->

<!—code is DICOM (Performed) Procedure Code Seq (0008,1032) -->

<code code="71020"

displayName="Radiologic examination, chest, two views, frontal and lateral"

codeSystem="2.16.840.1.113883.6.12"

codeSystemName="CPT4">

<translation code="XR"

displayName="XR"

codeSystem="1.2.840.10008.2.16.4"

codeSystemName="DCM"/>

</code>

<!- translation code is Modality (0008,0060) --/>

<effectiveTime value="20060823222400+0800"/>

</serviceEvent>

</documentationOf>

#### Performer

The documentationOf/serviceEvent may include as a participant the physician reading the study, equivalent to DICOM attribute (0008,1060), and other healthcare professional participants in the procedure (e.g., the surgical performer in an interventional procedure).

**COND:** If there are multiple serviceEvent performers documented, each performer element SHALL include an XML ID attribute that serves as the business name discriminator associated with an instance of the element.

Note: In simple procedures, the physician reading the study is identified in the Author or LegalAuthenticator participation on the ClinicalDocument, and does not need to be reidentified in this element. The technologist performing the imaging may be identified in this element as a secondary performer, since the interpreting physician is the principal performer responsible for the service event.

Figure 23: Physician reading study performer example

<performer typeCode="PRF">

<assignedEntity>

<id extension="111111111" root="2.16.840.1.113883.4.6"/>

<code code="2085R0202X"

codeSystem="2.16.840.1.113883.6.101"

codeSystemName="NUCC"

displayName="Diagnostic Radiology"/>

<addr nullFlavor="NI"/>

<telecom nullFlavor="NI"/>

<assignedPerson>

<name>

<given>Christine</given>

<family>Cure</family>

<suffix>MD</suffix>

</name>

</assignedPerson>

</assignedEntity>

</performer>

Figure 24: participant example

<participant typeCode="REF">

<associatedEntity classCode="PROV">

<id nullFlavor="NI"/>

<addr nullFlavor="NI"/>

<telecom nullFlavor="NI"/>

<associatedPerson>

<name>

<given>Amanda</given>

<family>Assigned</family>

<suffix>MD</suffix>

</name>

</associatedPerson>

</associatedEntity>

</participant>

Figure 25: dataEnterer example

<dataEnterer>

<assignedEntity typeCode="ENT">

<id root="2.16.840.1.113883.19.5" extension="43252"/>

<addr>

<streetAddressLine>21 North Ave.</streetAddressLine>

<city>Burlington</city>

<state>MA</state>

<postalCode>02368</postalCode>

<country>US</country>

</addr>

<telecom use="WP" value="tel:(555)555-1003"/>

<assignedPerson>

<name>

<given>Henry</given>

<family>Seven</family>

</name>

</assignedPerson>

</assignedEntity>

</dataEnterer>

## Parent Document Header Elements

|  |  |
| --- | --- |
| **Template ID** | 1.2.840.10008.20.x4.x3 |
| **Name** | Parent Document Header Elements |
| **Effective Date** |  |
| **Version Label** | DICOM-*yyyymmdd* |
| **Status** | draft |
| **Description** | CDA Header Elements describing relationship to prior/parent documents |
| **Classification** | CDA Header Elements |
| **Relationships** | Invoked from all document level templates |
| **Context** | sibling node |
| **Open/Closed** | Open |
| **Revision History** | DICOM-*yyyymmdd*: Initial version |

| **Business Name** | **Nest Level** | **Element/ Attribute** | **Card** | **Elem/ Attr Conf** | **Data Type** | **Value Conf** | **Value** | **Subsidiary Template** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | relatedDocument | 0..1 | MAY |  |  |  |  |
|  | @ | @typecode | 1.1 | SHALL | CS | SHALL | RPLC |  |
|  | > | parentDocument | 1..1 | SHALL |  |  |  |  |
| ReplacedDocumentID | >> | id | 1..1 | SHALL | II |  |  |  |
| ReplacedDocumentSetID | >> | setId | 0..1 | MAY | II |  |  |  |
| ReplacedDocumentVersion | >> | versionNumber | 1..1 | [COND](#_parentDocument/setId_and_versionNum) | INT |  |  |  |
|  |  | relatedDocument | 0..1 | MAY |  |  |  |  |
|  | @ | @typecode | 1.1 | SHALL | CS | SHALL | XFRM |  |
|  | > | parentDocument | 1..1 | SHALL |  |  |  |  |
| TransformedDocumentID | >> | id | 1..1 | SHALL | II |  |  |  |

### relatedDocument

A document may have two types of parent document:

* A superseded version that the present document wholly replaces (typeCode = RPLC). Documents may go through stages of revision prior to being legally authenticated. Such early stages may be drafts from transcription, those created by residents, or other preliminary versions. Policies not covered by this specification may govern requirements for retention of such earlier versions. Except for forensic purposes, the latest version in a chain of revisions represents the complete and current report.
* A source document from which the present document is transformed (typeCode = XFRM). A document may be created by transformation from a DICOM Structured Report (SR) document (see Annex C).

The CDA document management vocabulary includes a typeCode APND (append) relationship to a parent document. This relationship type is not supported in this specification; rather, append is effected by creating a replacement document with an Addendum section.

### parentDocument/setId and versionNumber

**COND:** If and only if the setID element is present, the versionNumber element SHALL be present.

Figure 26: relatedDocument example

<!-- transformation of a DICOM SR -->

<relatedDocument typeCode="XFRM">

<parentDocument>

<id root="1.2.840.113619.2.62.994044785528.20060823.200608232232322.9"/>

<!-- SOP Instance UID (0008,0018) of SR sample document-->

</parentDocument>

</relatedDocument>

# Section-Level Templates

## General requirements for sections

### Section Text

|  |  |
| --- | --- |
| **Template ID** | 1.2.840.10008.20.x4.x0 |
| **Name** | Section Text |
| **Effective Date** | *(Date of Final Text adoption)* |
| **Version Label** | DICOM-*yyyymmdd* |
| **Status** | Draft *(will change to Active on Final Text adoption)* |
| **Description** | This template specifies the common set of narrative block markup that may be invoked in a CDA imaging report section. |
| **Classification** | CDA Element Set |
| **Relationships** | Invoked by all sections |
| **Context** |  |
| **Open/Closed** | Open |
| **Revision History** | DICOM-*yyyymmdd*: Initial version |

| **Business Name** | **Nest Level** | **Element/ Attribute** | **Card** | **Elem/ Attr Conf** | **Data Type** | **Value Conf** | **Value** | **Subsidiary Template** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Text |  | text | 1..1 | [COND](#textCOND) | ED |  |  |  |
| **Content[\*]** | > | content | 0..\* | MAY | ST |  |  |  |
| **\*** | >@ | @ID | 1..1 | SHALL | XML ID |  | [See [xml ID attribute](#_XML_ID_and)] |  |
| Style | >@ | @styleCode | 0..1 | MAY | XML NMTOKENS |  |  |  |
| IntRef[\*] | > | linkHtml | 0..\* | MAY | ST |  |  |  |
|  | >@ | @href | 1..1 | SHALL | ST (URL - XML IDREF) |  |  |  |
| **Graphic[\*]** | > | renderMultiMedia | 0..\* | MAY |  |  |  |  |
|  | >@ | @referencedObject | 1..1 | SHALL | XML IDREF |  |  |  |
| Caption | >> | caption | 0..1 | MAY | ST |  |  |  |
| **ExtRef[\*]** | > | linkHtml | 0..\* | MAY | ST |  |  |  |
| URL | >@ | @href | 1..1 | SHALL | ST (URL) |  |  |  |
|  | >> | renderMultiMedia | 0..1 | MAY |  |  |  |  |
| ThumbRef | >>@ | @referencedObject | 1..1 | SHALL | XML IDREF |  |  |  |
| **Paragraph(\*)** | > | paragraph | 0..\* | MAY | ST |  |  |  |
| Caption | >> | caption | 0..1 | MAY | ST |  |  |  |
| **List(\*)** | > | list | 0..\* | MAY | ST |  |  |  |
| **\*** | >@ | @ID | 1..1 | SHALL | XML ID |  | [See [xml ID attribute](#_XML_ID_and)] |  |
| Ordered | >@ | @listType | 0..1 | MAY | XML NMTOKENS | SHALL | ordered |  |
| Caption | >> | caption | 0..1 | MAY | ST |  |  |  |
| Item(\*) | >> | item | 1..\* | SHALL | ST |  |  |  |
| \* | >>@ | @ID | 1..1 | SHALL | XML ID |  | [See [xml ID attribute](#_XML_ID_and)] |  |
| **Table(\*)** | > | table | 1..1 | SHALL |  |  |  |  |
| **\*** | >@ | @ID | 1..1 | SHALL | XML ID |  | [See [xml ID attribute](#_XML_ID_and)] |  |
| Caption | >> | caption | 0..1 | MAY | ST |  |  |  |
|  | >> | Tr | 1..1 | SHALL |  |  |  |  |
|  | >>@ | @styleCode | 1..1 | SHALL | CS | SHALL | Bold |  |
| ColumnHead(\*) | >>> | Th | 1..\* | SHALL | ST |  |  |  |
| **Row[\*]** | >> | Tr | 1..\* | SHALL |  |  |  |  |
| **\*** | >>@ | @ID | 1..1 | SHALL | XML ID |  |  |  |
| Cell(\*) | >>> | Td | 1..1 | SHALL | ST |  |  |  |

The text element within the section stores the narrative to be rendered, as described in the CDA R2 specification, and is referred to as the CDA narrative block.

**COND:** The text element SHALL be present if the section content is not completely represented by subsections.

As noted in the CDA R2 specification, the document originator is responsible for ensuring that the narrative block contains the complete, human readable, attested content of the section. Structured entries support computer processing and computation, and are not a replacement for the attestable, human-readable content of the CDA narrative block.

Additional specification information for the CDA narrative block can be found in the CDA R2 specification in sections 1.2.1, 1.2.3, 1.3, 1.3.1, 1.3.2, 4.3.4.2, and 6.

The narrative block allows a variety of markup. The markup that implements various types of internal and external linkage is shown in the table, and is included in the conformance specifications for each section narrative block that invokes this template. The markup elements may occur in any order and at any point within the narrative block text as allowed by the CDA R2 specification.

#### <content> markup and links from entries

The CDA narrative block may contain the <content> markup element to wrap a block of text so that it can be explicitly identified using its XML ID attribute, and referenced from elsewhere in the document. Specifically, structured entries may link to their equivalent narrative rendering in a content block using the XML ID (see CDA R2 Specification, section 4.3.5.1).

Additionally, a content block may include a styleCode attribute to suggest rendering (see CDA R2 Specification, section 4.3.5.11). For example, Bold could also be used to highlight actionable findings in the text of the Findings and/or Impression sections.

#### <linkHtml> markup and internal references

The CDA narrative block MAY contain the <linkHtml> markup to provide a link between narrative text in one section and a content block in another section (see CDA R2 specification section 4.3.5.2). The XML ID of the target content block is used in the linkHtml href attribute, with a prefixed ‘#’ to indicate the reference is in the current document.

For example, a linkHtml reference could be used to link an actionable finding in the Impression section to the specific, detailed measurement evidencing a problem that was identified in the text of the Findings section.

#### <renderMultiMedia> markup and graphical content

The CDA narrative block MAY contain the <renderMultiMedia> markup element to include graphical content, e.g., a coronary tree diagram or myocardial wall motion "bulls-eye chart". The renderMultiMedia element SHALL link to an observationMedia structured entry using the XML ID of that entry (see CDA R2 Specification, section 4.3.5.6).

#### <linkHtml> markup and external references

The CDA narrative block MAY contain the <linkHtml> markup to provide a link between narrative text and an external (non-attested) resource (see CDA R2 specification section 4.3.5.2).

Note: For radiology reports, this capability may be used to tag concepts in the narrative block to concepts defined in the RadLex terminology (<http://www.radlex.org>), developed by the Radiological Society of North America. The RadLex coded vocabulary is a useful tool for indexing report content for data mining purposes. It is not intended to be a complete grammar for expression of clinical statements, but rather a lexicon for tagging concepts of interest.

Within the report section narrative blocks, RadLex codes may be included using the <linkHtml> element and a URI pointing to the RadLex resource. <linkHtml> elements may be embedded in the text at the location of the concept (within the scope of a content tag), or may be provided in a list at the end of the narrative block.

Figure 27: Example – linkHtml references at point of use for RadLex

<section> ... <text> ...  
 <content>There is focal opacity<linkHtml href=http://www.radlex.org/RID/RID28530 /> at the right lung<linkHtml href=http://www.radlex.org/RID/RID1302 /> base most likely representing right lower lobe atelectasis<linkHtml href=http://www.radlex.org/RID/RID28493 />.  
 </content>  
 <content>The mediastinum ...</content>

</text> ... </section>

Figure 28: Example– linkHtml references at end of narrative block for RadLex

<section>

<title>Findings</title>

<text>

<content>Pleura normal... </content>

<linkHtml href=http://www.radlex.org/RID/RID1362 />

</text>

</section>

#### <linkHtml> markup and image references

The text elements (and their children) MAY contain Web Access to DICOM Persistent Object (WADO) references to DICOM objects by including a linkHtml element where @href is a valid WADO URL. The text content of linkHtml MAY be either the visible text of the hyperlink, or a descriptor or identifier of the image. The text content of linkHtml MAY include a <renderMultiMedia> markup element to specify a (limited resolution) copy of the image to be rendered in the narrative (e.g., a thumbnail); the renderMultiMedia element SHALL link to an observationMedia structured entry using the XML ID of that entry.

Figure 29: Example linkHtml reference for WADO image access

<text>

...

<paragraph>

<caption>Source of Measurement</caption>

<linkHtml href="http://www.example.org/wado?requestType=WADO&amp;studyUID=1.2.840.113619.2.62.994044785528.114289542805&amp;seriesUID=1.2.840.113619.2.62.994044785528.20060823223142485051&amp;objectUID=1.2.840.113619.2.62.994044785528.20060823.200608232232322.3&amp;contentType=application/dicom">Chest\_PA</linkHtml>

</paragraph>

...

</text>

#### list

This template specifies a structure and Business Names for list markup in the narrative text, as described in the CDA Specification section 4.3.5.8. Inclusion of the listType="ordered" attribute specifies a numbered list of items.

Each list is identified by an XML ID attribute, and each list item also is identified by an XML ID attribute.

The list items contain human readable displayable text using any of the narrative text structures permitted in section/text, including internal, external, or image references, or graphics. Processable structured data may be encoded in Coded Observation or Quantity Measurement entries in the *section*. Such observation entries SHOULD be linked to the corresponding item through the ID attribute of the item. (See [sections 10.1.3 and 10.5.2](#_text/reference_and_Related).)

#### table

This template specifies a structure and Business Names for table markup in the narrative text, as described in the CDA Specification section 4.3.5.9, typically used for a table of measurements. The table may be of arbitrary size.

Note: See Travis, A., et al., “Preferences for Structured Reporting of Measurement Data”, *JAcadRadiology* 21:6 DOI:10.1016/j.acra.2014.02.008

Each table is identified by an XML ID attribute, and each table row also is identified by an XML ID attribute.

The table cells contain human readable displayable text using any of the narrative text structures permitted in section/text, including internal, external, or image references, or graphics. Processable structured data may be encoded in Coded Observation or Quantity Measurement entries in the *section*. Such observation entries SHOULD be linked to the corresponding row through the ID attribute of the row. (See sections 10.1.3 and 10.5.2.)

Figure 30: Measurements Table example 1

A: As displayed

Cardiac Measurements

|  |  |  |
| --- | --- | --- |
| **Measurement name** | **Value** | **Flag** |
| Left ventricular ejection fraction | 40 % | **LOW** |
| Left ventricle end diastolic volume | 120 ml |  |
| Left ventricle end systolic volume | 72 ml |  |

B: As encoded in CDA instance

<text>

<table ID="T-C">

<caption>Cardiac Measurements</caption>

<tr styleCode="Bold">

<th>Measurement name</th>

<th>Value</th>

<th>Flag</th>

</tr>

<tr ID="Q1">

<td>Left ventricular ejection fraction</td>

<td>40 %</td>

<td styleCode="Bold">LOW</td>

</tr>

<tr ID="Q2">

<td>Left ventricle end diastolic volume</td>

<td>120 ml</td>

</tr>

<tr ID="Q3">

<td>Left ventricle end systolic volume</td>

<td>72 ml</td>

</tr>

</table>

</text>

<entry>

<observation classCode="OBS" moodCode="EVN" ID="Q1e">

<templateId root="2.16.840.1.113883.10.20.6.2.14"/>

<id root="1.2.840.10213.2.62.7044234.11652014"/>

<code code="10230-1" codeSystem="2.16.840.1.113883.6.1"

codeSystemName="LOINC" displayName="LVEF" />

<text><reference value="#Q1"/></text>

<statusCode code="completed"/>

<effectiveTime value="20140913223912"/>

<value xsi:type="PQ" unit="%">40</value>

<interpretationCode code="L" codeSystem="2.16.840.1.113883.6.83"

codeSystemName="ObservationInterpretation" displayName="Low" />

</observation>

</entry>

<entry>

<observation classCode="OBS" moodCode="EVN" ID="Q2e">

<templateId root="2.16.840.1.113883.10.20.6.2.14"/>

<id root="1.2.840.10213.2.62.7044234.11652014"/>

<code code="8821-1" codeSystem="2.16.840.1.113883.6.1"

codeSystemName="LOINC" displayName="LVEDV" />

<text><reference value="#Q2"/></text>

<statusCode code="completed"/>

<effectiveTime value="20140913223912"/>

<value xsi:type="PQ" unit="ml">120</value>

</observation>

</entry>

<entry>

<observation classCode="OBS" moodCode="EVN" ID="Q2e">

<templateId root="2.16.840.1.113883.10.20.6.2.14"/>

<id root="1.2.840.10213.2.62.7044234.11652014"/>

<code code="8823-7" codeSystem="2.16.840.1.113883.6.1"

codeSystemName="LOINC" displayName="LVESV" />

<text><reference value="#Q3"/></text>

<statusCode code="completed"/>

<effectiveTime value="20140913223912"/>

<value xsi:type="PQ" unit="ml">72</value>

</observation>

</entry>

Figure 31: Measurements Table example 2

A: As displayed

Table 2 - Current Lesion Sizes with Comparison to Exam on 2014/11/16

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Ref** | **Measurement name** | **Current Value** | **Prior Value** | **Image Reference** |
| L1 | Left periaortic lymph node size (mm) | 12 x 8 | 15 x 10 | Ser:3, Img:67 |
| L2 | Segment 2 left lobe lesion size (mm) | 6 x 8 | 10 x 9 | Ser:3, Img:79 |
| L3 | Left common iliac lymph node size (mm) | 12 x 3 | 16 x 5 | Ser:3, Img:139 |

B: As encoded in CDA instance

<text>

<table ID="Table2">

<caption>Table 2 - Current Lesion Sizes with Comparison to Exam on 2014/11/16</caption>

<tr styleCode="Bold">

<td>Ref</td>

<td>Measurement name</td>

<td>Current Value</td>

<td>Prior Value</td>

<td>Image Reference</td>

</tr>

<tr ID="lesRow1">

<td>L1</td>

<td>Left periaortic lymph node size (mm)</td>

<td>12 x 8</td>

<td>15 x 10</td>

<td><linkHtml href="http://wado.pacs.guh.org/..." >Ser:3, Img:67</linkHtml></td>

</tr>

...

</table>

</text>

### General Section Entries

|  |  |
| --- | --- |
| **Template ID** | 1.2.840.10008.20.x4.x4 |
| **Name** | General Section Entries |
| **Effective Date** | *(Date of Final Text adoption)* |
| **Version Label** | DICOM-*yyyymmdd* |
| **Status** | Draft *(will change to Active on Final Text adoption)* |
| **Description** | This template specifies the common set of structured entries that may be invoked in a CDA imaging report section, and an author participation for the section. |
| **Classification** | CDA Element Set |
| **Relationships** | Invoked by Findings section and its sub-sections, Clinical Information, and other sections |
| **Context** | sibling node |
| **Open/Closed** | open |
| **Revision History** | DICOM-*yyyymmdd*: Initial version |

| **Business Name** | **Nest Level** | **Element/ Attribute** | **Card** | **Elem/ Attr Conf** | **Data Type** | **Value Conf** | **Value** | **Subsidiary Template** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ContentTemplate |  | templateId | 0..1 | MAY | II |  |  |  |
|  |  | author | 0..\* | MAY |  |  |  |  |
|  | > | assignedAuthor | 1..1 | SHALL |  |  |  |  |
| AuthorID | >> | id | 1.\* | SHALL | II |  |  |  |
|  | >> | assignedPerson | 1..1 | [COND](#authorCOND) |  |  |  |  |
| AuthorName | >>> | name | 1..1 | SHALL | PN |  |  |  |
|  | >> | assignedAuthoringDevice | 1..1 | [COND](#authorCOND) |  |  |  |  |
| AuthorDeviceModel | >>> | manufacturerModelName | 0..1 | SHOULD | ST |  |  |  |
| AuthorSoftware | >>> | softwareName | 0..1 | SHOULD | ST |  |  |  |
|  | >> | representedOrganization | 0..1 | MAY |  |  |  |  |
| AuthorOrganization | >>> | name | 0..1 | SHOULD | ON |  |  |  |
|  |  | entry | 0..\* | MAY |  |  |  |  |
| *CodedObservation[\*]* | > | *observation* | 1..1 | SHALL |  |  |  | [Coded Observation](#_Code_Observations) 2.16.840.1.113883.10.20.6.2.13 |
|  |  | entry | 0..\* | MAY |  |  |  |  |
| *QuantityMeasurement[\*]* | > | *observation* | 1..1 | SHALL |  |  |  | [Quantity Measurement](#_Quantity_Measurement) 2.16.840.1.113883.10.20.6.2.14 |
|  |  | entry | 0..\* | MAY |  |  |  |  |
| *ObservationMedia[\*]* | > | *observationMedia* | 1..1 | SHALL |  |  |  | [Observation Media](#_observationMedia) 1.3.6.1.4.1.19376.1.4.1.4.7 |
|  |  | entry | 0..\* | MAY |  |  |  |  |
| *SOPInstance[\*]* | > | *observation* | 1..1 | SHALL |  |  |  | [SOP Instance Observation](#_Social_History_Observation) 1.2.840.10008.20.x3.x7 |
|  |  | entry | 0..\* | MAY |  |  |  |  |
|  | > | regionOfInterest | 0..0 | SHALL NOT |  |  |  |  |

Note that there is no business name associated with this template. Rather, this template is an editorial convenience for template specification, and the Business Names for the elements of this template are logically part of the Business Name scope of the invoking template.

Also, the ID of this template is not represented in a templateID element. Rather, the templateID of the invoking template implicitly includes the elements specified by this template.

#### templateID

This templateId may be used to identify the template(s) used to generate/constrain the content of the section. This is in addition to the templateId of the section level template, and typically represents clinical subspecialty requirements. See [Section 5.1.1](#_Template_IDs_and) on the structure and use of the templateId.

#### author

The author participation allows the recording of an author for a section, equivalent to the Observer Context TID 1002 defined in PS3.16. Either a person or a device may be identified as the author for a section or subsection.

**COND:** Either the assignedPerson or assignedAuthoringDevice element SHALL be present.

Figure 32: Author example

<author>

<assignedAuthor>

<id extension="121008" root="2.16.840.1.113883.19.5"/>

<assignedPerson>

<name>

<given>John</given>

<family>Blitz</family>

<suffix>MD</suffix>

</name>

</assignedPerson>

</assignedAuthor>

</author>

#### section/entry

A section may contain CDA entries that represent clinical statements in coded form (using the [Coded Observation](#_Code_Observations) template), numeric measurements (using the [Quantity Measurement](#_Quantity_Measurement) template), images to be be displayed in the narrative block (using the [Observation Media](#_observationMedia) template, and invoked from a [renderMultiMedia](#_<renderMultiMedia>_markup_and) element), or references to external images or annotated images (using the [SOP Instance Observation](#_Social_History_Observation) [\_Quantity\_Measurement](#_Quantity_Measurement)template).

These entries may appear in any order.

#### regionOfInterest

Section templates defined in this Implementation guide SHALL NOT use the CDA Region of Interest Overlay entry (classCode="ROIOVL"). If it is desired to show images with graphical annotations, the annotations SHOULD be encoded in DICOM Presentation State objects that reference the image. Report applications that display referenced images and annotation may retrieve a rendered image using a WADO reference in accordance with PS3.18, including the image and Presentation State, or other DICOM retrieval and rendering methods. This approach avoids the risks of errors in registering a CDA region of interest annotation with DICOM images, and places all image rendering within the scope of the DICOM Standard, including the full range of 2D and 3D presentations defined in DICOM.

## Clinical Information

|  |  |
| --- | --- |
| **Template ID** | 1.2.840.10008.20.x2.x1 |
| **Name** | Clinical Information |
| **Effective Date** | *(Date of Final Text adoption)* |
| **Version Label** | DICOM-*yyyymmdd* |
| **Status** | Draft *(will change to Active on Final Text adoption)* |
| **Description** | Clinical details about the case such as presenting signs and symptoms, past clinical history, the overall condition of the patient, etc. |
| **Classification** | CDA Section Level |
| **Relationships** | Invoked by [Imaging Report](#_Imaging_Report) Document Level Template |
| **Context** |  |
| **Open/Closed** | Open |
| **Revision History** | DICOM-*yyyymmdd*: Initial version |

| **Business Name** | **Nest Level** | **Element/ Attribute** | **Card** | **Elem/ Attr Conf** | **Data Type** | **Value Conf** | **Value** | **Subsidiary Template** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ClinicalInformation** |  | section | 1..1 | SHALL |  |  |  |  |
|  | > | templateId | 1..1 | SHALL | II |  |  |  |
|  | >@ | @root | 1..1 | SHALL | UID | SHALL | 1.2.840.10008.20.x2.x1 |  |
|  | > | id | 1..1 | SHALL | II |  |  |  |
|  | > | code | 1..1 | SHALL | CD | SHALL | (55752-0, LOINC, "Clinical Information") |  |
| Title | > | title | 1..1 | SHALL | ST |  |  |  |
| *Text* | *>* | *text* | 1..1 | [COND](#textCOND) | ED |  |  | [Section Text](#_section/text_1) 1.2.840.10008.20.x4.x0 |
|  | > | component | 0..1 | MAY |  |  |  |  |
| *Request* | >> | *section* | 1..1 | SHALL |  |  |  | [Request](#_Request_1) 1.2.840.10008.20.x2.x6 |
|  | > | component | 0..1 | MAY |  |  |  |  |
| *ProcedureIndications* | >> | *section* | 1..1 | SHALL |  |  |  | [Procedure Indications](#_Procedure_Indications_1) 1.2.840.10008.20.x2.x12 |
|  | > | component | 0..1 | MAY |  |  |  |  |
| *History* | >> | *section* | 1..1 | SHALL |  |  |  | [Medical (General) History](#_Adverse_Events) 2.16.840.1.113883.10.20.22.2.39 |
|  | > |  | 0..1 | MAY |  |  |  | [General Section Entries](#_General_Section_Entries) 1.2.840.10008.20.x4.x4 |

Figure 33: Clinical Information section example

<section classCode="DOCSECT" moodCode="EVN">

<templateId root="1.2.840.10008.20.x2.x1" />

<id root="1.2.840.10213.2.62.994044785528.114289542805"/>

<code code="55752-0" codeSystem="2.16.840.1.113883.6.1"

codeSystemName="LOINC" displayName="Clinical Information" />

<title>Clinical Information</title>

<text>The patient was referred for evaluation of suspected pulmonary embolism. </text>

<!---see examples for other sections/entries - />

</section>

## Imaging Procedure Description

|  |  |
| --- | --- |
| **Template ID** | 1.2.840.10008.20.x2.x2 |
| **Name** | Imaging Procedure Description |
| **Effective Date** | *(Date of Final Text adoption)* |
| **Version Label** | DICOM-*yyyymmdd* |
| **Status** | Draft *(will change to Active on Final Text adoption)* |
| **Description** | The Imaging Procedure Description section records the technical details of the procedure and may include information about protocol, imaging device, contrast, radiation dose, medications administered (sedation, stress agents), etc. |
| **Classification** | CDA Section Level |
| **Relationships** | Invoked by [Imaging Report](#_Imaging_Report) Document Level Template |
| **Context** |  |
| **Open/Closed** | Open |
| **Revision History** | DICOM-*yyyymmdd*: Initial version |

| **Business Name** | **Nest Level** | **Element/ Attribute** | **Card** | **Elem/ Attr Conf** | **Data Type** | **Value Conf** | **Value** | **Subsidiary Template** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ProcedureDescription** |  | section | 1..1 | SHALL |  |  |  |  |
|  | > | templateId | 1..1 | SHALL | II |  |  |  |
|  | >@ | @root | 1..1 | SHALL | UID | SHALL | 1.2.840.10008.20.x2.x2 |  |
|  | > | id | 1..1 | SHALL | II |  |  |  |
|  | > | code | 1..1 | SHALL | CD | SHALL | (55111-9, LOINC, "Current Imaging Procedure Description") |  |
| Title | > | title | 1..1 | SHALL | ST |  |  |  |
| *Text* | *>* | *text* | 1..1 | [COND](#textCOND) | ED |  |  | [Section Text](#_section/text_1) 1.2.840.10008.20.x4.x0 |
|  | > | entry | 1..1 | SHALL |  |  |  |  |
| *ProcedureTechnique* | >> | *procedure* | 1..1 | SHALL |  |  |  | [Procedure Technique](#_Procedure_Technique) 1.2.840.10008.20.x3.x2 |
|  | > | entry | 0..\* | MAY |  |  |  |  |
| *ProceduralMedication[\*]* | >> | *substanceAdministration* | 1..1 | SHALL |  |  |  | [Procedural Medication](#_Procedural_Medication) 1.2.840.10008.20.x3.x1 |
|  | > | component | 0..1 | MAY |  |  |  |  |
| *Complications* | >> | *section* | 1..1 | SHALL |  |  |  | [Complications Section](#_Complications_Section) 2.16.840.1.113883.10.20.22.2.37 |
|  | > | component | 0..1 | [COND](#_component/section_Radiation_Exposur) |  |  |  |  |
| *RadiationExposure* | >> | *section* | 1..1 | SHALL |  |  |  | [Radiation Exposure and Protection Information](#_Radiation_Exposure_and_1) 1.2.840.10008.20.x2.x7 |
|  | > | component | 1..1 | SHALL |  |  |  |  |
| *DICOMObjectCatalog* | >> | *section* | 1..1 | SHALL |  |  |  | [DICOM Object Catalog Section](#_DICOM_Object_Catalog_6) 2.16.840.1.113883.10.20.6.1.1 |
|  | > | entry | 0..1 | MAY |  |  |  |  |
| *ImageQuality* | >> | *observation* | 1..1 | SHALL |  |  |  | [Image Quality](#_Image_Quality) 1.2.840.10008.20.x3.x4 |

### component/section Radiation Exposure and Protection Information

**COND:** If the documented service utilizes ionizing radiation, a Radiation Exposure and Protection Information Section MAY be present.

Figure 34: Current Imaging Procedure description section example

<section classCode="DOCSECT" moodCode="EVN">

<templateId root="1.2.840.10008.20.x2.x2" />

<id root="1.2.840.10213.2.62.9940434234785528.11428954534542805"/>

<code code="55111-9" codeSystem="2.16.840.1.113883.6.1"

codeSystemName="LOINC" displayName="Current Imaging Procedure Description" />

<title>Imaging Procedure Description</title>

<text>A CT study was acquired with 2.5 mm images of the abdomen and pelvis with 140 mL of... </text>

<! -- See Procedure Technique template example – required here />

<! –- See DICOM Imaging Catalogue template example – required here />

<! ---see examples for other sections/entries />

</section>

## Comparison Study

|  |  |
| --- | --- |
| **TemplateID** | 1.2.840.10008.20.x2.x3 |
| **Name** | Comparison Study |
| **Effective Date** | *(Date of Final Text adoption)* |
| **Version Label** | DICOM-*yyyymmdd* |
| **Status** | Draft *(will change to Active on Final Text adoption)* |
| **Description** | Documentation of a prior Imaging Procedure to which the current images were compared |
| **Classification** | CDA Section Level |
| **Relationships** | Invoked by [Imaging Report](#_Imaging_Report) Document Level Template |
| **Context** |  |
| **Open/Closed** | Open |
| **Revision History** | DICOM-*yyyymmdd*: Initial version |

| **Business Name** | **Nest Level** | **Element/ Attribute** | **Card** | **Elem/ Attr Conf** | **Data Type** | **Value Conf** | **Value** | **Subsidiary Template** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ComparisonStudy** |  | section | 1..1 | SHALL |  |  |  |  |
|  | > | templateId | 1..1 | SHALL | II |  |  |  |
|  | >@ | @root | 1..1 | SHALL | UID | SHALL | 1.2.840.10008.20.x2.x3 |  |
|  | > | id | 1..\* | SHALL | II |  |  |  |
|  | > | code | 1..1 | SHALL | CD | SHALL | (18834-2, LOINC, "Radiology Comparison study") |  |
| Title | > | title | 1..1 | SHALL | ST |  |  |  |
| *Text* | *>* | *text* | 1..1 | [COND](#textCOND) | ED |  |  | [Section Text](#_section/text_1) 1.2.840.10008.20.x4.x0 |
|  | > | entry | 0..\* | MAY |  |  |  |  |
| *ProcedureTechnique* | >> | *procedure* | 1..1 | SHALL |  |  |  | [Procedure Technique](#_Procedure_Technique) 1.2.840.10008.20.x3.x2 |
|  | > | entry | 0..\* | MAY |  |  |  |  |
| *Study[\*]* | >> | *act* | 1..1 | SHALL |  |  |  | [Study Act](#_Study_Act) 1.2.840.10008.20.x3.x5 |
|  | > |  | 0..1 | MAY |  |  |  | [[General Section Entries](#_General_Section_Entries)](#_General_Section_Participations,) 1.2.840.10008.20.x4.x4 |

Figure 35: Comparison study section example

<section classCode="DOCSECT" moodCode="EVN">

<templateId root="1.2.840.10008.20.x2.x3" />

<id root="1.2.840.10213.2.62.994056444785528.1142893564536542805"/>

<code code="18834-2" codeSystem="2.16.840.1.113883.6.1"

codeSystemName="LOINC" displayName="Radiology Comparison Study" />

<title>Comparison Study</title>

<text>A prior CT with contrast performed on May 7, 2012, showed that...

</text>

<! ---see examples for other sections/entries />

</section>

## Findings

|  |  |
| --- | --- |
| **Template ID** | 2.16.840.1.113883.10.20.6.1.2 |
| **Name** | Findings |
| **Effective Date** | *(Date of Final Text adoption)* |
| **Version Label** | DICOM-*yyyymmdd* |
| **Status** | Draft *(will change to Active on Final Text adoption)* |
| **Description** | Records clinically significant observations confirmed or discovered during the procedure. |
| **Classification** | CDA Section Level |
| **Relationships** | Invoked by [Imaging Report](#_Imaging_Report) Document Level Template |
| **Context** |  |
| **Open/Closed** | Open |
| **Revision History** | From Consolidated CDA r1.1  DICOM-*yyyymmdd*: Added optional subsections and entries |

| **Business Name** | **Nest Level** | **Element/ Attribute** | **Card** | **Elem/ Attr Conf** | **Data Type** | **Value Conf** | **Value** | **Subsidiary Template** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Findings** |  | section |  |  |  |  |  |  |
|  | > | templateId | 1..1 | SHALL | II |  |  |  |
|  | >@ | @root | 1..1 | SHALL | UID | SHALL | 2.16.840.1.113883.10.20.6.1.2 |  |
|  | > | id | 1..\* | SHALL | II |  |  |  |
|  | > | code | 1..1 | SHALL | CD | SHALL | (59776-5, LOINC, "Procedure Findings") |  |
| Title | > | title | 1..1 | SHALL | ST |  |  |  |
| *Text* | *>* | *text* | 1..1 | [COND](#textCOND) | ED |  |  | [Section Text](#_section/text_1) 1.2.840.10008.20.x4.x0 |
|  | > | component | 0..\* | MAY |  |  |  |  |
| *FetusFindings[\*]* | >> | *section* | 1..1 | SHALL |  |  |  | [Fetus Findings](#_OBUS_Fetus_Findings) 1.2.840.10008.20.x2.x8 |
|  | > | component | 0..\* | MAY |  |  |  |  |
| *Subsection[\*]* | >> | *section* | 1..1 | SHALL |  |  |  | [Labeled Subsection](#_Labeled_Subsection) 1.2.840.10008.20.x2.x9 |
|  | > |  | 0..1 | MAY |  |  |  | [[General Section Entries](#_General_Section_Entries)](#_General_Section_Participations,) 1.2.840.10008.20.x4.x4 |

### text

If entries are present, the section/text SHALL represent faithfully all such statements and MAY contain additional text.

The narrative text associated with an actionable finding SHOULD be highlighted using styleCode Bold. See [Section 9.1.1.1](#_Complications_Section_55109-3).

Actionable findings that require a specific follow-up action or procedure SHOULD be referenced from a recommendation in the [Recommendation](#_Recommendation) section.

Communication of actionable findings SHOULD be documented in the [Communication of Actionable Findings](#_Communication_of_Actionable) section.

Figure 36: Findings section example

<section classCode="DOCSECT" moodCode="EVN">

<templateId root="2.16.840.1.113883.10.20.6.1.2"/>

<id root="1.2.840.10213.2.62.941494044785528.114289542452452805"/>

<code code="59776-5" codeSystem="2.16.840.1.113883.6.1"

codeSystemName="LOINC" displayName="Procedure Findings"/>

<title>Findings</title>

<text>

<paragraph><caption>Finding</caption>

<content ID="Fndng2">The cardiomediastinum is... </content>

</paragraph>

<paragraph><caption>Diameter</caption>

<content ID="Diam2">45mm</content>

</paragraph>

...

</text>

<entry>

<templateId root="2.16.840.1.113883.10.20.6.2.12"/>

...

</entry>

<! —- see examples for other sections/entries - />

</section>

## Impression

|  |  |
| --- | --- |
| **Template ID** | 1.2.840.10008.20.x2.x4 |
| **Name** | Impression |
| **Effective Date** | *(Date of Final Text adoption)* |
| **Version Label** | DICOM-*yyyymmdd* |
| **Status** | Draft *(will change to Active on Final Text adoption)* |
| **Description** | The most important diagnoses or other clinical conclusions that can be made from the imaging observations and other clinical information are recorded here. This section may include recommendations for additional imaging tests or other actions, as well as global assessments, such as BI-RADS Categories or the equivalent. |
| **Classification** | CDA Section Level |
| **Relationships** | Invoked by [Imaging Report](#_Imaging_Report) Document Level Template |
| **Context** |  |
| **Open/Closed** | Open |
| **Revision History** | DICOM-*yyyymmdd*: Initial version |

| **Business Name** | **Nest Level** | **Element/ Attribute** | **Card** | **Elem/ Attr Conf** | **Data Type** | **Value Conf** | **Value** | **Subsidiary Template** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Impression** |  | section | 1..1 | SHALL |  |  |  |  |
|  | > | templateId | 1..1 | SHALL | II |  |  |  |
|  | >@ | @root | 1..1 | SHALL | UID | SHALL | 1.2.840.10008.20.x2.x4 |  |
|  | > | id | 1..\* | SHALL | II |  |  |  |
|  | > | code | 1..1 | SHALL | CD | SHALL | (19005-8, LOINC, "Impressions") |  |
| Title | > | title | 1..1 | SHALL | ST |  |  |  |
| *Text* | *>* | *text* | 1..1 | COND | ED |  |  | [Section Text](#_section/text_1) 1.2.840.10008.20.x4.x0 |
|  | > | component | 0..1 | MAY |  |  |  |  |
| *CommunicationOfActionableFindings* | >> | *section* | 1..1 | SHALL |  |  |  | [Communication of Actionable Findings](#_Communication_of_Actionable_1) 1.2.840.10008.20.x2.x10 |
|  | > | component | 0..1 | MAY |  |  |  |  |
| *KeyImages* | >> | *section* | 1..1 | SHALL |  |  |  | [Key Images](#_Key_Images_1) 1.3.6.1.4.1.19376.1.4.1.2.14 |
|  | > | component | 0..\* | MAY |  |  |  |  |
| *Recommendation* | >> | *section* | 1..1 | SHALL |  |  |  | [Recommendation](#_Radiology_Recommendation_1) 1.2.840.10008.20.x2.x11 |
|  | > | entry | 0..\* | MAY |  |  |  |  |
| *CodedObservation* | >> | *observation* | 1..1 | SHALL | CD |  |  | [Coded Observation](#_Coded_Observation_1) 2.16.840.1.113883.10.20.6.2.13 |

Figure 37: Impression section example

<section classCode="DOCSECT" moodCode="EVN">

<templateId root="2.16.840.1.113883.10.20.22.2.27" />

<id root="1.2.840.10213.2.62.994948294044785528.11422458954285205"/>

<code code="19005-8"

codeSystem="2.16.840.1.113883.6.1"

codeSystemName="LOINC"

displayName="Impressions" />

<title>Impression</title>

<text>This exam identified… </text>

<!--- other sections and entries here ---/>

</section>

## Addendum

|  |  |
| --- | --- |
| **Template ID** | 1.2.840.10008.20.x2.x5 |
| **Name** | Addendum |
| **Effective Date** | *(Date of Final Text adoption)* |
| **Version Label** | DICOM-*yyyymmdd* |
| **Status** | Draft *(will change to Active on Final Text adoption)* |
| **Description** | Addendum section for imaging report includes supplemental information added to the original document contents.. |
| **Classification** | CDA Section Level |
| **Relationships** | Invoked by [Imaging Report](#_Imaging_Report) Document Level Template |
| **Context** |  |
| **Open/Closed** | Open |
| **Revision History** | DICOM-*yyyymmdd*: Initial version |

| **Business Name** | **Nest Level** | **Element/ Attribute** | **Card** | **Elem/ Attr Conf** | **Data Type** | **Value Conf** | **Value** | **Subsidiary Template** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Addendum[\*]** |  | section | 1..1 | SHALL |  |  |  |  |
| **\*** | @ | @ID | 1..1 | [SHALL](#_section/@ID) | XML ID |  | [See [xml ID attribute](#_XML_ID_and)] |  |
|  | > | templateId | 1..1 | SHALL | II |  |  |  |
|  | >@ | @root | 1..1 | SHALL | UID | SHALL | 1.2.840.10008.20.x2.x5 |  |
|  | > | id | 1..\* | SHALL | II |  |  |  |
|  | > | code | 1..1 | SHALL | CD | SHALL | (55107-7 LOINC, "Addendum") |  |
| Title | > | title | 1..1 | SHALL | ST |  |  |  |
| *Text* | *>* | *text* | 1..1 | [COND](#textCOND) | ED |  |  | [Section Text](#_section/text_1) 1.2.840.10008.20.x4.x0 |
|  | > | author | 1..1 | [SHALL](#_author) |  |  |  |  |
| Time | >> | time | 1..1 | SHALL | TS |  |  |  |
|  | >> | assignedAuthor | 1..1 | SHALL |  |  |  |  |
| AuthorID | >>> | id | 1..\* | SHALL | II |  |  |  |
|  | >>>> | assignedPerson | 1..1 | SHALL |  |  |  |  |
| AuthorName | >>>>> | name | 1..1 | SHALL | PN |  |  |  |
|  | > | component | 0..1 | MAY |  |  |  |  |
| *CommunicationOfActionableFindings* | >> | *section* | 1..1 | SHALL |  |  |  | [Communication of Actionable Findings](#_Communication_of_Actionable_1) 1.2.840.10008.20.x2.x10 |
|  | > |  | 0..1 | MAY |  |  |  | [[General Section Entries](#_General_Section_Entries)](#_General_Section_Participations,) 1.2.840.10008.20.x4.x4 |

### section/@ID

The Addendum section SHALL include an XML ID attribute (not to be confused with the **id** element of the act class) that serves as the business name discriminator associated with an instantiation of the template. Even if only one Addendum section is intantiated, the ID attribute shall be present.

### author

Note that the Author identified in the document header is the author of the original report, as that participation sets the default authoring context for the report. The Author participation in this section shall be present, and identifies the author of the addendum, even if the same as the author of the original report.

### component/section - Communication of Actionable Findings

It is possible for an imaging report to be legally signed (authenticated) prior to the Actionable Findings being properly communicated. In this event, an addendum to the imaging report is often created to document the communication of the actionable findings. This can be included in the text of the Addendum or as a coded element using the Communication of Actionable Findings section.

Figure 38: Addendum section example

<section classCode="DOCSECT" moodCode="EVN" ID="Adndm" >

<templateId root="1.2.840.10008.20.x2.x5"/>

<id root="1.2.840.10213.2.62.7906994044785528.1142895428068506"/>

<code code="55107-7" codeSystem="2.16.840.1.113883.6.1"

codeSystemName="LOINC" displayName=" Addendum"/>

<title> Addendum </title>

<text> The supplemental information added to the original document...</text>

<author>

<time value="20140605143000+0500"/>

<assignedAuthor>

<id extension="23454345" root="2.16.840.1.113883.19.5"/>

<assignedPerson>

<name><given>Henry</given> <family>Radiologist</family> </name>

</assignedPerson>

</assignedAuthor>

</author>

</section>

## Sub-sections

### Request

|  |  |
| --- | --- |
| **Template ID** | 1.2.840.10008.20.x2.x6 |
| **Name** | Request |
| **Effective Date** | *(Date of Final Text adoption)* |
| **Version Label** | DICOM-*yyyymmdd* |
| **Status** | Draft *(will change to Active on Final Text adoption)* |
| **Description** | Information about the requested imaging studies and associated tests. It may include information on the reason for the request, and on any validation of the request by clinical decision support against relevant appropriateness criteria. |
| **Classification** | CDA Section Level |
| **Relationships** | Invoked by [Clinical Information](#_Clinical_Information_1) Section Level template |
| **Context** |  |
| **Open/Closed** | Open |
| **Revision History** | DICOM-*yyyymmdd*: Initial version |

| **Business Name** | **Nest Level** | **Element/ Attribute** | **Card** | **Elem/ Attr Conf** | **Data Type** | **Value Conf** | **Value** | **Subsidiary Template** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Request** |  | section | 1..1 | SHALL |  |  |  |  |
|  | > | templateId | 1..1 | SHALL | II |  |  |  |
|  | >@ | @root | 1..1 | SHALL | UID | SHALL | 1.2.840.10008.20.x2.x6 |  |
|  | > | id | 1..\* | SHALL | II |  |  |  |
|  | > | code | 1..1 | SHALL | CD | SHALL | (55115-0, LOINC, "Request") |  |
| Title | > | title | 1..1 | SHALL | ST |  |  |  |
| *Text* | *>* | *text* | 1..1 | [COND](#textCOND) | ED |  |  | [Section Text](#_section/text_1) 1.2.840.10008.20.x4.x0 |
| CDSRecordText[\*] | >> | content | 0..\* | MAY | ST |  |  |  |
| \* | >>@ | @ID | 1..1 | SHALL | XML ID |  |  |  |
|  | > | entry | 0..\* | MAY |  |  |  |  |
| **CDSRecordEntry[\*]** | >> | observation | 1..1 | SHALL |  |  |  |  |
|  | >>@ | @classCode | 1..1 | SHALL | CS | SHALL | OBS |  |
|  | >>@ | @moodCode | 1..1 | SHALL |  | SHALL | EVN |  |
| TrackingID | >>> | id | 1..1 | SHALL | II |  |  |  |
|  | >>> | code | 1..1 | SHALL | CD | SHALL | (99SUP155-9, DCM, “Procedure Appropriate to Indication”) |  |
| CDSDecision | >>> | value | 1..1 | SHALL | CD | SHALL | **ValueSet** [LOINC Y/N/NA](#_LOINC_Y/N/NA) |  |
|  | >>>@ | @xsi:type | 1..1 | SHALL | ST | SHALL | CD |  |
|  | >>> | statusCode | 1..1 | SHALL | CS | SHALL | COMPLETED |  |
| CDSDecisionTime | >>> | effectiveTime | 0..1 | SHOULD | TS |  |  |  |
| CDSDecisionCriteria | >>> | methodCode | 0..1 | MAY | CD |  | **ConceptDomain** AppropriateUseCriteria |  |
|  | >>> | text | 0..1 | SHOULD | ED |  |  |  |
| Ref | >>>> | reference | 1..1 | SHALL | URL (XML IDREF) |  | #*contentRef* |  |
|  | >>> | author | 1..1 | SHALL |  |  |  |  |
|  | >>>> | assignedAuthor | 1..1 | SHALL |  |  |  |  |
| CDSServiceID | >>>>> | id | 1..1 | SHALL | II |  |  |  |
|  | >>>>>> | assignedAuthoringDevice | 0..1 | MAY |  |  |  |  |
| CDSServiceName | >>>>>>> | softwareName | 1..1 | SHALL | ST |  |  |  |
|  | >>> | participant | 1..1 | SHALL |  |  |  |  |
|  | >>>@ | @typeCode | 1..1 | SHALL | CS | SHALL | REF |  |
|  | >>>> | participantRole | 1..1 | SHALL |  |  |  |  |
|  | >>>>@ | @classCode | 1..1 | SHALL | CS | SHALL | PROV |  |
| OrderingProviderID | >>>>> | id | 1..1 | SHALL | II |  |  |  |
|  | >>>>>> | playingEntity | 0..1 | MAY |  |  |  |  |
|  | >>>>>>@ | @classCode | 1..1 | SHALL | CS | SHALL | PSN |  |
| OrderingProviderName | >>>>>>> | name | 1..1 | SHALL | PN |  |  |  |
|  | >> | entryRelationship | 0..1 | SHOULD |  |  |  |  |
|  | >>@ | @typeCode | 1..1 | SHALL | CS | SHALL | GEVL |  |
|  | >>> | procedure | 1..1 | SHALL |  |  |  |  |
|  | >>>@ | @classCode | 1..1 | SHALL | CS | SHALL | PROC |  |
|  | >>>@ | @moodcode | 1..1 | SHALL | CS | SHALL | RQO |  |
| ReqProcCode | >>>> | code | 1..1 | SHALL | CD |  | **ConceptDomain** ProedureCode |  |
|  | > |  | 0..1 | MAY |  |  |  | [[General Section Entries](#_General_Section_Entries)](#_General_Section_Participations,) 1.2.840.10008.20.x4.x4 |

#### text/content and @ID – CDS Record

The Request section narrative text block MAY include content blocks recording clinical decision support assessments of the request with respect to the indications, patient characteristics, and relevant guidelines. Each such text/content SHALL include an XML ID attribute that serves as the business name discriminator associated with an instantiation of the element. Even if only one content block is instantiated, the ID attribute shall be present.

Each clinical decision support assessment record SHOULD have a corresponding structured entry.

#### entry/observation

The Request section MAY include entries corresponding to the clinical decision support assessments in the narrative text block.

#### entry/observation/text/reference

The observation entry SHALL include a text/reference element, whose value attribute SHALL begin with a '#' and SHALL point to its corresponding narrative content block. See [Section 9.1.1.1](#_Complications_Section_55109-3).

#### entry/observation/methodCode

The entry/observation/methodCode is the name of the Appropriate Use Criteria (AUC). Binding to the Value Set Concept Domain may be specific to the locale.

Note: In the United States, the Department of Health and Human Services will recognize or register sources of AUC clinical decision support rules for advanced imaging, and that registration number might be used as the methodCode.

#### entry/observation/author/assignedAuthor

The entry/observation/author/assignedAuthor identifies the clinical decision support software application or service that evalutes a requested procedure against relevant Appropriate Use Criteria. This CDS is identified by the id and assignedAuthoringDevice/softwareNameelements.

Notes: The CDS service is distinct from the AUC rules. An AUC rule might be implemented by multiple CDS services, and a CDS service might evaluate against multiple rules.

In the United States, the Department of Health and Human Services will certify and register specific CDS software or services for advanced imaging procedures, and that registration number might be used as the id extension with DHHS as the assigning authority root.  It is recommended that the assignedAuthoringDevice/softwareName should include sufficient information to identify the specific instance of the CDS software, e.g., the name and version number of the software, and its execution location (e.g., as part of a local EMR instance, or as a remote web service).

#### entry/observation/participant/@typeCode=REF

The observation entry SHALL include a participant element with @typeCode value REF identifying the the ordering physician for the requested procedure. This will typically be the same as the physician identified by the participant element with @typeCode value REF in the header of the document (see [Imaging Header](#_Imaging_Header_Elements)).

#### entry/observation/actRelationship

The entry/observation/actRelationship SHOULD reference the requested procedure code that was evaluated by the CDS service.

Figure 39: Request section example

<section classCode="DOCSECT" moodCode="EVN">

<templateId root="1.2.840.10008.20.x2.x6" />

<id root="1.2.840.10213.2.62.7906994785528.114289506"/>

<code code="55115-0"

codeSystem="2.16.840.1.113883.6.1"

codeSystemName="LOINC"

displayName="Request" />

<title>Request</title>

<text>PTA (Iliac Angioplasty) for treatment of symptomatic artherosclerotic disease in both iliac arteries.

<content ID="CDS001">Procedure ordered by Pat Smith, MD, NPI:8740944987. Classified APPROPRIATE by RadCDS based on ACR Select criteria at 2015-07-21 10:52:31 CDT

</content>

</text>

<entry> <observation classCode="OBS" moodCode="EVN" ID="CDS001-E">

<id root="1.2.840.90012.1097.9961.100" extension="20150721-16554">

<code code="99SUP155-9"

codeSystem="2.16.840.1.113883.6.1"

codeSystemName="LOINC"

displayName="Procedure Appropriate to Indication" />

<value xsi:type="CD" code="LA33-6"

codeSystem="2.16.840.1.113883.6.1"

codeSystemName="LOINC"

displayName="yes"/>

<effectiveTime value="20150721105231+0500"/>

<statusCode code="completed"/>

<methodCode code="CDS-003"

codeSystem="2.16.840.1.113883.19.166"

codeSystemName="US DHHS CDS"

displayName="ACR Select" />

<text> <reference value="#CDS001"> </text>

<author>

<assignedAuthor>

<id root="2.16.840.1.113883.19.169" extension="900104">

<assignedAuthoringDevice>

<softwareName>RadCDS</softwareName >

</assignedAuthoringDevice>

</assignedAuthor>

</author>

<participant typeCode="REF">

<participantRole>

<id root="2.16.840.1.113883.4.6" extension="8740944987" />

<playingEntity classCode="PSN">

<name>Pat Smith, MD</name>

</playingEntity>

</participantRole>

</participant>

</observation>

</entry>

</section>

### Procedure Indications

|  |  |
| --- | --- |
| **Template ID** | 2.16.840.1.113883.10.20.22.2.29 |
| **Name** | Procedure Indications |
| **Effective Date** | 2012-07 |
| **Version Label** | DICOM-*yyyymmdd* |
| **Status** | Draft *(will change to Active on Final Text adoption)* |
| **Description** | Records details about the reason for the procedure. This section may include the pre-procedure diagnosis or diagnoses as well as one or more symptoms that contribute to the reason the procedure is being performed. |
| **Classification** | CDA Section Level |
| **Relationships** | Invoked by [Clinical Information](#_Clinical_Information_1) Section Level template |
| **Context** |  |
| **Open/Closed** | Open |
| **Revision History** | From Consolidated CDA r1.1  DICOM-*yyyymmdd*: adapted to use optional Coded Observation entry rather than optional Indication entry |

| **Business Name** | **Nest Level** | **Element/ Attribute** | **Card** | **Elem/ Attr Conf** | **Data Type** | **Value Conf** | **Value** | **Subsidiary Template** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ProcedureIndications** |  | section | 1..1 | SHALL |  |  |  |  |
|  | > | templateId | 1..1 | SHALL | II |  |  |  |
|  | >@ | @root | 1..1 | SHALL | UID | SHALL | 2.16.840.1.113883.10.20.22.2.29 |  |
|  | > | id | 1..\* | SHALL | II |  |  |  |
|  | > | code | 1..1 | SHALL | CD | SHALL | (59768-2, LOINC, "Procedure Indications") |  |
| Title | > | title | 1..1 | SHALL | ST |  |  |  |
| *Text* | *>* | *text* | 1..1 | [COND](#textCOND) | ED |  |  | [Section Text](#_section/text_1) 1.2.840.10008.20.x4.x0 |
|  | > | entry | 0..\* | MAY |  |  |  |  |
| *CodedObservation[\*]* | >> | *observation* | 1..1 | SHALL |  |  | [See [binding](#_entry/observation)] | [Coded Observation](#_Code_Observations) 2.16.840.1.113883.10.20.6.2.13 |

#### entry/observation

The binding to the Coded Observation concept domains is:

| Concept Domain or Element | Value Conf | Value |
| --- | --- | --- |
| ObservationType | SHOULD | (432678004, SNOMED, "Indication for procedure") |
| Other concept domains |  | unspecified |

Note: In Consolidated CDA r1.1 the binding to the observationType is to Value Set Problem Type (2.16.840.1.113883.3.88.12.3221.7.2) with conformance SHOULD. Values from that Value Set are acceptable here as well.

Figure 40: Procedure indications section example

<section classCode="DOCSECT" moodCode="EVN">

<templateId root="1.2.840.10008.20.x2.x12"/>

<id root="1.2.840.10213.2.62.044785528.1142895426"/>

<code code="59768-2"

codeSystem="2.16.840.1.113883.6.1"

codeSystemName="LOINC"

displayName="Procedure Indications"/>

<title>Procedure Indications</title>

<text>The procedure is performed as a follow-up for abnormal screening result.

</text>

</section>

### Medical (General) History

|  |  |
| --- | --- |
| **Template ID** | 2.16.840.1.113883.10.20.22.2.39 |
| **Name** | Medical (General) History |
| **Effective Date** | 2012-07 |
| **Version Label** | DICOM-*yyyymmdd* |
| **Status** | Active |
| **Description** | History general describes all aspects of medical history of the patient even if not pertinent to the current procedure, and may include chief complaint, past medical history, social history, family history, surgical or procedure history, medication history, and other history information. The history may be limited to information pertinent to the current procedure or may be more comprehensive. It may also be reported as a collection of random clinical statements or it may be reported categorically. Categorical report formats may be divided into multiple subsections, including Past Medical History and Social History. |
| **Classification** | CDA Section Level |
| **Relationships** | Invoked by [Clinical Information](#_Clinical_Information_1) Section Level template |
| **Context** |  |
| **Open/Closed** | Open |
| **Revision History** | From Consolidated CDA r1.1  DICOM-*yyyymmdd*: Addition of optional entries; C-CDA templateID retained |

| **Business Name** | **Nest Level** | **Element/ Attribute** | **Card** | **Elem/ Attr Conf** | **Data Type** | **Value Conf** | **Value** | **Subsidiary Template** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **History** |  | section | 1..1 | SHALL |  |  |  |  |
|  | > | templateId | 1..1 | SHALL | II |  |  |  |
|  | >@ | @root | 1..1 | SHALL | UID | SHALL | 2.16.840.1.113883.10.20.22.2.39 |  |
|  | > | id | 1..\* | SHALL | II |  |  |  |
|  | > | code | 1..1 | SHALL | CD | SHALL | (11329-0, LOINC, "History General") |  |
| Title | > | title | 1..1 | SHALL | ST |  |  |  |
| *Text* | *>* | *text* | 1..1 | [COND](#textCOND) | ED |  |  | [Section Text](#_section/text_1) 1.2.840.10008.20.x4.x0 |
|  | > |  | 0..1 | MAY |  |  |  | [[General Section Entries](#_General_Section_Entries)](#_General_Section_Participations_2) 1.2.840.10008.20.x4.x4 |

#### section/text

In the context of an Imaging Report, the section/text should document any contraindications to contrast administration or other procedure techniques that affected the selection or performance of the protocol.

Figure 41: Medical (General) History section example

<section classCode="DOCSECT" moodCode="EVN">

<templateId root="2.16.840.1.113883.10.20.22.2.39" />

<id root="1.2.840.10213.2.62.7044785528.114289875"/>

<code code="11329-0"

codeSystem="2.16.840.1.113883.6.1"

codeSystemName="LOINC"

displayName="History General" />

<title>Relevant Medical History</title>

<text><list>

<item>Patient reported adverse reaction to iodine. </item>

<item>Patient is smoker (1 pack daily). </item>

</list></text>

</section>

### Complications Section

|  |  |
| --- | --- |
| **Template ID** | 2.16.840.1.113883.10.20.22.2.37 |
| **Name** | Complications Section |
| **Effective Date** | 2012-07 |
| **Version Label** | DICOM-*yyyymmdd* |
| **Status** | Draft *(will change to Active on Final Text adoption)* |
| **Description** | The Complications section records problems that occurred during the procedure or other activity. The complications may have been known risks or unanticipated problems. |
| **Classification** | CDA Section Level |
| **Relationships** | Invoked in [Imaging Procedure Description](#_Imaging_Procedure_Description) section |
| **Context** |  |
| **Open/Closed** | Open |
| **Revision History** | From Consolidated CDA r1.1  DICOM-*yyyymmdd*: Addition of optional entries |

| **Business Name** | **Nest Level** | **Element/ Attribute** | **Card** | **Elem/ Attr Conf** | **Data Type** | **Value Conf** | **Value** | **Subsidiary Template** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Complications** |  | section | 1..1 | SHALL |  |  |  |  |
|  | > | templateId | 1..1 | SHALL | II |  |  |  |
|  | >@ | @root | 1..1 | SHALL | UID | SHALL | 2.16.840.1.113883.10.20.22.2.37 |  |
|  | > | id | 1..\* | SHALL | II |  |  |  |
|  | > | code | 1..1 | SHALL | CD | SHALL | (55109-3, LOINC, "Complications") |  |
| Title | > | title | 1..1 | SHALL | ST |  |  |  |
| *Text* | *>* | *text* | 1..1 | [COND](#textCOND) | ED |  |  | [Section Text](#_section/text_1) 1.2.840.10008.20.x4.x0 |
|  | > | entry | 0..\* | MAY |  |  |  |  |
| *CodedObservation[\*]* | >> | *observation* |  |  |  |  |  | [Coded Observation](#_Coded_Observation_2) 2.16.840.1.113883.10.20.6.2.13 |

Figure 42: Complications section example

<section classCode="DOCSECT" moodCode="EVN">

<templateId root="2.16.840.1.113883.10.20.22.2.37"/>

<id root="1.2.840.10213.2.62.70444786655528.11428987524546666"/>

<code code="55109-3"

codeSystem="2.16.840.1.113883.6.1"

codeSystemName="LOINC"

displayName="Complications"/>

<title>Complications</title>

<text>Immediately following IV contrast injection, the patient reporting itching %22all over.%22  Dr. Smith examined the patient and found multiple urticaria.  The patient denied difficulty breathing or swallowing.  The patient was given Benadryl 50 mg PO and was followed for 30 minutes, during which time the symptoms subsided. </text>

<entry>

<observation classCode="OBS" moodCode="EVN">

<templateId root="2.16.840.1.113883.10.20.6.2.13"/>

<!-- Coded Observation -->

...

</observation>

</entry>

</section>

### Radiation Exposure and Protection Information

|  |  |
| --- | --- |
| **Template ID** | 1.2.840.10008.20.x2.x7 |
| **Name** | Radiation Exposure and Protection Information |
| **Effective Date** | *(Date of Final Text adoption)* |
| **Version Label** | DICOM-*yyyymmdd* |
| **Status** | Draft *(will change to Active on Final Text adoption)* |
| **Description** | Contains information related to the radiation exposure and protection of the patient, as may be required by national or local legal requirements or standards. |
| **Classification** | CDA Section and Entry Level |
| **Relationships** | Invoked by [Imaging Procedure Description](#_Current_Imaging_Procedure) section |
| **Context** |  |
| **Open/Closed** | Open |
| **Revision History** | DICOM-*yyyymmdd*: Initial version |

| **Business Name** | **Nest Level** | **Element/ Attribute** | **Card** | **Elem/ Attr Conf** | **Data Type** | **Value Conf** | **Value** | **Subsidiary Template** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **RadiationExposure** |  | section | 1..1 | SHALL |  |  |  |  |
|  | > | templateId | 1..1 | SHALL | II |  |  |  |
|  | >>@ | @root | 1..1 | SHALL | UID | SHALL | 1.2.840.10008.20.x2.x7 |  |
|  | > | code | 1..1 | SHALL | CD | SHALL | (73569-6, LOINC, "Radiation exposure and protection information") |  |
|  | > | id | 1..1 | SHALL | II |  |  |  |
| Title | > | title | 1..1 | SHALL | ST |  |  |  |
| *Text* | *>* | *text* | 1..1 | SHALL | ED |  |  | [Section Text](#_section/text_1) 1.2.840.10008.20.x4.x0 |
|  | > | entry | 0..1 | [COND](#_entry/procedure/participant_Irradia) |  |  |  |  |
|  | >> | procedure | 1..1 | SHALL |  |  |  |  |
|  | >>@ | @classCode | 1..1 | SHALL | CS | SHALL | PROC |  |
|  | >>@ | @moodCode | 1..1 | SHALL | CS | SHALL | EVN |  |
|  | >>> | code | 1..1 | SHALL | CD | SHALL | (99SUP155-1, DCM, "Patient exposure to ionizing radiation") |  |
|  | >>> | participant | 1..1 | SHALL |  |  |  |  |
|  | >>@ | @typeCode | 1..1 | SHALL | CS | SHALL | RESP |  |
|  | >>> | participantRole | 1..1 | SHALL |  |  |  |  |
| IrradiationAuthorizingID | >>>> | id | 1..1 | SHALL | II |  |  |  |
|  | >>>> | functionCode | 1..1 | SHALL | CE | SHALL | (113850, DCM, "Irradiation Authorizing") |  |
|  | >>>> | playingEntity | 1..1 | SHALL |  |  |  |  |
| IrradiationAuthorizingName | >>>>> | name | 1..1 | SHALL | PN |  |  |  |
|  | > | entry | 0..1 | MAY |  |  |  |  |
| *SOPInstance[doseReport]* | >> | *observation* | 1..1 | SHALL |  |  |  | [SOP Instance Observation](#_SOP_Instance_Observation) 1.2.840.10008.20.x3.x7 |
|  | > | entry | 1..1 | [COND](#_entry/observation_Pregnancy) |  |  |  |  |
| *CodedObservation[pregnancy]* | >> | *observation* | 1..1 | SHALL |  | SHALL | [See [binding](#_entry/observation_Pregnancy)] | [Coded Observation](#_Code_Observations) 2.16.840.1.113883.10.20.6.2.13 |
|  | > | entry | 0..1 | MAY |  |  |  |  |
| *CodedObservation[indication]* | >> | *observation* | 1..1 | SHALL |  | SHALL | [See [binding](#_entry/observation_Indication)] | [Coded Observation](#_Code_Observations) 2.16.840.1.113883.10.20.6.2.13 |
|  | > | entry | 0..\* | MAY |  |  |  |  |
| *QuantityMeasurement[\*]* | >> | *observation* | 1..1 |  |  | SHALL | [See [binding](#_entry/observation_Dose_measurements)] | [Quantity Measurement](#_Quantity_Measurement) 2.16.840.1.113883.10.20.6.2.14 |
|  | > | entry | 0..1 | MAY |  |  |  |  |
|  | >> | substanceAdministration |  |  |  |  |  |  |
|  | >>@ | @classCode | 1..1 | SHALL |  | SHALL | SBADM |  |
|  | >>@ | @moodCode | 1..1 | SHALL |  | SHALL | EVN |  |
|  | >>> | code | 1..1 |  |  | SHALL | (440252007, SNOMED, "Administration of radiopharmaceutical") |  |
| RadioactivityDose | >>> | doseQuantity | 0..1 | SHOULD | PQ |  |  |  |
|  | >>> | consumable | 1..1 | SHALL |  |  |  |  |
|  | >>>> | manufacturedProduct | 1..1 | SHALL |  |  |  |  |
|  | >>>>> | material | 1..1 | SHALL |  |  |  |  |
| Radiopharmaceutical | >>>>>> | code | 1..1 | SHALL | CE | SHOULD  CWE | **ValueSet** [CID 25](#_CID_25_Radiopharmaceuticals) Radiopharmaceuticals, or [CID 4021](#_CID_4021_PET) PET radiopharmaceuticals |  |
| FreeTextRadiopharmaceutical | >>>>>>> | original Text | 0..1 | SHOULD | ED |  |  |  |

#### text

The section text SHALL contain information related to the radiation exposure and protection of the patient, as is required by state/national legal requirements or standards, for example:

* 1. information on the indications for the procedure
  2. the name of the "Irradiation Authorizing" person who is the clinician responsible for determining that the irradiating procedure was appropriate for the indications.
  3. summary information on radiation exposure if ionizing is applied in the context of the current procedure (detailed specification of exposure is out of the scope of this textual summary).
  4. information on the radioactive substance administered if radioactive substance is administered in the context of the current procedure.

Note: Compare to PS3.16 TID 2008 Radiation Exposure and Protection Information.

#### entry/procedure Patient Exposure

**COND:** If modality is CT, MG, NM, PT, XR, XA, or XF, the section **SHOULD** contain a procedure entry for the exposure of the patient to ionizing radiation

This entry **SHALL** have a participant, the irradiation authorizing person who is the clinician responsible for determining that the irradiating procedure was appropriate for the indications.

Note: This may be the same person as the performing physician identified in the header.

#### entry/observation SOP Instance

The section may include a reference to a DICOM Dose Report SOP Instance that provides a detailed record of exposure.

#### entry/observation Pregnancy

**COND:** A coded observation entry SHALL be present if the patient is female and child-bearing age.

The binding to the Coded Observation concept domains is:

| Concept Domain or Element | Value Conf | Value |
| --- | --- | --- |
| ObservationType | SHALL | (364320009, SNOMED, "Pregnancy observable") |
| ObservationValue | SHALL  CNE | ValueSet [CID 6096](#_CID_6096_Pregnancy) DICOM Pregnancy Status |
| Other concept domains |  | unspecified |

#### entry/observation Indication

An indication for procedure recorded in this section should be consistent with any indications identified in the Clinical Information and/or Procedure Indications section. It is included here for conformance with regulatory requirements in some jurisdictions for the indications to be specified in the context of the radiation exposure information.

The binding to the Coded Observation concept domains is:

| Concept Domain or Element | Value Conf | Value |
| --- | --- | --- |
| ObservationType | SHALL | (432678004, SNOMED, "Indication for procedure") |
| Other concept domains |  | unspecified |

#### entry/observation Dose measurements

The section may include multiple dose measurements. The binding to the Quantity Measurement concept domains is:

| Concept Domain or Element | Value Conf | Value |
| --- | --- | --- |
| ObservationType | SHALL  CWE | ValueSet [CID x10040](#_CID_x10040_) Summary Radiation Exposure Quantities |
| Other concept domains |  | unspecified |

Figure 43: Radiation Exposure and Protection section example

<section classCode="DOCSECT" moodCode="EVN">

<templateId root="1.2.840.10008.20.x2.x7" />

<id root="1.2.840.10213.2.62.704478559484.11428372623"/>

<code code="73569-6"

codeSystem="2.16.840.1.113883.6.1"

codeSystemName="LOINC"

displayName="Radiation Exposure And Protection Information" />

<title> Radiation Exposure and Protection Information</title>

<text>A dosage of... </text>

<entry>

<procedure classCode="PROC" moodCode="EVN">

<code code="99SUP155-1"

codeSystem="2.16.840.1.113883.6.1"

codeSystemName="DCM"

displayName="Patient exposure to ionizing radiation" />

<participant typeCode="RESP">

<participantRole>

<id root="2.16.840.1.113883.4.6" extension="980003719">

<functionCode code="113850"

codeSystem="2.16.840.1.113883.6.1"

codeSystemName="DCM"

displayName="Irradiation Authorizing" />

<playingEntity>

<name>

<given>Martha</given>

<family>Radiologist</family>

</name>

<playingEntity>

</participantRole>

</entry>

<entry>

<observation classCode="OBS" moodCode="EVN" ID="pregnancy" >

<templateId root="2.16.840.1.113883.10.20.6.2.13"/>

<id root="1.2.840.10213.2.62.7044779.114265201"/>

<code code="364320009"

codeSystem="2.16.840.1.113883.6.96"

codeSystemName="SNOMED CT"

displayName="Pregnancy observable"/>

<statusCode code="completed"/>

<value xsi:type="CD" code="60001007"

codeSystem="2.16.840.1.113883.6.96"

codeSystemName="SNOMED CT"

displayName="not pregnant"/>

<effectiveTime value="20140914171504+0500"/>

</observation>

</entry>

</section>

### Key Images

|  |  |
| --- | --- |
| **ID** | 1.3.6.1.4.1.19376.1.4.1.2.14 |
| **Name** | Key Images |
| **Effective Date** | 2011-07 |
| **Version Label** | DICOM-*yyyymmdd* |
| **Status** | Draft *(will change to Active on Final Text adoption)* |
| **Description** | The Key Images section contains narrative description of and references to DICOM Image Information Objects that illustrate the findings of the procedure reported. |
| **Classification** | CDA Section Level |
| **Relationships** | Invoked in [Impression](#_Impressions_1) section |
| **Context** |  |
| **Open/Closed** | Open |
| **Revision History** | From IHE Cardiac Imaging Report Content  DICOM-*yyyymmdd*: Addition of optional inline image (observationMedia) |

| **Business Name** | **Nest Level** | **Element/ Attribute** | **Card** | **Elem/ Attr Conf** | **Data Type** | **Value Conf** | **Value** | **Subsidiary Template** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **KeyImages** |  | section | 1..1 | SHALL |  |  |  |  |
|  | > | templateId | 1..1 | SHALL | II |  |  |  |
|  | >@ | @root | 1..1 | SHALL | UID | SHALL | 1.3.6.1.4.1.19376.1.4.1.2.14 |  |
|  | > | id | 1..\* | SHALL | II |  |  |  |
|  | > | code | 1..1 | SHALL | CD | SHALL | (55113-5, LOINC, "Key Images") |  |
| Title | > | title | 1..1 | SHALL | ST |  |  |  |
| *Text* | *>* | *text* | 1..1 | [COND](#textCOND) | ED |  |  | [Section Text](#_section/text_1) 1.2.840.10008.20.x4.x0 |
|  | > | entry | 0..\* | SHOULD |  |  |  |  |
| *SOPInstance[\*]* | *>>* | *observation* | 1..1 | SHALL |  |  |  |  |
|  | > | entry | 0..\* | MAY |  |  |  |  |
| *Graphic[\*]* | *>>* | *observationMedia* | 1..1 | SHALL |  |  |  | [Observation Media](#_observationMedia) 1.3.6.1.4.1.19376.1.4.1.4.7 |

#### section/text

The Key Images section text **SHALL** contain image references using linkHtml elements, where @href is a valid Web Access to DICOM Persistent Object (WADO) URL. See [section 9.1.1.5](#_<linkHtml>_markup_and). The text content of linkHtml should be either visible text of the hyperlink, or a descriptor or identifier of the image, or a (limited resolution) copy of the image (see [section 9.8.7.3](#_observationMedia_1)).

#### SOP Instance Observation

The Key Images section **SHOULD** include SOP Instance Observation entries equivalent to the linkHtml image references.

#### observationMedia

The Key Images section **MAY** include observationMedia entries with in-line encoded copies of the referenced images, linked into the narrative block using the renderMultiMedia markup. See [section 9.1.1.3](#_<renderMultiMedia>_markup_and). The renderMultiMedia may be positioned within the linkHtml markup. These in-line encoded images may have limited resolution and lossy compression as appropriate for inclusion in a report.

Figure 44: Key Images section example

<section classCode="DOCSECT" moodCode="EVN">>

<templateId root="1.3.6.1.4.1.19376.1.4.1.2.14" />

<id root="1.2.840.10213.2.62.704478559484.11428372623" />

<code code="55113-5"

codeSystem="2.16.840.1.113883.6.1"

codeSystemName="LOINC"

displayName="Key Images" />

<title>Key Images</title>

<text>Maximum extent of tumor is shown in   
 <linkHtml href=http://www.ex.org/wado?requestType=WADO&...>

image 1 <renderMultiMedia referencedObject="refimag1" />

</linkHtml>

</text>

<entry> <!--SOP Instance reference>

<observation classCode=DGIMG moodcode=EVN ID="SOP1-2">

</entry>

<entry> <!--inline rendered image>

<observationMedia ID="refimag1">

<value representation=B64 mediaType="image/jpeg">

Bgd3fsET4g...

</value>

</observationMedia>

</entry>

</section>

### DICOM Object Catalog

|  |  |
| --- | --- |
| **Template ID** | 2.16.840.1.113883.10.20.6.1.1 |
| **Name** | DICOM Object Catalog Section |
| **Effective Date** | 2012-07 |
| **Version Label** | CCDA-1.1 |
| **Status** | Active |
| **Description** | DICOM Object Catalog lists all referenced objects and their parent Series and Studies, plus other DICOM attributes required for retrieving the objects. The DICOM Object Catalog section is not intended for viewing and may contain empty section text. |
| **Classification** | CDA Section Level |
| **Relationships** | Invoked by [Imaging Procedure Description](#_Current_Imaging_Procedure) Section |
| **Context** |  |
| **Open/Closed** | Open |
| **Revision History** | From Consolidated CDA r1.1 |

| **Business Name** | **Nest Level** | **Element/ Attribute** | **Card** | **Elem/ Attr Conf** | **Data Type** | **Value Conf** | **Value** | **Subsidiary Template** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **DICOMCatalog** |  | section | 1..1 | SHALL |  |  |  |  |
|  | > | templateId | 1..1 | SHALL | II |  |  |  |
|  | >@ | @root | 1..1 | SHALL | UID | SHALL | 2.16.840.1.113883.10.20.6.1.1 |  |
|  | > | id | 1..\* | SHALL | II |  |  |  |
|  | > | code | 1..1 | SHALL | CD | SHALL | (121181, DCM, "Dicom Object Catalog") |  |
| Title | > | title | 1..1 | SHALL | ST |  |  |  |
| *Text* | *>* | *text* | 1..1 | SHALL | ED |  |  | [Section Text](#_section/text_1) 1.2.840.10008.20.x4.x0 |
|  | > | entry | 0..\* | SHOULD |  |  |  |  |
| *Study[\*]* | >> | *act* | 1..1 | SHALL |  |  |  | [Study Act](#_Study_Act) 2.16.840.1.113883.10.20.6.2.6 |

Figure 45: DICOM object catalog section example

<section classCode="DOCSECT" moodCode="EVN">

<templateId root="2.16.840.1.113883.10.20.6.1.1"/>

<id root="1.2.840.10213.2.62.70447834679.11429737"/>

<code code="121181"

codeSystem="1.2.840.10008.2.16.4"

codeSystemName="DCM"

displayName="DICOM Object Catalog"/>

<entry>

<!-- \*\*\*\* Study Act \*\*\*\* -->

<act classCode="ACT" moodCode="EVN">

<templateId root="2.16.840.1.113883.10.20.6.2.6"/>

<id root="1.2.840.113619.2.62.994044785528.114289542805"/>

<code code="113014" codeSystem="1.2.840.10008.2.16.4"

codeSystemName="DCM" displayName="Study"/>

<!-- \*\*\*\* Series Act\*\*\*\*-->

<entryRelationship typeCode="COMP">

<act classCode="ACT" moodCode="EVN">

<id root="1.2.840.113619.2.62.994044785528.20060823223142485051"/>

<code code="113015" codeSystem="1.2.840.10008.2.16.4"

codeSystemName="DCM" displayName="Series">

...

</code>

<!-- \*\*\*\* SOP Instance UID \*\*\* -->

<!-- 2 References -->

<entryRelationship typeCode="COMP">

<observation classCode="DGIMG" moodCode="EVN">

<templateId root="2.16.840.1.113883.10.20.6.2.8"/>

...

</observation>

</entryRelationship>

<entryRelationship typeCode="COMP">

<observation classCode="DGIMG" moodCode="EVN">

<templateId root="2.16.840.1.113883.10.20.6.2.8"/>

...

</observation>

</entryRelationship>

</act>

</entryRelationship>

</act>

</entry>

</section>

### Fetus Findings

|  |  |
| --- | --- |
| **Template ID** | 1.2.840.10008.20.x2.x8 |
| **Name** | Fetus Findings |
| **Effective Date** | *(Date of Final Text adoption)* |
| **Version Label** | DICOM-*yyyymmdd* |
| **Status** | Draft *(will change to Active on Final Text adoption)* |
| **Description** | Records observations related to a fetus confirmed or discovered during an imaging procedure. |
| **Classification** | CDA Section Level |
| **Relationships** | Invoked in [Findings](#_Findings) section |
| **Context** |  |
| **Open/Closed** | Open |
| **Revision History** | DICOM-*yyyymmdd*: Initial version |

| **Business Name** | **Nest Level** | **Element/ Attribute** | **Card** | **Elem/ Attr Conf** | **Data Type** | **Value Conf** | **Value** | **Subsidiary Template** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **FetusFindings[\*]** |  | section | 1..1 | SHALL |  |  |  |  |
| **\*** | @ | @ID | 1..1 | SHALL | XML ID |  | [See [xml ID attribute](#_XML_ID_and)] |  |
|  | > | templateId | 1..1 | SHALL | II |  |  |  |
|  | >@ | @root | 1..1 | SHALL | UID | SHALL | 1.2.840.10008.20.x2.x8 |  |
|  | > | id | 1..\* | SHALL | II |  |  |  |
|  | > | code | 1..1 | SHALL | CD | SHALL | (99SUP155-7, DCM, "Fetal Study observation") |  |
| Title | > | title | 1..1 | SHALL | ST |  |  |  |
| *Text* | *>* | *text* | 1..1 | [COND](#textCOND) | ED |  |  | [Section Text](#_section/text_1) 1.2.840.10008.20.x4.x0 |
|  | > | subject | 1..1 | SHALL |  |  |  |  |
|  | >> | relatedSubject | 1..1 | SHALL |  |  |  |  |
|  | >>> | code | 1..1 | SHALL | CE | SHALL | (121026, DCM, "Fetus") |  |
|  | >>> | subject | 1..1 | SHALL |  |  |  |  |
| FetusID | >>>> | name | 1..1 | SHALL | PN |  |  |  |
|  | > | component | 0..\* | MAY |  |  |  |  |
| *Subsection[\*]* | >> | *section* | 1..1 | SHALL |  |  |  | [Labeled Subsection](#_Labeled_Subsection) 1.2.840.10008.20.x2.x9 |
|  | > |  | 0.1 | MAY |  |  |  | [[General Section Entries](#_General_Section_Entries)](#_General_Section_Participations,) 1.2.840.10008.20.x4.x4 |

For reports on mothers and their fetus(es), information on a mother is mapped to recordTarget/PatientRole/Patient in the CDA header. Information on the fetus is mapped to subject/relatedSubject/SubjectPerson at the CDA section level. Both context information on the mother and fetus must be included in the document if observations on fetus(es) are contained in the document.

#### section/@ID

The Fetus Findings sub-section SHALL include an XML ID attribute (not to be confused with the **id** element of the act class) that serves as the business name discriminator associated with an instantiation of the template. Even if only one fetus findings sub-section is intantiated, the ID attribute shall be present.

Example: The business name for the narrative text in a subsection about fetus A might be ImagingReport:Findings:FetusFindings[FetusA]:text

#### name - FetusID

The subject/relatedSubject/subject/name element is used to store the DICOM fetus ID, typically a pseudonym such as "fetus A". This is in addition to the identification in the XML ID attribute, and shall be present even if only one fetus is identified in the document.

Figure 46: Fetus Findings section example

<section classCode="DOCSECT" moodCode="EVN">

<templateId root="2.16.840.1.113883.10.20.22.2.27" />

<id root="1.2.840.10213.2.62.70447834679.11429737"/>

<code code="99SUP155-7" codeSystem="2.16.840.1.113883.6.1"

codeSystemName="LOINC" displayName="Fetal Study observation" />

<title>Fetus #1</title>

<text>Estimated gestational age of 27 weeks... </text>

<relatedSubject>

<code code="121026" codeSystem="1.2.840.10008.2.16.4" displayName="Fetus"/>

<subject>

<name>Fetus 1</name>

</subject>

</relatedSubject>

</section>

### Labeled Subsection

|  |  |
| --- | --- |
| **Template ID** | 1.2.840.10008.20.x2.x9 |
| **Name** | Labeled Subsection |
| **Effective Date** | *(Date of Final Text adoption)* |
| **Version Label** | DICOM-*yyyymmdd* |
| **Status** | Draft *(will change to Active on Final Text adoption)* |
| **Description** | Narrative or coded subsection that allows organization of content for a labeled topic (a particular organ or anatomic feature, a lesion, a tumor, etc.). The section.code shall be absent, but the section.title shall be present.  The attribute ID may be defined in advance by a radiology report template (e.g., "liver") or dynamically by the report creator device (eg., for multiple tumors). |
| **Classification** | CDA Section Level |
| **Relationships** | Invoked in [Findings](#_Findings) Section |
| **Context** |  |
| **Open/Closed** | Open |
| **Revision History** | DICOM-*yyyymmdd*: Initial version |

| **Business Name** | **Nest Level** | **Element/ Attribute** | **Card** | **Elem/ Attr Conf** | **Data Type** | **Value Conf** | **Value** | **Subsidiary Template** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Subsection[\*]** |  | section | 1..1 | SHALL |  |  |  |  |
| **\*** | @ | @ID |  |  | XML ID |  | [See [xml ID attribute](#_XML_ID_and)] |  |
|  | > | templateId | 1..1 | SHALL | II |  |  |  |
|  | >@ | @root | 1..1 | SHALL | UID | SHALL | 1.2.840.10008.20.x2.x9 |  |
|  | > | id | 1..\* | SHALL | II |  |  |  |
|  | > | code | 0..0 | SHALL NOT |  |  |  |  |
| Title | > | title | 1..1 | SHALL  noNull | ST |  | [See [title](#_title)] |  |
| *Text* | *>* | *text* | 1..1 | [COND](#textCOND) | ED |  |  | [Section Text](#_section/text_1) 1.2.840.10008.20.x4.x0 |
|  | > | component | 0..\* | MAY |  |  |  |  |
| *Subsection[\*]* | >> | *section* | 1..1 | SHALL |  |  |  | [Labeled Subsection](#_Labeled_Subsection) 1.2.840.10008.20.x2.x9 |
|  | > |  | 0..1 | MAY |  |  |  | [[General Section Entries](#_General_Section_Entries)](#_General_Section_Participations,) 1.2.840.10008.20.x4.x4 |

#### title

The title element is used to identify the topic (specific organ or anatomic feature, abnormality, lesion, etc.) as the subject of the sub-section findings in the human readable document. As there is no section.code, this is the required mechainsm to represent the section purpose as free text.

#### component/section Labeled Subsection

This template invokes itself recursively to allow arbitrarily deep nested subsections.

Figure 47: Labeled sub-section example

<section classCode="DOCSECT" moodCode="EVN" ID="Liver">

<templateId root="1.2.840.10008.20.x2.x9" />

<id root="1.2.840.10213.2.62.7044794679.114296787"/>

<title>Liver</title>

<text>No evidence of cirrhosis, nodular regeneration, or ... </text>

</section>

### Communication of Actionable Findings

|  |  |
| --- | --- |
| **Template ID** | 1.2.840.10008.20.x2.x10 |
| **Name** | Communication of Actionable Findings |
| **Effective Date** | *(Date of Final Text adoption)* |
| **Version Label** | DICOM-*yyyymmdd* |
| **Status** | Draft *(will change to Active on Final Text adoption)* |
| **Description** | A section that documents the notification of an actionable finding to a provider or other person responsible for patient care. The documentation in narrative text, and optionally in a coded entry, includes by whom, to whom, and at what date/time.  Specific findings, including actionable (aka critical) findings documented in text or as coded entries, are typically found in the Findings Section. The actionable findings may be duplicated in the Impression Section in either text or as coded entries. The actionable findings may be new (critical) or a change to a previous report/diagnosis (discrepant). |
| **Classification** | CDA Section and Entry Level |
| **Relationships** | Invoked in [Impression](#_Impression) and [Addendum](#_Addendum_2) sections |
| **Context** |  |
| **Open/Closed** | Open |
| **Revision History** | DICOM-*yyyymmdd*: Initial version |

| **Business Name** | **Nest Level** | **Element/ Attribute** | **Card** | **Elem/ Attr Conf** | **Data Type** | **Value Conf** | **Value** | **Subsidiary Template** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ActionableFindings** |  | section | 1..1 | SHALL |  |  |  |  |
|  | > | templateId | 1..1 | SHALL | II |  |  |  |
|  | >@ | @root | 1..1 | SHALL | UID | SHALL | 1.2.840.10008.20.x2.x10 |  |
|  | > | id | 1..\* | SHALL | II |  |  |  |
|  | > | code | 1..1 | SHALL | CD | SHALL | (73568-8, LOINC, "Communication of Critical Results") |  |
| Title | > | title | 1..1 | SHALL | ST |  |  |  |
|  | > | text | 1..1 | SHALL | ED |  |  |  |
| **Content[\*]** | >> | content | 0..\* | SHALL | ST |  | [See [section/text/content - narrative](#_Communication_of_and)] |  |
| **\*** | >>@ | @ID | 1..1 | SHALL | XML ID |  |  |  |
| FindingRef | >>> | linkHtml | 0..\* | MAY | ST |  |  |  |
| FindingURI | >>>@ | @href | 1..1 | SHALL | URL (XML IDREF) |  | *#findingRef* |  |
|  | > | entry | 0..\* | SHOULD |  |  |  |  |
| **Communication[\*]** | >> | act | 1..1 | SHALL |  | SHALL |  |  |
|  | >>@ | @classCode | 1..1 | SHALL | CS | SHALL | ACT |  |
|  | >>@ | @moodCode | 1..1 | SHALL | CS | SHALL | EVN |  |
| **\*** | >>@ | @ID | 1..1 | SHALL | XML ID |  |  |  |
|  | >>> | code | 1..1 | SHALL | CD | SHALL | (99SUP155-5, 99SUP155, "results communicated") |  |
| CommTime | >>> | effectiveTime | 1..1 | SHALL | TS |  |  |  |
|  | >>> | text | 1..1 | SHALL | ED |  |  |  |
| Ref | >>>> | reference | 1..1 | SHALL | URL (XML IDREF) |  | #*contentRef* |  |
|  | >>> | performer | 1..1 | SHALL |  |  |  |  |
|  | >>>> | assignedEntity | 1..1 | SHALL |  |  |  |  |
|  | >>>>> | assignedperson | 1..1 | SHALL |  |  |  |  |
| ReportingPhysicianName | >>>>>> | name | 1..1 | SHALL | PN |  |  |  |
|  | >>> | participant | 1..1 | SHALL |  |  |  |  |
|  | >>>@ | @typeCode | 1..1 | SHALL | CS | SHALL | NOT |  |
|  | >>>> | participantRole | 1..1 | SHALL |  |  |  |  |
| NotificationContactTelecom | >>>>> | telecom | 1..1 | SHALL | TEL |  |  |  |
|  | >>>>> | playingEntity | 1..1 | SHALL |  |  |  |  |
| NotificationContactName | >>>>>> | name | 1..1 | SHALL | PN |  |  |  |

#### section/text/content - narrative

Each documented act of communication of actionable findings SHALL be included as narrative in a section/text/content element, labeled with an XML ID (see [Section 9.1.1.1](#_Complications_Section_55109-3)).

Note: The following text content for such a block is specified in the RSNA Radiology Reporting Templates, Template 297: Communication of Actionable Finding (<http://radreport.org/txt-mrrt/0000297>):

method [discussed directly | discussed by telephone | described in message]

by [ person ]

to [ person ]

on [<date>] at [<time>]

The documentation may also provide a linkHtml reference to either the actionable finding narrative elsewhere in the report, e.g., in the Findings or Complications section, and/or to the structured entry of that finding (see [Section 9.1.1.2](#_<linkHtml>_markup_and_1)).

#### entry/act

A structured entry representation of the act of communication MAY be included in the section. This entry does not necessarily represent the entirety of the act as described in the narrative text, e.g., the communication method and actual content of the communication is not represented, nor whether the receiver acknowledged the communication ("read-back"). The act/text/reference element SHALL include an XML IDREF value pointing to the associated narrative content block.

#### entry/act/effectiveTime

The entry/act/effectiveTime element represents the date and time that actionable findings were communicated. The time that the findings were first observed is recorded in the effectiveTime element of the original observation, as linked through the section/text/content/linkHtml element.

#### entry/act/participant

The entry/act/participant element represents the notified party (@typecode = "NOT"). This could be the patient.

Figure 48: Communication of Actionable Results section example

<section classCode="DOCSECT" moodCode="EVN">

<templateId root="1.2.840.10008.20.x2.x10" />

<id root="1.2.840.10213.2.62.7044794679.114296787"/>

<code code="73568-8"

codeSystem="2.16.840.1.113883.6.1"

codeSystemName="LOINC"

displayName="Communication of Critical Results" />

<title>Communication of Actionable Results</title>

<text><content ID=CR1>Dr. Smith was phoned at 262-966-0120 at 3:14pm on Wednesday, June 4, 2014, and the 4mm lung nodule was discussed directly with Dr. Smith to explain the follow-up recommendation of... </content></text>

,<entry>

<act classCode="ACT" moodCode=EVN">

<code code="99SUP155-5"

codeSystem="1.2.840.10008.2.16.4"

codeSystemName="DCM"

displayName="Results Communicated"/>

<effectiveTime value="20140604221400-0700"/>

<text>

<reference value="#CR1" />

</text>

<performer>

<assignedEntity>

<id root="1.2.840.10213.2.62.7044794679.114298686"/>

<assignedPerson>

<name>Jane Doctor</name>

</assignedPerson>

</assignedEntity>

</performer>

<participant typeCode="NOT">

<participantRole>

<telecom value="tel:262-966-0120" />

<playingEntity>

<name>Dr. Smith</name>

</playingEntity>

</participantRole>

</participant>

</act>

</entry>

</section>

### Recommendation

|  |  |
| --- | --- |
| **Template ID** | 1.2.840.10008.20.x2.x11 |
| **Name** | Recommendation |
| **Effective Date** | *(Date of Final Text adoption)* |
| **Version Label** | DICOM-*yyyymmdd* |
| **Status** | Draft *(will change to Active on Final Text adoption)* |
| **Description** | This section provides a separate section to describe the study interpreter’s recommendations for follow-up studies or procedures. |
| **Classification** | CDA Section Level |
| **Relationships** | Invoked in [Impression](#_Impression) section |
| **Context** |  |
| **Open/Closed** | Open |
| **Revision History** | DICOM-*yyyymmdd*: Initial version |

| **Business Name** | **Nest Level** | **Element/ Attribute** | **Card** | **Elem/ Attr Conf** | **Data Type** | **Value Conf** | **Value** | **Subsidiary Template** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Recommendation** |  | section |  |  |  |  |  |  |
|  | > | templateId | 1..1 | SHALL | II |  |  |  |
|  | >@ | @root | 1..1 | SHALL | UID | SHALL | 1.2.840.10008.20.x2.x11 |  |
|  | > | id | 1..\* | SHALL | II |  |  |  |
|  | > | code | 1..1 | SHALL | CD | SHALL | (18783-1, LOINC, "Study recommendation") |  |
| Title | > | title | 0..1 | MAY | ST |  |  |  |
| Text | > | text | 0..1 | SHALL | ED |  |  |  |
| **Content[\*]** | >> | content | 0..\* | SHALL | ST |  | [See [text/content](#_text/content)] |  |
| **\*** | >>@ | @ID | 1..1 | SHALL | XML ID |  |  |  |
| GuidelineRef | >>> | linkHtml | 0..1 | MAY | ST |  |  |  |
| GuidelineURI | >>>@ | @href | 1..1 | SHALL | URI |  |  |  |
|  | > | entry | 0..\* | SHOULD |  |  |  |  |
| **FollowupProcedure[\*]** | >> | procedure | 1..1 | SHALL |  |  |  |  |
| **\*** | >>@ | @ID | 1..1 | SHALL | XML ID |  | [See [xml ID attribute](#_XML_ID_and)] |  |
|  | >>@ | @classCode | 1..1 | SHALL | CS | SHALL | PROC |  |
|  | >>@ | @moodCode | 1..1 | SHALL | CS | SHALL | PRP |  |
| ProcedureCode | >>> | code | 1..1 | SHALL | CD |  | **ConceptDomain** RecommendedFollow-up |  |
| When | >>> | effectiveTime | 1..1 | SHOULD | IVL <TS> |  |  |  |
|  | >>> | text | 1..1 | SHALL | ED |  |  |  |
| Ref | >>>> | reference | 1..1 | SHALL | URL (XML IDREF) |  | #*contentRef* |  |

#### text/content

Each documented recommendation SHALL be included as narrative in a content element, labeled with an XML ID (see [Section 9.1.1.1](#_Complications_Section_55109-3)). The content element NEED NOT be top level markup within the section/text element; it MAY be wrapped in another allowed narrative block markup, such as paragraph, list/item, or table/row/cell.

If the recommendation is based on a clinical guideline, a reference to that guideline MAY be included in a linkHtml element.

Each recommendation SHOULD have a corresponding structured entry.

#### entry/procedure and @ID

The Recommendation section SHOULD include entries for recommended follow-up actions or procedures. Each entry/procedure SHALL include an XML ID attribute (not to be confused with the **id** element of the act class) that serves as the business name discriminator associated with an instantiation of the element. Even if only one procedure entry is instantiated, the ID attribute shall be present.

Note: While this entry may be a trigger for a tracking system for ensuring follow up on recommendations, the imaging study report only conveys the interpreting physician’s recommendations.

#### entry/procedure/code

An example binding for Concept Domain Recommended Follow-up would be Value Set CID 6028 Mammography Recommended Follow-up.

#### entry/procedure/effectiveTime

The HL7v3 IVL <TS> Data Type used for effectiveTime requires the specification of absolute dates, rather than a date relative to the date of the report.

Note: Thus the concept "follow-up within one year" needs to be encoded as a IVL <TS> with an effectiveTime/high element value one year after the date of the report.

#### entry/procedure/text/reference

The procedure entry SHALL include a text/reference element, whose value attribute SHALL begin with a '#' and SHALL point to its corresponding narrative content block. See [Section 9.1.1.1](#_Complications_Section_55109-3).

Figure 49: Radiology recommendation section example

<section classCode="DOCSECT" moodCode="EVN">

<templateId root="1.2.840.10008.20.x2.x11" />

<id root="1.2.840.10213.2.62.7044779.114265201"/>

<code code="18783-1" codeSystem="2.16.840.1.113883.6.1"

codeSystemName="LOINC" displayName="Study Recommendation" />

<title>Radiology Recommendation</title>

<text>

<content ID="rec01">Biopsy should be considered. Follow-up at 3 month interval.

</content>

<linkHtml href="http://pubs.rsna.org/doi/abs/10.1148/radiol.2372041887" />

</text>

<entry>

<procedure ID=RadRec1 classCode="PROC" moodCode="PRP"/>

<!—local coding scheme -->

<code code="9191919" codeSystem="2.16.840.1.56789.6.1"

codeSystemName="My Hospital Coding System"

displayName="3 month follow-up" />

<effectiveTime value="20141213"/>

<text><reference value="#rec01" /></text>

</entry>

</section>

# Entry-level Templates

## Coded Observation

|  |  |
| --- | --- |
| **Template ID** | 2.16.840.1.113883.10.20.6.2.13 |
| **Name** | Coded Observation |
| **Effective Date** | *(Date of Final Text adoption)* |
| **Version Label** | DICOM-*yyyymmdd* |
| **Status** | Draft *(will change to Active on Final Text adoption)* |
| **Description** | Qualitative or categorical observation using a value of type CD. |
| **Classification** | CDA Entry Level |
| **Relationships** | Invoked from all sections |
| **Context** |  |
| **Open/Closed** | open |
| **Revision History** | From Consolidated CDA r1.1  DICOM-*yyyymmdd*: Added optional XML ID, negationInd, interpretationCode, targetSiteCode, and methodCode with Business Names; added optional subject Coded Observation |

| **Business Name** | **Nest Level** | **Element/ Attribute** | **Card** | **Elem/ Attr Conf** | **Data Type** | **Value Conf** | **Value** | **Subsidiary Template** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **CodedObservation[\*]** |  | observation |  |  |  |  |  |  |
| **\*** | @ | @ID | 0..1 | SHOULD | XML ID |  | [See [xml ID attribute](#_XML_ID_and)] |  |
|  | @ | @classCode | 1..1 | SHALL | CS | SHALL | OBS |  |
|  | @ | @moodCode | 1..1 | SHALL |  | SHALL | EVN |  |
| Not | @ | @negationInd | 0..1 | MAY | BL | SHALL | true |  |
|  | > | templateId | 1..1 | SHALL | II |  |  |  |
|  | >@ | @root | 1..1 | SHALL | UID | SHALL | 2.16.840.1.113883.10.20.6.2.13 |  |
|  | > | id | 1..1 | SHALL | II |  |  |  |
| ObsName | > | code | 1..1 | SHALL | CD |  | **ConceptDomain** ObservationType |  |
| ObsValue | > | value | 1..1 | SHALL | CD |  | **ConceptDomain** ObservationValue |  |
|  | >@ | @xsi:type | 1..1 | SHALL | ST | SHALL | CD |  |
|  | > | statusCode | 1..1 | SHALL | CS | SHALL | COMPLETED |  |
| Time | > | effectiveTime | 0..1 | SHOULD | TS |  |  |  |
| InterpretationCode | > | interpretationCode | 0..1 | MAY | CE | SHALL CNE | **ValueSet** [ObservationInterpretation](#_ObservationInterpretation_Value_Set) |  |
| ActionablePriority | >> | translation | 0..1 | MAY | CD | MAY  CWE | **ValueSet** [CID x7035](#_CID_x7035_)  [[See interpretationCode and translation](#_interpretationCode/translation)] |  |
| TargetSite | > | targetSiteCode | 1..1 | [COND](#targetCond) | CD |  | **ConceptDomain** ObservationSite |  |
|  | >> | qualifier | 0..1 | [COND](#targetLatC) |  |  |  |  |
|  | >>> | name | 1..1 | SHALL | CD | SHALL | (272741003, SNOMED CT, "laterality") |  |
| Laterality | >>> | value | 1..1 | SHALL | CD | SHALL CNE | **ValueSet** [CID 244](#_CID_244_Laterality) Laterality |  |
|  | >> | qualifier | 0..1 | [COND](#targetLatC) |  |  |  |  |
|  | >>> | name | 1..1 | SHALL | CD | SHALL | (106233006, SNOMED CT, "topographical modifier") |  |
| TopoModifier | >>> | value | 1..1 | SHALL | CD | SHALL CNE | **ValueSet** [CID 2](#_CID_244_Laterality) |  |
| Method | > | methodCode | 0..1 | MAY | CD |  | **ConceptDomain** ObservationMethod |  |
|  | > | text | 0..1 | SHOULD | ED |  |  |  |
| Ref | >> | reference | 1..1 | SHALL | URL (XML IDREF) |  | #*contentRef* |  |
|  | > | entryRelationship | 0..\* | MAY |  |  |  |  |
|  | >@ | @typeCode | 1..1 | SHALL | CS | SHALL | SPRT |  |
| *SOPInstance[\*]* | >> | *observation* | 1..1 | SHALL |  |  |  | [[SOP Instance Observation](#_SOP_Instance_Observation) 1.2.840.10008.20.x3.x7](#E_Sop_Instance_Observation) |
|  | > | entryRelationship | 0..\* | MAY |  |  |  |  |
|  | >@ | @typeCode | 1..1 | SHALL | CS | SHALL | SPRT |  |
| *QuantityMeasurement[\*]* | > | *observation* | 1..1 | SHALL |  |  |  | [Quantity Measurement](#_Quantity_Measurement)  2.16.840.1.113883.10.20.6.2.14 |
|  | > | entryRelationship | 0..\* | MAY |  |  |  |  |
|  | >@ | @typeCode | 1..1 | SHALL | CS | SHALL | SUBJ |  |
| *CodedObservation[\*]* | > | *observation* | 1..1 | SHALL |  |  |  | [Coded Observation](#_Code_Observations) 2.16.840.1.113883.10.20.6.2.13 |

### observation/@ID

The Coded Observation entry SHOULD include an XML ID attribute (not to be confused with the **id** element of the act class) that serves as the target for an internal document reference and as business name discriminator associated with an instantiation of the template.

### code and @negationInd

The Observation code element has an associated Concept Domain ObservationType. A representative binding for this Concept Domain is to the value (ASSERTION, actcode[2.16.840.1.113883.5.4], "Assertion"), providing an assertion of a finding concept in the value element.

The Observation may have @negationInd attribute "true", which together with the code "ASSERTION" indicates that the finding was not observed, e.g., to represent "No finding of stroke".

Note: This is the pattern used in Consolidated CDA for negative findings.

### text/reference and Related Narrative Block Markup

The Observation entry SHOULD include a text/reference element, whose value attribute (not to be confused with the value element of the Observation class) SHALL begin with a '#' and SHALL point to its corresponding narrative in the parent section (using the approach defined in CDA Release 2, section 4.3.5.1). See [Section 9.1.1.1](#_Complications_Section_55109-3).

### interpretationCode and translation for Actionable Findings

When an observation is unexpected or "actionable" (one type of which is denoted a “critical finding”), it may be flagged using the interpretationCode. For very abnormal findings the interpretationCode element SHALL be set to (AA, ObservationInterpretation, "abnormal alert"). Unexpected normal findings, e.g., no findings of disease when patient treatment had been planned on the presumption of disease, may also be flagged using interpretationCode (N, ObservationInterpretation, "normal").

The translation element of the interpretationCode may be used to provide a further classification as defined in a regionally- or professionally-specified value set. This template identifies an optional value set for the ACR Actionable Finding categories 1, 2, and 3, as defined by: Larson PA, et al. J Am Coll Radiol 2014; published online. DOI 10.1016/j.jacr.2013.12.016.

The narrative text associated with the actionable finding SHOULD be highlighted using styleCode Bold. See [Section 9.5.1](#_text_2) and [Section 9.1.1.1](#_Complications_Section_55109-3).

Actionable findings that require a specific follow-up action or procedure SHOULD be referenced from a recommendation in the [Recommendation](#_Recommendation) section.

Communication of actionable findings SHOULD be documented in the [Communication of Actionable Findings](#_Communication_of_Actionable) section.

### targetSiteCode

Each observation needs to fully specify its site / location.

**COND:** If the observation site is not precoordinated in the observation/code or observation/value, it SHALL be specified in the observation/targetSiteCode.

**COND:** The qualifier element for laterality SHALL be present if the targetSiteCode represents a paired body part and laterality is not pre-coordinated in the targetSiteCode.

Note that inclusion in a labeled subsection (see section 9.8.9) does not imply a finding site for the observation from the title. The title is not semantically part of the post-coordination.

### entryRelationship/@typeCode=SUBJ/observation - coded

The Coded Observation entry MAY include an actRelationship of type SUBJ (has subject) to a subsidiary Coded Observation (recursively invoking this same template). This allows the constructions of complex clinical statements.

Figure 50: Coded observation example

<text> ... <content ID="fnd-1"> ...finding of a right hilar mass (abnormal – class 1)

...</content>

</text>

...

<entry>

<observation classCode="OBS" moodCode="EVN" ID="obs1" >

<templateId root="2.16.840.1.113883.10.20.6.2.13"/>

<id root="1.2.840.10213.2.62.7044779.114265201"/>

<code code="ASSERTION" codeSystem="2.16.840.1.113883.5.4"

codeSystemName="actCode"

displayName="Assertion"/>

<statusCode code="completed"/>

<value xsi:type="CD" code="309530007"

codeSystem="2.16.840.1.113883.6.96"

codeSystemName="SNOMED CT"

displayName="Hilar mass"/>

<effectiveTime value="20140914171504+0500"/>

<text><reference value="#fnd-1"/></text>

<interpretationCode code = "AA" codeSystem="2.16.840.1.113883.5.83"

codeSystemName="ObservationInterpretation"

displayName="Abnormal Alert">

<translation code="RID49480" codeSystem="2.16.840.1.113883.6.256"

codeSystemName="RADLEX"

displayName="ACR Category 1 Actionable Finding"/>

</interpretationCode>

<!-- although "hilar mass" is by definition in the lung, the observation.value

does not describe right or left lung, so targetSite is required -->

<targetSiteCode code="3341006"

codeSystem="2.16.840.1.113883.6.96" codeSystemName="SNOMED CT"

displayName="right lung">

</targetSiteCode>

<!-- entryRelationship elements referring to SOP Instance Observations

or Quantity Measurement Observations may appear here -->

</observation>

</entry>

## Procedural Medication

|  |  |
| --- | --- |
| **Template ID** | 1.2.840.10008.20.x3.x1 |
| **Name** | Procedural Medication |
| **Effective Date** | *(Date of Final Text adoption)* |
| **Version Label** | DICOM-*yyyymmdd* |
| **Status** | Draft *(will change to Active on Final Text adoption)* |
| **Description** | Procedural medication describes a substance administration that has actually occurred prior to or during a procedure (e.g., imaging contrast/agents, anti-histamines, anti-anxiety, beta blockers to control heart rate during procedure, etc.). |
| **Classification** | CDA Entry Level |
| **Relationships** | Invoked in [Imaging Procedure Description](#_Imaging_Procedure_Description) section |
| **Context** |  |
| **Open/Closed** | Open |
| **Revision History** | DICOM-*yyyymmdd*: Initial version |

| **Business Name** | **Nest Level** | **Element/ Attribute** | **Card** | **Elem/ Attr Conf** | **Data Type** | **Value Conf** | **Value** | **Subsidiary Template** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ProceduralMedication[\*]** or **Contrast[\*]** |  | substanceAdministration | 1..1 | SHALL |  |  |  |  |
| **\*** | @ | @ID | 1..1 | SHOULD | XML ID |  | [See [xml ID attribute](#_XML_ID_and)] |  |
|  | @ | @classCode | 1..1 | SHALL | CS | SHALL | SBADM |  |
|  | @ | @moodCode | 1..1 | SHALL | CS | SHALL | EVN |  |
|  | > | templateId | 1..1 | SHALL | II |  |  |  |
|  | >@ | @root | 1..1 | SHALL | UID | SHALL | 1.2.840.10008.20.x3.x1 |  |
|  | > | id | 1..1 | SHALL | II |  |  |  |
|  | > | text | 0..1 | SHOULD | ED |  |  |  |
| Ref | >> | reference | 0..1 | SHOULD | URL (XML IDREF) |  | *#contentRef* |  |
|  | > | statusCode | 1..1 | SHALL | CS | SHALL | COMPLETED |  |
| Route | > | routeCode | 0..1 | MAY | CE | SHOULD CWE | **ValueSet** [CID 11](#_CID_11_Route) Route Of Adminis­tration |  |
| Dose | > | doseQuantity | 0..1 | SHOULD | PQ |  |  |  |
| DoseUnit | >@ | @unit | 0..1 | SHOULD |  | SHALL CNE | **ValueSet** [CID 82](#_CID_82_Units) Units of Measure |  |
| Rate | > | rateQuantity | 0..1 | MAY | PQ |  |  |  |
| RateUnit | >@ | @unit | 1..1 | SHALL | CS | SHALL CNE | **ValueSet** [CID 82](#_CID_82_Units) Units of Measure |  |
|  | > | consumable | 1..1 | SHALL |  |  |  |  |
|  | >> | manufacturedProduct | 1..1 | SHALL |  |  |  |  |
|  | >>@ | @classCode | 1..1 | SHALL | CS | SHALL | MANU |  |
|  | >>> | manufacturedMaterial | 1..1 | SHALL |  |  |  |  |
| CodedProductName | >>>> | code | 1..1 | SHALL | CE |  | **ConceptDomain**  MedContrastName |  |
| FreeTextProductName | >>>>> | original Text | 0..1 | SHOULD | ED |  |  |  |

### Business Name alias

This template defines a primary scoping business name "ProceduralMedication" and an alias "Contrast". This allows production logic to use either term, although the structure is identical.

### substanceAdministration/@ID

The substanceAdministration entry SHOULD include an XML **ID** attribute (not to be confused with the **id** element of the act class) that serves as the business name discriminator associated with an instantiation of the template.

### text/reference and Related Narrative Block Markup

The substanceAdministration entry SHOULD include a text/reference element, whose value attribute SHALL begin with a '#' and SHALL point to its corresponding narrative in the parent section (using the approach defined in CDA Release 2, section 4.3.5.1). See [Section 9.1.1.1](#_Complications_Section_55109-3).

### doseQuantity

* 1. Pre-coordinated consumable: If the consumable code is a precoordinated unit dose (e.g. "metoprolol 25mg tablet") then doseQuantity is a unitless number that indicates the number of products given per administration (e.g. "2", meaning 2 x "metoprolol 25mg tablet").
  2. Not pre-coordinated consumable: If the consumable code is not pre-coordinated (e.g. is simply "metoprolol"), then doseQuantity must represent a physical quantity with @unit, e.g. "25" and "mg", specifying the amount of product given per administration.

Figure 51: Procedural Medication activity example

<substanceAdministration classCode="SBADM" moodCode="EVN" ID="med-1">

<templateId root="1.2.840.10008.20.x3.x1"/>

<id root="cdbd33f0-6cde-11db-9fe1-0800200c9a66"/>

<text>

<reference value="#med1"/>

</text>

<statusCode code="completed"/>

<routeCode code="47625008" codeSystem="2.16.840.1.113883.6.96"

codeSystemName="SNOMED CT" displayName="intravenous route"/>

<doseQuantity value="100" unit="ml"/>

<consumable>

<manufacturedProduct classCode="MANU">

<templateId root="2.16.840.1.113883.10.20.22.4.23"/>

<id/>

<manufacturedMaterial>

<code code="412372002"

codeSystem="2.16.840.1.113883.6.96"

codeSystemName=”SNOMED CT”

displayName="Meglumine Diatrizoate”>

<originalText>

<reference value="#manmat1"/>

</originalText>

<translation code="3320"

codeSystem="2.16.840.1.113883.6.88" codeSystemName="RxNorm"

displayName="Diatrizoate Meglumine"/>

</code>

</manufacturedMaterial>

<manufacturerOrganization>...</manufacturerOrganization>

</manufacturedProduct>

</consumable>

</substanceAdministration>

## observationMedia

|  |  |
| --- | --- |
| **Template ID** | 1.3.6.1.4.1.19376.1.4.1.4.7 |
| **Name** | observationMedia Entry |
| **Effective Date** | 2011-07 |
| **Version Label** | IHECIRC-TI |
| **Status** | Active |
| **Description** | The observationMedia Entry provides an in-line graphic depiction of the section findings. It is referenced by a <renderMultiMedia> element in the section text. Typical uses are for graphic representation of findings (e.g., arterial tree diagrams) or in-line representations of key images. |
| **Classification** | CDA Entry Level |
| **Relationships** |  |
| **Context** |  |
| **Open/Closed** | Open |
| **Revision History** | From IHE Cardiac Imaging Report Content Profile Supplement for Trial Implementation |

| **Business Name** | **Nest Level** | **Element/ Attribute** | **Card** | **Elem/ Attr Conf** | **Data Type** | **Value Conf** | **Value** | **Subsidiary Template** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ObservationMedia[\*]** |  | observationMedia | 1..1 | SHALL |  |  |  |  |
| **\*** | @ | @ID | 1..1 | SHALL | XML ID |  | [See [xml ID attribute](#_XML_ID_and)] |  |
|  | > | templateId | 1..1 | SHALL | II |  |  |  |
|  | >@ | @root | 1..1 | SHALL | UID | SHALL | 1.3.6.1.4.1.19376.1.4.1.4.7 |  |
| Image | > | value | 1..1 | SHALL | ED |  |  |  |
|  | >@ | @representation | 1..1 | SHALL | CS | SHALL | B64 |  |
| MediaType | >@ | @mediaType | 1..1 | SHALL | CS | SHALL  CNE  STATIC | **ValueSet** [ImageMedia Type](#_ImageMediaType) |  |
| ImageURI | >> | reference | 0..1 | MAY | TEL |  |  |  |

### observationMedia/@ID and Related Narrative Block Markup

The ObservationMedia entry SHALL include an XML ID attribute (not to be confused with the **id** element of the act class) used as a target of a <renderMultiMedia> element in the section/text narrative block of the parent section. See [Section 9.1.1.3](#_<renderMultiMedia>_markup_and).

### value and reference

The **value** of type ED SHALL contain an in-line encoding of a graphic using base64. The <reference> element, if present, SHALL reference a URI for the same image as included in-line.

Figure 52: Observation Media activity example

<observationMedia classCode="SBADM" moodCode="EVN" ID="obsMedia-1">

<templateId root="1.3.6.1.4.1.19376.1.4.1.4.7"/>

<id root="1.2.840.19432234.2342342.23232232"/>

<value representation="B64" mediaType="image/jpeg">

Bgd3fsET4g...

</value>

</observationMedia>

## Procedure Technique

|  |  |
| --- | --- |
| **Template ID** | 1.2.840.10008.20.x3.x2 |
| **Name** | Procedure Technique |
| **Effective Date** | *(Date of Final Text adoption)* |
| **Version Label** | DICOM-*yyyymmdd* |
| **Status** | Draft *(will change to Active on Final Text adoption)* |
| **Description** | The Procedure Technique entry allows the encoding of various parameters of the image acquisition. Other details may be found in other entries (e.g., procedural medication). |
| **Classification** | CDA Entry Level |
| **Relationships** | Invoked by [Imaging Procedure Description](#_Imaging_Procedure_Description) section |
| **Context** |  |
| **Open/Closed** | Open |
| **Revision History** | DICOM-*yyyymmdd*: Initial version |

| **Business Name** | **Nest Level** | **Element/ Attribute** | **Card** | **Elem/ Attr Conf** | **Data Type** | **Value Conf** | **Value** | **Subsidiary Template** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ProcedureTechnique** |  | procedure | 1..1 | SHALL |  |  |  |  |
|  | @ | @classCode | 1..1 | SHALL | CS | SHALL | PROC |  |
|  | @ | @moodCode | 1..1 | SHALL | CS | SHALL | EVN |  |
|  | > | templateId | 1..1 | SHALL | II |  |  |  |
|  | >@ | @root | 1..1 | SHALL | UID |  | 1.2.840.10008.20.x3.x2 |  |
|  | > | id | 1..\* | SHALL | II |  |  |  |
| ProcedureCode | > | code | 1..1 | SHALL | CD |  | **ConceptDomain** ProcedureCode |  |
| EffectiveTime | > | effectiveTime | 0..1 | SHOULD | IVL <TS> |  |  |  |
| Modality | > | methodCode | 1..\* | SHALL | CD | SHALL CNE | **ValueSet** [CID 29](#_CID_29_Acquisition_1) Acquisition Modality |  |
| MethodCode | > | methodCode | 0..\* | MAY | CD |  | **ConceptDomain** ImagingTechnique |  |
| TargetSite | > | targetSiteCode | 0..\* | SHOULD | CD |  | **ConceptDomain** TargetSite |  |
|  | >> | qualifier | 0..1 | [COND](#targetLatP) |  |  |  |  |
|  | >>> | name | 1..1 | SHALL | CD | SHALL | (272741003, SNOMED CT, "laterality") |  |
| Laterality | >>> | value | 1..1 | SHALL | CD | SHALL CNE | **ValueSet** [CID 244](#_CID_244_Laterality) Laterality |  |
| Ref | >> | reference | 1..1 | SHALL | URL (XML IDREF) |  | #*contentRef* |  |
|  | > | participation | 0..1 | [COND](#priorLocation) |  |  |  |  |
|  | >@ | @typecode | 1..1 | SHALL | CS | SHALL | LOC |  |
|  | >> | participantRole | 1..1 | SHALL |  |  |  |  |
|  | >>@ | classCode | 1..1 | SHALL | CS | SHALL | SDLOC |  |
|  | >>> | scopingEntity | 1..1 | SHALL |  |  |  |  |
| ProviderOrganization | >>>> | desc | 1..1 | SHALL | ST |  |  |  |

id

procedure/id does not correspond to any DICOM UID, but is an arbitrary identifier for this entry.

code

When invoked from the Current Imaging Procedure Description section, procedure/code SHALL be identical to documentationOf/serviceEvent/code in the CDA header.

### methodCode - modality

When invoked from the (current) Imaging Procedure Description section, procedure/methodCode used for modality SHALL be identical to documentationOf/serviceEvent/code/translation used for modality in the CDA header (see [Section 8.2.4.1](#_code_and_translation)).

### methodCode – other parameters

methodCode may be used to encode study type, contrast use, challenge, views , positioning (CID 91-94), etc.

### targetSiteCode and laterality

procedure/targetSiteCode may be used to encode the specific anatomic focus, and is not necessarily identical to documentationOf/serviceEvent/code/translation used for anatomic region in the CDA header. This may be derived from *Body Part Examined (0018,0015)*, as mapped to SNOMED codes in PS3.16 Annex L, or from *Anatomic Region Sequence (0008,2218)*.

**COND:** The qualifier element for laterality SHALL be present if the targetSiteCode represents a paired body part and laterality is not pre-coordinated in the targetSiteCode.

### text/reference and Related Narrative Block Markup

The Procedure entry SHOULD include a text/reference element, whose **value** attribute SHALL begin with a '#' and SHALL point to its corresponding narrative in the parent section (using the approach defined in CDA Release 2, section 4.3.5.1). See [Section 9.1.1.1](#_<content>_markup_and).

### participation - location

**COND:** If this template is invoked from the Comparison Study section, procedure/participation MAY be used to identify the location (provider organization) at which the Comparison Study was performed.

Figure 53: Procedure Technique template example

<procedure moodCode="EVN" classCode="PROC">

<templateId root="1.2.840.10008.20.x3.x2"/>

<id root="1.2.840.6544.33.9100653988998717.997527582345600170"/>

<procedureCode code="RPID465"

displayName="MR NECK ANGIOGRAPHY"

codeSystem="2.16.840.1.113883.6.256"

codeSystemName="RadLex"/>

<effectiveTime value="20140913222400"/>

<methodCode code="MR"

displayName="Magnetic Resonance"

codeSystem="1.2.840.10008.2.16.4" codeSystemName="DCM"/>

<targetSiteCode code="45048000"

codeSystem="2.16.840.1.113883.6.96" codeSystemName="SNOMED CT"

displayName="Neck (structure)">

<qualifier>

<name code="272741003"

codeSystem="2.16.840.1.113883.6.96"

codeSystemName="SNOMED CT" displayName="laterality" />

<value code="66459002"

codeSystem="2.16.840.1.113883.6.96"

codeSystemName="SNOMED CT" displayName="Unilateral" />

</qualifier>

</targetSiteCode>

</procedure>

## Quantity Measurement

|  |  |
| --- | --- |
| **Template ID** | 2.16.840.1.113883.10.20.6.2.14 |
| **Name** | Quantity Measurement |
| **Effective Date** | *(Date of Final Text adoption)* |
| **Version Label** | DICOM-*yyyymmdd* |
| **Status** | Draft *(will change to Active on Final Text adoption)* |
| **Description** | A Quantity Measurement records quantitative measurements such as linear, area, volume, and numeric measurements. If based on image data, a reference to the image may be present. |
| **Classification** | CDA Entry Level |
| **Relationships** |  |
| **Context** |  |
| **Open/Closed** | open |
| **Revision History** | DICOM-*yyyymmdd*: Initial publication, derived from template originally published in DIR r1-2009, revised in Consolidated CDA r1-2011 as 2.16.840.1.113883.10.20.6.2.14. This derivation includes recommended XML ID; Units of Measure specified with DICOM value set for UCUM (CID 82 Units of Measure), equivalent to C-CDA specified value set (UCUM Units of Measure (case sensitive) 2.16.840.1.113883.11.12839); addition of optional interpretationCode |

| **Business Name** | **Nest Level** | **Element/ Attribute** | **Card** | **Elem/ Attr Conf** | **Data Type** | **Value Conf** | **Value** | **Subsidiary Template** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **QuantityMeasurement[\*]** |  | observation | 1..1 | SHALL |  |  |  |  |
| **\*** | @ | @ID | 0..1 | SHOULD | XML ID |  | [See [xml ID attribute](#_XML_ID_and)] |  |
|  | @ | @classCode | 1..1 | SHALL | CS | SHALL | OBS |  |
|  | @ | @moodCode | 1..1 | SHALL | CS | SHALL | EVN |  |
|  | > | templateId | 1..1 | SHALL | II |  |  |  |
|  | >@ | @root | 1..1 | SHALL | UID | SHALL | 2.16.840.1.113883.10.20.6.2.14 |  |
|  | > | id | 1..1 | SHALL | II |  |  |  |
| MeasurementName | > | code | 1..1 | SHALL | CD |  | **ConceptDomain** ObservationType |  |
|  | > | value | 1..1 | SHALL |  |  |  |  |
|  | >@ | @xsi:type | 1..1 | SHALL | ST | SHALL | PQ |  |
| MeasurementValue | >@ | @value | 1..1 | SHALL | REAL |  |  |  |
| MeasurementUnits | >@ | @unit | 1..1 | SHALL | CS | SHALL  CNE | **ValueSet** [CID 82](#_CID_82_Units) Units of Measure |  |
|  | > | statusCode | 1..1 | SHALL | CS | SHALL | COMPLETED |  |
| Time | > | effectiveTime | 0..1 | SHOULD | TS |  |  |  |
| InterpretationCode | > | interpretationCode | 0..1 | MAY | CE | SHALL CNE | **ValueSet** [ObservationInterpretation](#_ObservationInterpretation_Value_Set) |  |
| ActionablePriority | >> | translation | 1..1 | MAY | CD | MAY CWE | **ValueSet** [CID x7035](#_CID_x7035_)  [[See interpretationCode and translation](#_interpretationCode/translation_1)] |  |
| TargetSite | > | targetSiteCode | 1..1 | [COND](#targetCondQ) | CD |  | **ConceptDomain** ObservationSite |  |
|  | >> | qualifier | 0..1 | [COND](#targetLatQ) |  |  |  |  |
|  | >>> | name | 1..1 | SHALL | CD | SHALL | (272741003, SNOMED CT, "laterality") |  |
| Laterality | >>> | value | 1..1 | SHALL | CD | SHALL CNE | **ValueSet** [CID 244](#_CID_244_Laterality) Laterality |  |
|  | >> | qualifier | 0..1 | [COND](#targetLatQ) |  |  |  |  |
|  | >>> | name | 1..1 | SHALL | CD | SHALL | (106233006, SNOMED CT, "Topographical modifier") |  |
| TopoModifier | >>> | value | 1..1 | SHALL | CD | SHALL CNE | **ValueSet** CID 2 |  |
| Method | > | methodCode | 0..1 | MAY | CD |  | **ConceptDomain** ObservationMethod |  |
|  | > | text | 0..1 | SHOULD |  |  |  |  |
| Ref | >> | reference | 1..1 | SHALL | URL (XML IDREF) |  | #*contentRef* |  |
|  | > | entryRelationship | 0..\* | MAY |  |  |  |  |
|  | >@ | @typeCode | 1..1 | SHALL | CS | SHALL | SPRT |  |
| *SOPInstance[\*]* | >> | *observation* | 1..1 | SHALL |  |  |  | [[SOP Instance Observation](#_SOP_Instance_Observation) 1.2.840.10008.20.x3.x7](#E_Sop_Instance_Observation) |
|  | > | *entryRelationship* | 0..\* | MAY |  |  |  |  |
|  | >@ | *@typeCode* | 1..1 | SHALL | CS | SHALL | SPRT |  |
| *QuantityMeasurement[\*]* | > | *observation* | 1..1 | SHALL |  |  |  | [Quantity Measurement](#_Quantity_Measurement)  2.16.840.1.113883.10.20.6.2.14 |

### observation/@ID

The QuantityMeasurement observation entry SHALL include an XML ID attribute (not to be confused with the **id** element of the act class) that serves as the business name discriminator associated with an instantiation of the template.

### text/reference and Related Narrative Block Markup

The Observation entry SHOULD include a text/reference element, whose **value** attribute (not to be confused with the **value** element of the Observation class) SHALL begin with a '#' and SHALL point to its corresponding narrative in the parent section (using the approach defined in CDA Release 2, section 4.3.5.1). See [Section 9.1.1.1](#_<content>_markup_and).

### interpretationCode and translation for Actionable Findings

When a measurement is out of normal range, it may be flagged using the interpretationCode. Very abnormal values, often denoted as exceeding "panic limits", or as "actionable" or “critical findings”, may have values such as (LL, ObservationInterpretation, "low alert"), (HH, ObservationInterpretation, "high alert"), or (AA, ObservationInterpretation, "abnormal alert").

The translation element of the interpretationCode may be used to provide a further classification as defined in a regionally- or professionally-specified value set. This template identifies an optional value set for the ACR Actionable Finding categories 1, 2, and 3, as defined by: Larson PA, et al. J Am Coll Radiol 2014; published online. DOI 10.1016/j.jacr.2013.12.016.

The narrative text associated with the actionable finding SHOULD be highlighted using styleCode Bold. See [Section 9.1.1.1](#_Complications_Section_55109-3).

Actionable findings that require a specific follow-up action or procedure SHOULD be referenced from a recommendation in the [Recommendation](#_Recommendation) section.

Communication of actionable findings SHOULD be documented in the [Communication of Actionable Findings](#_Communication_of_Actionable) section.

### targetSiteCode

Each observation needs to fully specify its site / location.

**COND:** If the observation site is not precoordinated in the observation/code, it SHALL be specified in the observation/targetSiteCode.

**COND:** The qualifier element for laterality SHALL be present if the targetSiteCode represents a paired body part and laterality is not pre-coordinated in the targetSiteCode.

**COND:** The qualifier element for topographical modifier SHALL be present if the targetSiteCode does not fully specify the observation location in sufficient detail.

Notes: Inclusion of a site name in a labeled subsection title (see section 9.8.9) does not imply a finding site for observations within that subsection. The title is not semantically part of the post-coordination, and target sites must be explicitly identified.

See example of a measurement using a topographical modifier qualifier.

Figure 54: Quantity measurement observation example 1

<text> ...

<content ID="Q21" styleCode="Bold">Calcium score (Agatston): 817 [HIGH – ACR Cat3]

</content>

... </text>

<entry>

<observation classCode="OBS" moodCode="EVN" ID="Q21a">

<templateId root="2.16.840.1.113883.10.20.6.2.14"/>

<id root="1.2.840.10213.2.62.7044234.11652014"/>

<code code="112058" codeSystem="1.2.840.10008.2.16.4"

codeSystemName="DCM" displayName="Calcium score" />

<text><reference value="#Q21"/></text>

<statusCode code="COMPLETED"/>

<effectiveTime value="20140913223912"/>

<value xsi:type="PQ" unit="[arb'U]">817</value>

<interpretationCode code="HH" codeSystem="2.16.840.1.113883.5.83"

codeSystemName="ObservationInterpretation" displayName="High alert">

<translation code="RID49482" codeSystem="2.16.840.1.113883.6.256"

codeSystemName="RADLEX" displayName="ACR Category 3 Actionable Finding" />

</interpretationCode>

<methodCode code="112055" codeSystem="1.2.840.10008.2.16.4"

codeSystemName="DCM" displayName="Agatston" />

<!-- entryRelationships to SOP Instance Observations may go here -->

</observation>

Figure 55: Quantity measurement observation example 2

<section>

<title>Left femoral artery</title>

<text> ...

<content ID="M10">Distal lumen stenosis: 75%</content>

... </text>

<entry>

<observation classCode="OBS" moodCode="EVN" ID="OM10">

<templateId root="2.16.840.1.113883.10.20.6.2.14"/>

<id root="1.2.840.10213.2.62.7044234.988810005"/>

<code code="408714007" codeSystem="2.16.840.1.113883.6.96"

codeSystemName=" SNOMED CT"

displayName="Vessel lumen diameter reduction" />

<text><reference value="#M10"/></text>

<statusCode code="COMPLETED"/>

<effectiveTime value="20140913223912"/>

<value xsi:type="PQ" unit="%">75</value>

<targetSiteCode code="113270003"

codeSystem="2.16.840.1.113883.6.96" codeSystemName="SNOMED CT"

displayName="Left femoral artery">

<qualifier>

<name code="106233006" codeSystem="2.16.840.1.113883.6.96"

codeSystemName="SNOMED CT" displayName="Topographical modifier" />

<value code="46053002" codeSystem="2.16.840.1.113883.6.96"

codeSystemName="SNOMED CT" displayName="Distal" />

</qualifier>

</targetSiteCode>

</observation>

## Study Act

|  |  |
| --- | --- |
| **Template ID** | 1.2.840.10008.20.x3.x5 |
| **Name** | Study Act |
| **Effective Date** | *(Date of Final Text adoption)* |
| **Version Label** | DICOM-*yyyymmdd* |
| **Status** | Draft *(will change to Active on Final Text adoption)* |
| **Description** | A Study Act contains the DICOM study information that defines the characteristics of an imaging study performed on a patient. An imaging study is a collection of one or more series of medical images, presentation states, SR documents, overlays, and/or curves that are logically related for the purpose of diagnosing a patient. Each study is associated with exactly one patient. A study may include composite instances that are created by a single modality, multiple modalities, or by multiple devices of the same modality. The study information is modality-independent. |
| **Classification** | CDA Entry Level |
| **Relationships** | Used By: [DICOM Object Catalog](#_DICOM_Object_Catalog_6) and [Comparison Study](#_Comparison_Study) |
| **Context** |  |
| **Open/Closed** | Open |
| **Revision History** | DICOM-*yyyymmdd*: Initial publication, derived from template originally published in DIR r1-2009, revised in Consolidated CDA r1-2011 as 2.16.840.1.113883.10.20.6.2.6. This derivation includes recommended XML ID, makes Series conditional (required for Object Catalog) to support use in Comparison Study reference, and uses DICOM-*yyyymmdd* Series Act subsidiary template. |

| **Business Name** | **Nest Level** | **Element/ Attribute** | **Card** | **Elem/ Attr Conf** | **Data Type** | **Value Conf** | **Value** | **Subsidiary Template** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Study[\*]** |  | act | 1..1 | SHALL |  |  |  |  |
|  | @ | @classCode | 1..1 | SHALL | CS | SHALL | ACT |  |
|  | @ | @moodCode | 1..1 | SHALL | CS | SHALL | EVN |  |
| **\*** | @ | @ID | 0..1 | SHOULD | XML ID |  | [See [xml ID attribute](#_XML_ID_and)] |  |
|  | > | templateId | 1..1 | SHALL | II |  |  |  |
|  | >@ | @root | 1..1 | SHALL | UID | SHALL | 1.2.840.10008.20.x3.x5 |  |
|  | > | id | 1..1 | SHALL | II |  |  |  |
| StudyUID | >@ | @root | 1..1 | SHALL | UID |  | *Study Instance UID* *(0020,000D)* |  |
|  | >@ | @extension | 0..0 | SHALL NOT |  |  |  |  |
|  | > | code | 1..1 | SHALL | CD | SHALL | (113014, DCM, "Study") |  |
| Description | > | text | 0..1 | MAY | ED |  |  |  |
| Time | > | effectiveTime | 0..1 | SHOULD | TS |  | *Study Date (0008,0020) + Study Time* *(0008,0030) +* *Timezone Offset From UTC (0008,0201)* |  |
|  | > | entryRelationship | 1..\* | [COND](#_entryRelationship/act_-_series) |  |  |  |  |
|  | >@ | @typeCode | 1..1 | SHALL | CS | SHALL | COMP |  |
| *Series[\*]* | >> | *act* |  |  |  |  |  | [Series Act](#_Series_Act) 1.2.840.10008.20.x3.x6 |

### act/@ID

The act entry SHOULD include an XML **ID** attribute (not to be confused with the **id** element of the act class) that serves as the Business Name discriminator associated with an instantiation of the template.

Note: The DICOM Study ID (0020,0010) attribute value, if it conforms to the XML Name production requirements, may be used as the ID.

### entryRelationship/act - series

**COND:** If this template is invoked by the DICOM Object Catalog, the entryrelationship to the Series act SHALL be present, otherwise it MAY be present.

Figure 56: Study act example

<act classCode="ACT" moodCode="EVN" ID="S90051051">

<templateId root="2.16.840.1.113883.10.20.6.2.6"/>

<id root="1.2.840.113619.2.62.994044785528.114289542805"/>

<code code="113014" codeSystem="1.2.840.10008.2.16.4"

codeSystemName="DCM" displayName="Study"/>

<effectiveTime value="20060823223232">

<!-- \*\*\*\* Series \*\*\*\*-->

<entryRelationship typeCode="COMP">

<act classCode="ACT" moodCode="EVN">

...

</act>

</entryRelationship>

</act>

## Series Act

|  |  |
| --- | --- |
| **Template ID** | 1.2.840.10008.20.x3.x6 |
| **Name** | Series Act |
| **Effective Date** | *(Date of Final Text adoption)* |
| **Version Label** | DICOM-*yyyymmdd* |
| **Status** | Draft *(will change to Active on Final Text adoption)* |
| **Description** | A Series Act contains the DICOM series information for referenced DICOM composite objects. The series information defines the attributes that are used to group composite instances into distinct logical sets. Each series is associated with exactly one study. Series Act clinical statements are only instantiated in the DICOM Object Catalog section inside a Study Act. |
| **Classification** | CDA Entry Level |
| **Relationships** | Used By: [Study Act](#E_Study_Act) |
| **Context** |  |
| **Open/Closed** | open |
| **Revision History** | DICOM-*yyyymmdd*: Initial publication, derived from template originally published in DIR r1-2009, revised in Consolidated CDA r1-2011 as 2.16.840.1.113883.10.20.22.4.63. This derivation includes recommended XML ID, and uses DICOM-*yyyymmdd* SOP Instance subsidiary template. |

| **Business Name** | **Nest Level** | **Element/ Attribute** | **Card** | **Elem/ Attr Conf** | **Data Type** | **Value Conf** | **Value** | **Subsidiary Template** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Series[\*]** |  | act | 1..1 | SHALL |  |  |  |  |
|  | @ | @classCode | 1..1 | SHALL | CS | SHALL | ACT |  |
|  | @ | @moodCode | 1..1 | SHALL | CS | SHALL | EVN |  |
| **\*** | @ | @ID | 0..1 | SHOULD | XML ID |  | [See [xml ID attribute](#_XML_ID_and)] |  |
|  | > | templateId | 1..1 | SHALL | II |  |  |  |
|  | >@ | @root | 1..1 | SHALL | UID | SHALL | 1.2.840.10008.20.x3.x6 |  |
|  | > | id | 1..1 | SHALL |  |  |  |  |
| SeriesUID | >@ | @root | 1..1 | SHALL | UID |  | *Series Instance UID* *(0020,000E)* |  |
|  | >@ | @extension | 0..0 | SHALL NOT |  |  |  |  |
|  | > | code | 1..1 | SHALL | CD | SHALL | (113015, DCM, "Series" ) |  |
|  | >> | qualifier | 1..1 | SHALL |  |  |  |  |
|  | >>> | name | 1..1 | SHALL | CD | SHALL | (121139, DCM, "Modality") |  |
| Modality | >>> | value | 1..1 | SHALL | CD |  | *Modality (0008,0060)* |  |
| Description | > | text | 0..1 | MAY | ED |  |  |  |
| Time | > | effectiveTime | 0..1 | SHOULD | TS |  | *Series Date (0008,0021) + Series Time* *(0008,0031) +* *Timezone Offset From UTC (0008,0201)* |  |
|  | > | entryRelationship | 1..\* | SHALL |  |  |  |  |
|  | >@ | @typeCode | 1..1 | SHALL | CS | SHALL | COMP |  |
| *SOPInstance[\*]* | >> | *observation* | 1..1 |  |  |  |  | [[SOP Instance Observation](#_SOP_Instance_Observation) 1.2.840.10008.20.x3.x7](#E_Sop_Instance_Observation) |

### act/@ID

The act entry SHALL include an XML **ID** attribute (not to be confused with the **id** element of the act class) that serves as the business name discriminator associated with an instantiation of the template.

Figure 57: Series act example

<act classCode="ACT" moodCode="EVN" ID="Series1">

<templateId root="1.2.840.10008.20.x3.x6"/>

<id root="1.2.840.113619.2.62.994044785528.20060823223142485051"/>

<code code="113015" codeSystem="1.2.840.10008.2.16.4"

codeSystemName="DCM" displayName="Series">

<qualifier>

<name code="121139" codeSystem="1.2.840.10008.2.16.4"

codeSystemName="DCM"

displayName="Modality" />

<value code="CR" codeSystem="1.2.840.10008.2.16.4"

codeSystemName="DCM"

displayName="Computed Radiography" />

</qualifier>

</code>

<!-- \*\*\*\* SOP Instance UID \*\*\* -->

<entryRelationship typeCode="COMP">

<observation classCode="DGIMG" moodCode="EVN">

<templateId root="2.16.840.1.113883.10.20.6.2.8"/>

...

</observation>

</entryRelationship>

</act>

## SOP Instance Observation

|  |  |
| --- | --- |
| **Template ID** | 1.2.840.10008.20.x3.x7 |
| **Name** | SOP Instance Observation |
| **Effective Date** | *(Date of Final Text adoption)* |
| **Version Label** | DICOM-*yyyymmdd* |
| **Status** | Draft *(will change to Active on Final Text adoption)* |
| **Description** | A SOP Instance Observation contains the DICOM Service Object Pair (SOP) Instance information for referenced DICOM composite objects. The SOP Instance act class is used to reference both image and non-image DICOM instances. The text attribute contains the DICOM WADO reference. |
| **Classification** | CDA Entry Level |
| **Relationships** |  |
| **Context** |  |
| **Open/Closed** | open |
| **Revision History** | DICOM-*yyyymmdd*: Initial publication, derived from template originally published in DIR r1-2009, revised in Consolidated CDA r1-2011 as 2.16.840.1.113883.10.20.6.2.8  This derivation includes required XML ID; Purpose of Reference value set specified with DICOM CID 7003; directly incorporates descendant templates Purpose of Reference Observation, Referenced Frames, and Boundary Observation |

| **Business Name** | **Nest Level** | **Element/ Attribute** | **Card** | **Elem/ Attr Conf** | **Data Type** | **Value Conf** | **Value** | **Subsidiary Template** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SOPInstance[\*]** |  | observation | 1..1 | SHALL |  |  |  |  |
|  | @ | @classCode | 1..1 | SHALL | CS | SHALL | DGIMG |  |
|  | @ | @moodCode | 1..1 | SHALL | CS | SHALL | EVN |  |
| **\*** | @ | @ID | 0..1 | SHOULD | XML ID |  | [See [xml ID attribute](#_XML_ID_and)] |  |
|  | > | templateId | 1..1 | SHALL | II |  |  |  |
|  | >@ | @root | 1..1 | SHALL | UID | SHALL | 1.2.840.10008.20.x3.x7 |  |
| SOPInstanceUID | > | id | 1..\* | SHALL | II |  | *SOP Instance UID* *(0008,0018)* |  |
|  | > | code | 1..1 | SHALL | CD |  |  |  |
| SOPClassUID | >@ | @code | 1..1 | SHALL | ST |  | *SOP Class UID* *(0008,0016)* |  |
|  | >@ | @codeSystem | 1..1 | SHALL | UID | SHALL | 1.2.840.10008.2.6.1 |  |
|  | > | text | 0..1 | SHOULD | ED |  |  |  |
|  | >@ | @mediaType | 1..1 | SHALL | ST | SHALL | application/dicom |  |
| WADOReference | >> | reference | 1..1 | SHALL | URL |  |  |  |
|  | > | effectiveTime | 0..1 | SHOULD | TS |  | *Instance Creation Date (0008,0012) + Instance Creation Time* *(0008,0013) +* *Timezone Offset From UTC (0008,0201)* |  |
|  | > | entryRelationship | 0..\* | [COND](#entrySOPCOND) |  |  |  |  |
|  | >@ | @typeCode | 1..1 | SHALL | CS | SHALL | SUBJ |  |
| *SOPInstance[\*]* | >> | *observation* | 1..1 | SHALL |  |  |  | [[SOP Instance Observation](#_SOP_Instance_Observation) 1.2.840.10008.20.x3.x7](#E_Sop_Instance_Observation) |
|  | > | entryRelationship | 0..1 | [COND](#entrySOPCOND) |  |  |  |  |
|  | >@ | @typeCode | 1..1 | SHALL | CS | SHALL | RSON |  |
|  | >> | observation | 1..1 | SHALL |  |  |  |  |
|  | >>@ | @classCode | 1..1 | SHALL | CS | SHALL | OBS |  |
|  | >>@ | @moodCode | 1..1 | SHALL | CS | SHALL | EVN |  |
|  | >>> | code | 1..1 | SHALL | CD | SHALL | (ASSERTION, ActCode [2.16.840.1.113883.5.4], "Assertion") |  |
| PurposeOfReference | >>> | value | 1..1 | SHALL | CD | SHALL  CWE  DYNAMIC | **ValueSet** [CID 7003](#_CID_7003_Diagnostic) Diagnostic Imaging Report Purposes of Reference |  |
|  | > | entryRelationship | 0..1 | [COND](#entrySOPCOND) |  |  |  |  |
|  | >@ | @typeCode | 1..1 | SHALL | CS | SHALL | COMP |  |
|  | >> | observation | 1..1 | SHALL |  |  |  |  |
|  | >>@ | @classCode | 1..1 | SHALL | CS | SHALL | ROIBND |  |
|  | >>@ | @moodCode | 1..1 | SHALL | CS | SHALL | EVN |  |
|  | >> | code | 1..1 | SHALL | CD | SHALL | (121190, DCM, "Referenced Frames") |  |
|  | >> | entryRelationship | 1..1 | SHALL |  |  |  |  |
|  | >>@ | @typeCode | 1..1 | SHALL | CS | SHALL | COMP |  |
|  | >>> | observation | 1..1 | SHALL |  |  |  |  |
|  | >>>@ | @classCode | 1..1 | SHALL | CS | SHALL | OBS |  |
|  | >>>@ | @moodCode | 1..1 | SHALL | CS | SHALL | EVN |  |
|  | >>> | code | 1..1 | SHALL | CD | SHALL | (113036, DCM, "Frames for Display") |  |
| ReferencedFrames | >>> | value | 1..1 | SHALL | LIST <INT> |  |  |  |

### observation/@ID

The observation entry SHALL include an XML ID attribute (not to be confused with the **id** element of the act class) that serves as the business name discriminator associated with an instantiation of the template.

### entryRelationship

**COND:** entryRelationship SHALL NOT be present in a SOP Instance Observation included within a DICOM Object Catalog section, and MAY be present otherwise.

#### entryRelationship/@typeCode=SUBJ (SOP Instance)

This template recursively invokes itself to allow a Presentation State SOP Instance reference to identify the target Image SOP Instances.

Note: This is not required, as the Presentation State SOP Instance itself identifies the target Image SOP Instances.

#### entryRelationship/@typeCode=RSON (Purpose of Reference)

A Purpose of Reference Observation describes the purpose of the DICOM composite object reference. Appropriate codes, such as externally defined DICOM codes, may be used to specify the semantics of the purpose of reference. When this observation is absent, it implies that the reason for the reference is unknown.

Note: In Consolidated CDA r1.1, this was defined using a separate "Purpose of Reference Observation" template, which is included directly in this template specification.

#### entryRelationship/@typeCode=COMP (Referenced Frames)

A Referenced Frames Observation contains a list of integer values for the referenced frames of a DICOM multiframe image SOP instance. It identifies the frame numbers within the referenced SOP instance to which the reference applies. The observation identifies frames using the same convention as DICOM, with the first frame in the referenced object being Frame 1. A Referenced Frames Observation must be used if a referenced DICOM SOP instance is a multiframe image and the reference does not apply to all frames.

Note: In Consolidated CDA r1.1, this was defined using separate "Referenced Frames Observation" and "Boundary Observation" templates, which are included directly in this template specification.

Figure 58: Purpose of reference example

<observation classCode="OBS" moodCode="EVN">

<templateId root="2.16.840.1.113883.10.20.6.2.9"/>

<code code="ASSERTION" codeSystem="2.16.840.1.113883.5.4"/>

<value xsi:type="CD" code="121112"

codeSystem="1.2.840.10008.2.16.4"

codeSystemName="DCM"

displayName="Source of Measurement"/>

</observation>

Figure 59: SOP instance observation example

<observation classCode="DGIMG" moodCode="EVN">

<templateId root="1.2.840.10008.20.x3.x7"/>

<id root="1.2.840.113619.2.62.994044785528.20060823.200608232232322.3"/>

<code code="1.2.840.10008.5.1.4.1.1.1"

codeSystem="1.2.840.10008.2.6.1" codeSystemName="DCMUID"

displayName="Computed Radiography Image Storage">

</code>

<text mediaType="application/dicom">

<reference value="http://www.example.org/wado?requestType=WADO&amp;studyUID=1.2.840.113619.2.62.994044785528.114289542805&amp;seriesUID=1.2.840.113619.2.62.994044785528.20060823223142485051&amp;objectUID=1.2.840.113619.2.62.994044785528.20060823.200608232232322.3&amp;contentType=application/dicom"/>

<!--reference to image 1 (PA) -->

</text>

<effectiveTime value="20060823223232"/>

</observation>

## Image Quality

|  |  |
| --- | --- |
| **Template ID** | 1.2.840.10008.20.x3.x4 |
| **Name** | Image Quality |
| **Effective Date** | *(Date of Final Text adoption)* |
| **Version Label** | DICOM-*yyyymmdd* |
| **Status** | Draft *(will change to Active on Final Text adoption)* |
| **Description** | Provides a quality assessment for the image set identified by the invoking section. By default unless otherwise identified, applies to the image set interpreted by the document (typically a Study). If the quality rating applies to only a subset of the Study (e.g., a Series, or a specific Image), that subset shall be identified in the invoking section. |
| **Classification** | CDA Entry Level |
| **Relationships** | Invoked by [Imaging Procedure Description](#_Imaging_Procedure_Description) section |
| **Context** |  |
| **Open/Closed** | open |
| **Revision History** | DICOM-*yyyymmdd*: Initial version Derived from Coded Observation |

| **Name** | **Nest Level** | **Element/ Attribute** | **Card** | **Elem/ Attr Conf** | **Data Type** | **Value Conf** | **Value** | **Subsidiary Template** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ImageQuality** |  | observation | 1..1 | SHALL |  |  |  |  |
|  | @ | @classCode | 1..1 | SHALL | CS | SHALL | OBS |  |
|  | @ | @moodCode | 1..1 | SHALL | CS | SHALL | EVN |  |
|  | > | templateId | 1..1 | SHALL | II |  |  |  |
|  | >@ | @root | 1..1 | SHALL | UID | SHALL | 1.2.840.10008.20.x3.x4 |  |
|  | > | id | 1..1 | SHALL | II |  |  |  |
|  | > | code | 1..1 | SHALL | CD |  | (111050, DCM, "Image Quality Assessment") |  |
| Rating | > | value | 1..1 | SHALL | CD | SHOULD CWE | **ValueSet** [CID x7036](#_CID_x7035_)  Image Quality Assessment |  |
|  | >@ | @xsi:type | 1..1 | SHALL | ST | SHALL | CD |  |
|  | > | statusCode | 1..1 | SHALL | CS | SHALL | COMPLETED |  |
|  | > | text | 0..1 | SHOULD |  |  |  |  |
| Ref | >> | reference | 1..1 | SHALL | URL (XML IDREF) |  | #*contentRef* |  |

### text/reference and Related Narrative Block Markup

The Observation entry SHOULD include a text/reference element, whose **value** attribute (not to be confused with the **value** element of the Observation class) SHALL begin with a '#' and SHALL point to its corresponding narrative in the parent section (using the approach defined in CDA Release 2, section 4.3.5.1). See [Section 9.1.1.1](#_<content>_markup_and).

Figure 60: Image Quality example

<observation classCode="OBS" moodCode="EVN" ID="imagequality" >

<templateId root="1.2.840.10008.20.x3.x4"/>

<id root="1.2.840.113619.2.62.994044785528.20060823.200608232232322.3"/>

<code code="111050" codeSystem="1.2.840.10008.2.6.1"

codeSystemName="DCM"

displayName="Image Quality Assessment"/>

<statusCode code="completed"/>

<value xsi:type="CD" code="RID12"

codeSystem="2.16.840.1.113883.6.256"

codeSystemName="RADLEX"

displayName="Diagnostic quality"/>

<text>

<reference value="#09"/>

</text>

</observation>

1. SR Diagnostic Imaging Report to HL7 DIR Transformation Guide

Retired. See PS3.20-2015.

Note: This Annex provided a transformation of SR documents based on TID 2000 Basic Diagnostic Imaging Report to HL7 CDA Release 2 Imaging Reports based on the HL7 Diagnostic Imaging Reports (DIR) Release 1.0 Informative specification Template 2.16.840.1.113883.10.20.6.

1. Imaging ReportS with Specific Section Content to HL7 DIR Transformation Guide

Retired. See PS3.20-2015.

Note: This Annex provided a transformation of SR documents based on TID 2006 Imaging Report With Conditional Radiation Exposure and Protection Information to HL7 CDA Release 2 Imaging Reports based on the HL7 Diagnostic Imaging Reports (DIR) Release 1.0 Informative specification Template 2.16.840.1.113883.10.20.6.

1. SR to CDA Imaging Report Transformation Guide

Constrained DICOM SR documents based on Imaging Report templates can be mapped to HL7 CDA Release 2 Imaging Reports based on Template 1.2.840.10008.20.x1.x1, as specified in Section 7.1. The SR report templates to which this transformation applies include:

* TID 2000 Basic Diagnostic Imaging Report
* TID 2005 Transcribed Diagnostic Imaging Report
* TID 2006 Imaging Report With Conditional Radiation Exposure and Protection Information

SR instances based on other templates may also be able to be mapped using the transformations in this Annex.

SR documents can be thought of as consisting of a document header and a document body, corresponding to a CDA document header and body. The header includes the modules related to the Patient, Study, Series, and Equipment Information Entitites, plus the SR Document General Module, as specified in PS3.3. The SR Document Content Module contains the content tree (structured content) of the document body. Note, however, that DICOM SR considers the root content item, including the coded report title, and some context-setting content items as part of the document body content tree, but these constitute part of the CDA header. See Figure C-1.

## C.1 Constraints

This Annex defines the transformation of an Enhanced SR SOP Instance to a CDA instance. The following constraints apply to such SOP Instances:

* Observation Context: The mapping does not support changing the observation context for the report as a whole from its default context, as specified in the Patient, Study, and Document Information Entities (see PS3.3 Section C.17.5)

Note: TID 2000, 2005, and 2006 specify inclusion of TID 1001 Observation Context as Mandatory, but TID 1001 has no content if all aspects of context are inherited, as under this constraint.

* Subject Context: The mapping does not support the subject of any of the report sections to be a specimen (TID 1009), a device (TID 1010), or a non-human subject. Only a fetus subject context is supported for a Findings section.
* Procedure Context: The mapping allows identification of a different procedure than the procedure identified in the SR Study IE only as context for a Prior Procedure Descriptions section.
* De-identified Documents: There is no CDA implementation guidance from HL7 for de-identified documents, other than general rules for using the MSK null flavor (see Section 5.3.2). There is no CDA capability equivalent to the Encrypted Attributes Sequence (see PS3.3 Section C.12.1.1.4.1) for carrying encrypted re-identification data.
* Patient Study Module: Medical or clinical characteristics of the patient specified in the Patient Study Module are not mapped (see PS3.3 Section C.17.5)
* Clinical Trials: Template 1.2.840.10008.20.x1.x1 does not define attributes for clinical trials equivalent to those of the Patient, Study, and Series IEs (Clinical Trial Subject Module, Clinical Trial Study Module, Clinical Trial Series Module).
* Spatial Coordinates: The mapping does not support SCOORD observations. As CDA documents are principally for human reading, detailed ROI data is presumed to reside in the DICOM SOP Instances of the study, or in images ready for rendering with a Presentation State, not in the CDA report. Template 1.2.840.10008.20.x1.x1 does not support the CDA Region of Interest Overlay entry class (see Setion 9.1.2.4).



**Figure C-1. TID 2000 Structure Summarized from PS 3.16, and mapping to CDA**

## C.2 Conventions

Literal values to be encoded in CDA elements are represented in the mapping tables in normal font, as a string, or as a coded value triplet:

“NI”

(codeValue, codingScheme, codeMeaning)

Data mapped from a specific Attribute in the SR instance into a CDA element is identified by the Attribute Name and Tag, represented in the mapping tables in italic font:

*Attribute Name (gggg,eeee)*

Data mapped from Attributes within sequences is identified by the > character:

*Sequence Attribute Name (ggg0,eee0) > Item Attribute Name (ggg1,eee1)*

Data mapped from an SR Content Item is identified by the Concept Name of the Content Item, represented in the mapping tables as a triplet in italic font:

*(codeValue, codingScheme, codeMeaning)*

Data mapped from a specific Attribute in an SR Content Item uses the triplet to identify the Content Item, with the > character and the specific attribute name and tag:

*(codeValue, codingScheme, codeMeaning)* *> Attribute Name (gggg,eeee)*

Additional notes are withn square brackets:

[Note]

The mapping of the value typically requires a transformation from the DICOM Value Representation or the Content Item Value Type representation to the CDA Data Type encoding. For example, transforming a Code Sequence attribute to a CD or CE Data Type requires a look up of the Coding Scheme OID (see Section 5.2.7.3).

Mandatory CDA elements for which there is no corresponding source data in the SR SOP Instance may be coded with a nullFlavor attribute (see [Section 5.3.2](#_Null_Flavor)).

## C.3 Header transformation

For transformation of the SR content into the CDA header, the target elements of the CDA instance are listed in Table C.3-1 by their Business Names, together with the recommended source in an SR instance. This allows the transforming application to “pull” the relevant information from the SR to populate the CDA header.

Table C.3-1 CDA Header content from SR

|  |  |
| --- | --- |
| CDA Business Name | DICOM SR |
| ImagingReport: DocType | *Concept Name Code Sequence (0040,A043)* [of the root content item] |
| ImagingReport: ContentTemplate |  |
| ImagingReport: DocumentID |  |
| ImagingReport: Title | *(121050, DCM, "Equivalent Meaning of Concept Name")* *> Concept Code Sequence (0040,A168)* > *Code Meaning (0008,0104)* if present; otherwise *Concept Name Code Sequence (0040,A043) > Code Meaning (0008,0104)* [ of the root content item]. |
| ImagingReport: CreationTime | *Content Date (0008,0023) + Content Time (0008,0033) +* *Timezone Offset From UTC (0008,0201)* |
| ImagingReport: Confidentiality |  |
| ImagingReport: LanguageCode | *(121049, DCM, "Language of Content Item and Descendants")* |
| ImagingReport: SetId |  |
| ImagingReport: VersionNumber |  |
| ImagingReport: Patient:ID | *Patient ID (0010,0020)* |
| ImagingReport: Patient:IDIssuer | *Issuer of Patient ID Qualifiers Sequence (0010,0024) > Universal Entity ID (0040,0032)* |
| ImagingReport: Patient:Addr | *Patient’s Address*  *(0010,1040)* |
| ImagingReport: Patient:Tele | *Patient's Telephone Numbers*  *(0010,2154)* |
| ImagingReport: Patient:Name | *Patient’s Name (0010,0010)* |
| ImagingReport: Patient:Gender | *Patient’s Sex (0010,0040)*  [Map value “O” to nullFlavor UNK] |
| ImagingReport: Patient:BirthTime | *Patient’s Birth Date (0010,0030) + Patient’s Birth Time (0010,0032)* |
| ImagingReport: Patient:ProviderOrgName | *Issuer of Patient ID (0010,0021)* |
| ImagingReport: Patient:ProviderOrgTel |  |
| ImagingReport: Patient:ProviderOrgAddr |  |
| ImagingReport: SigningTime | *Verifying Observer Sequence (0040,A073) > Verification DateTime (0040,A030)* . |
| ImagingReport: SignerID | *Verifying Observer Sequence (0040,A073) > Verifying Observer Identification Code Sequence (0040,A088)* [code value as identifier] |
| ImagingReport: SignerAddr |  |
| ImagingReport: SignerTel |  |
| ImagingReport: SignerName | *Verifying Observer Sequence (0040,A073) > Verifying Observer Name (0040,A075)* |
| ImagingReport: SignatureBlock |  |
| ImagingReport: Author:AuthoringTime | *Content Date (0008,0023) + Content Time (0008,0033) + Timezone Offset From UTC (0008,0201)* |
| ImagingReport: Author:ID | *Author Observer Sequence (0040,A078) > Person Identification Code Sequence (0040,1101)* [code value as identifier] |
| ImagingReport: Author:Addr |  |
| ImagingReport: Author:Tel |  |
| ImagingReport: Author:Name | *Author Observer Sequence (0040,A078) > Person Name (0040,A123)* |
| ImagingReport: Recipient:Addr |  |
| ImagingReport: Recipient:Tel |  |
| ImagingReport: Recipient:Name |  |
| ImagingReport: Recipient:Org |  |
| ImagingReport: CustodianOrgID | *Custodial Organization Sequence (0040,A07C) > Institution Code Sequence (0008,0082)* [code value as identifier] |
| ImagingReport: CustodianOrgName | *Custodial Organization Sequence (0040,A07C) > Institution Name (0008,0080)* |
| ImagingReport: CustodianOrgAddr |  |
| ImagingReport: CustodianOrgTel |  |
| ImagingReport: EncounterID | *Admission Id (0038,0010)* |
| ImagingReport: EncounterIDIssuer | *Issuer of Admission ID Sequence (0038;0014) > Universal Entity ID (0040,0032)* |
| ImagingReport: EncounterTime |  |
| ImagingReport: HealthcareFacilityName |  |
| ImagingReport: HealthcareFacilityAddress | *Institution Address (0008,0081)* |
| ImagingReport:HealthcareProviderOrganizationName | *Institution Name (0008,0080)* |
| ImagingReport:AttendingPhysicianName | *Physician(s) of Record (0008,1048)* |
| ImagingReport:OrderPlacerNumber | *Referenced Request Sequence (0040,A370) > Placer Order Number/Imaging Service Request (0040,2016)* |
| ImagingReport:OrderAssigningAuthority | *Referenced Request Sequence (0040,A370) > Order Placer Identifier Sequence (0040,0026) > Universal Entity ID (0040,0032)* |
| ImagingReport:AccessionNumber | *Accession Number (0008,0050)* |
| ImagingReport:AccessionAssigningAuthority | *Issuer of Accession Number Sequence (0008,0051) > Universal Entity ID (0040,0032)* |
| ImagingReport:OrderedProcedureCode | *Referenced Request Sequence (0040,A370) > Requested Procedure Code Sequence (0032,1064)* |
| ImagingReport: OrderPriority |  |
| ImagingReport:Study:StudyUID | *Study Instance UID* *(0020,000D)* |
| ImagingReport:Study:ProcedureCode | *Procedure Code Sequence (0008,1032)* |
| ImagingReport:Study:Modality | *(122142, DCM, "Acquisition Device Type"}* or *(55111-9, LN, "Current Procedure Descriptions") > (122142, DCM, "Acquisition Device Type"}* |
| ImagingReport:Study:AnatomicRegionCode | *(123014, DCM, "Target Region")* or *(55111-9, LN, "Current Procedure Descriptions") > (123014, DCM, "Target Region")* |
| ImagingReport:Study:StudyTime | *Study Date (0008,0020) + Study Time (0008,0030) +* *Timezone Offset From UTC (0008,0201)* |
| ImagingReport: Performer:Type |  |
| ImagingReport: Performer:ID |  |
| ImagingReport: Performer:Name |  |
| ImagingReport: ReferrerAddr | *Referring Physician Identification Sequence (0008,0096) > Person's Address (0040,1102)* |
| ImagingReport: ReferrerTel | *Referring Physician Identification Sequence (0008,0096) > Person's Telephone Numbers (0040,1103)* |
| ImagingReport: ReferrerName | *Referring Physician's Name (0008,0090)* |
| ImagingReport: TranscriptionistID | *Participant Sequence (0040,A07A) > Person Identification Code Sequence (0040,1101)*, [where Participation Type (0040,A080) equals "ENT" (Data Enterer); code value as identifier] |
| ImagingReport: TranscriptionistName | *Participant Sequence (0040,A07A) Person Name (0040,A123)* [where Participation Type (0040,A080) equals "ENT" (Data Enterer)] |
| ImagingReport: TransformedDocumentID | *SOP Instance UID (0008,0018)* |

ImagingReport:Study:Modality and ImagingReport:Study:AnatomicRegionCode may be mapped from attributes in the root CONTAINER, if present there as in TID 2000, or in the Current Procedure Descriptions section CONTAINER, if present there as in TID 2006.

## C.4 Body transformation

For transformation of the body, this Sections maps the SR content items to their target CDA elements. This allows the transforming application to traverse the SR content tree and construct equivalent CDA content.

### C.4.1 Section Mapping

SR TID 2000, 2005, and 2006 specify that imaging report elements are contained in sections, represented as CONTAINERs with concept name codes from CID 7001.

Each CONTAINER immediately subsidiary to the root CONTAINER shall be mapped to the section or subsection as specified in Table C.4-1. Note that some SR document sections are mapped to subsections under CDA Template 1.2.840.10008.20.x1.x1.

Table C.4-1 SR Section mapping to CDA

|  |  |  |  |
| --- | --- | --- | --- |
| **Coding Scheme Designator** | **Code Value** | **Code Meaning** | **Map to Template  Section / Subsection** |
| LN | [11329-0](http://s.details.loinc.org/LOINC/11329-0.html) | History | Clinical Information / Medical (General) History |
| LN | [55115-0](http://s.details.loinc.org/LOINC/55115-0.html) | Request | Clinical Information / Request |
| LN | [55111-9](http://s.details.loinc.org/LOINC/55111-9.html) | Current Procedure Descriptions | Imaging Procedure Description |
| LN | [55114-3](http://s.details.loinc.org/LOINC/55114-3.html) | Prior Procedure Descriptions | Comparison Study |
| LN | [18834-2](http://s.details.loinc.org/LOINC/18834-2.html) | Previous Findings | Comparison Study |
| LN | [18782-3](http://s.details.loinc.org/LOINC/18782-3.html) | Findings (Study Observation) | Findings or Findings / Fetus Findings (see C.4.1.3) |
| LN | 59776-5 | Findings | Findings or Findings / Fetus Findings (see C.4.1.3) |
| LN | [19005-8](http://s.details.loinc.org/LOINC/19005-8.html) | Impressions | Impression |
| LN | [18783-1](http://s.details.loinc.org/LOINC/18783-1.html) | Recommendations | Impression / Recommendation |
| LN | [55110-1](http://s.details.loinc.org/LOINC/55110-1.html) | Conclusions | Impression |
| LN | [55107-7](http://s.details.loinc.org/LOINC/55107-7.html) | Addendum | Addendum |
| LN | [18785-6](http://s.details.loinc.org/LOINC/18785-6.html) | Indications for Procedure | Clinical Information / Procedure Indications |
| LN | [55108-5](http://s.details.loinc.org/LOINC/55108-5.html) | Patient Presentation | Clinical Information |
| LN | [55109-3](http://s.details.loinc.org/LOINC/55109-3.html) | Complications | Imaging Procedure Description / Complications |
| LN | [55112-7](http://s.details.loinc.org/LOINC/55112-7.html) | Summary | Impression |
| LN | [55113-5](http://s.details.loinc.org/LOINC/55113-5.html) | Key Images | Impression / Key Images |
| LN | [73569-6](http://s.details.loinc.org/LOINC/73569-6.html) | Radiation Exposure and Protection Information | Imaging Procedure Description / Radiation Exposure and Protection Information |
| LN | [55752-0](http://s.details.loinc.org/LOINC/55752-0.html) | Clinical Information | Clinical Information |
| LN | [29549-3](http://s.details.loinc.org/LOINC/29549-3.html) | Medications Administered | Imaging Procedure Description / Procedural Medication |
| LN | [73568-8](http://s.details.loinc.org/LOINC/73568-8.html) | Communication of Critical Results | Impression / Communication of Actionable Findings |

CDA Template 1.2.840.10008.20.x1.x1 requires a minimum of an Imaging Procedure Description section and an Impression section.

The section/code element shall be populated in accordance with the relevant CDA template; note that the code might not be the same as the Concept Name code of the SR section CONTAINER. The title element of each CDA section shall be populated as shown in Table C.4-2.

Table C.4-2 CDA Section mapping from SR

|  |  |
| --- | --- |
| CDA Business Name | DICOM SR |
| <section>: Title | *Concept Name Code Sequence (0040,A043) > Code Meaning (0008,0104)* [ of the section CONTAINER content item] |
| <section>: Text | See C.4.2 |
| <section>: CodedObservation[\*] | See C.4.3.1 and C.4.3.2 |
| <section>: QuantityMeasurement[\*] | See C.4.3.4 |
| <section>: SOPInstance[\*] | See C.4.3.3 |

SR allows sections to be qualified by observation context, using TID 1001 and its subsidiary templates. This capability is constrained in this mapping.

#### C.4.1.1 Section Observer Context

Observer Context (TID 1002) allows identification of a human or device author.

Table C.4-3 CDA Section author mapping from SR

|  |  |
| --- | --- |
| CDA Business Name | DICOM SR |
| <section>: AuthorID | If *(121005, DCM, "Observer Type")*= (121007, DCM, "Device"), then  *(121012, DCM, "Device Observer UID")*  ID for human observer not represented in SR; use nullFlavor="UNK" |
| <section>: AuthorName | *(121008, DCM, "Person Observer Name")* |
| <section>: AuthorOrganization | *(121009, DCM, "Person Observer's Organization Name")* |
| <section>: AuthorDeviceModel | *(121015, DCM, "Device Observer Model Name")* |
| <section>: AuthorSoftware | *(121013, DCM, "Device Observer Name")* |

#### C.4.1.2 Comparison Study Procedure Context

Procedure Context ([TID 1005](file:///C:\Standards\DICOM\WG%208\part16.pdf#sect_TID_1002)) allows identification of a different procedure than the procedure identified in the SR Study IE as the context for the section observations. In the transformations of this Annex, only an identified comparison procedure is supported as Procedure Context, the SR section being transformed must be either Prior Procedure Descriptions or Previous Findings, and the CDA section shall be in accordance with the Comparison Study section Template 1.2.840.10008.20.x2.x3.

SR Instances using TID 2006 have additional attributes of a comparison procedure specified using TID 2007, which is used in the Prior Procedure Descriptions section. The attributes of both TID 1005 and TID 2007 are source data in the Table C.4-4 mapping.

Table C.4-4 Comparison Study mapping from SR

|  |  |
| --- | --- |
| CDA Business Name | DICOM SR |
| ComparisonStudy: ProcedureTechnique: ProcedureCode | *(121023, DCM, "Procedure Code")* |
| ComparisonStudy: ProcedureTechnique: EffectiveTime | *(111060, DCM, "Study Date") + (111061, DCM, "Study Time")* |
| ComparisonStudy: ProcedureTechnique: Modality | *(122142, DCM, "Acquisition Device Type"}* |
| ComparisonStudy: ProcedureTechnique: MethodCode |  |
| ComparisonStudy: ProcedureTechnique: TargetSite | *(123014, DCM,"Target Region")* |
| ComparisonStudy: ProcedureTechnique: Laterality: |  |
| ComparisonStudy: ProcedureTechnique: Ref: |  |
| ComparisonStudy: ProcedureTechnique: ProviderOrganization |  |
| ComparisonStudy: Study[\*]: StudyUID | *(121018, DCM, "Procedure Study Instance UID")* |
| ComparisonStudy: Study[\*]: Description | *(121065, DCM, "Procedure Description")*, if present, or  *(121023, DCM, "Procedure Code") > Code Meaning (0008,0104)* |
| ComparisonStudy: Study[\*]: Time | *(111060, DCM, "Study Date") + (111061, DCM, "Study Time")* |

#### C.4.1.3 Fetus Subject Context

The Subject Context ([TID 1006](file:///C:\Standards\DICOM\WG%208\part16.pdf#sect_TID_1002)) allows identification of a different subject than the patient identified in the SR Patient IE. In the transformations of this Annex, only an identified fetus subject is supported as Subject Context for a Findings section. An SR section with a fetus subject context shall be mapped to a CDA section shall be in accordance with the Fetus Findings subsection Template 1.2.840.10008.20.x2.x8. This section is subsidiary to the top level Findings section; multiple SR fetus findings sections may be mapped to separate CDA Fetus Findings subsections.

Table A.4-3 CDA Fetus subject mapping from SR

|  |  |
| --- | --- |
| CDA Business Name | DICOM SR |
| Findings: FetusFindings[\*]: FetusID | *(121030, DCM, "Subject ID")* or *(11951-1, LN, "Fetus ID")* |

### C.4.2 Section/text

DICOM SR Report Narrative (TID 2002) specifies that sections contain imaging report elements of type CODE, TEXT, IMAGE, or NUM.

Section/text in the CDA document contains the narrative text (attested content) of the document. Section/text shall be generated from all the Content Items subsidiary to a section CONTAINER of the SR document, such that the full meaning is be conveyed in an unambiguous manner in the narrative block.

The narrative rendered from each Content Item shall be encapsulated in a <content> element of the narrative block, allowing the associated entry to reference it.

### C.4.3 Content Item Mapping

Each Content Item immediately subsidiary to a section CONTAINER shall be mapped to the corresponding entry level template, and shall be included subsidiary to the associated CDA section or subsection. This is in addition to its rendering in the section/text narrative block.

Coded concepts that are encoded in the SR using with the Coding Scheme Designator “SRT” shall be mapped to the equivalent SNOMED CT code. Mappings for value sets invoked in both SR and CDA are provided in PS3.16.

#### C.4.3.1 Coded Observations

SR CODE Content Items shall be mapped to Coded Observation entries.

Table A.4-2 CDA Coded Observation mapping from SR CODE

|  |  |
| --- | --- |
| CDA Business Name | DICOM SR |
| CodedObservation[\*]: ObsName | *Concept Name Code Sequence (0040,A043)* |
| CodedObservation[\*]: ObsValue | *Concept Code Sequence (0040,A168)* |
| CodedObservation[\*]: Time | *Observation DateTime (0040,A032)* |
| CodedObservation[\*]: InterpretationCode |  |
| CodedObservation[\*]: ActionableFindingCode |  |
| CodedObservation[\*]: TargetSite | *(G-C0E3, SRT, "Finding Site")* |
| CodedObservation[\*]:Laterality | *(G-C0E3, SRT, "Finding Site") > (G-C171, SRT,"Laterality")* |
| CodedObservation[\*]:TopoModifier |  |
| CodedObservation[\*]:Method |  |
| CodedObservation[\*]: SOPInstance | See A.4.3.5 |
| CodedObservation[\*]: QuantityMeasurement | See A.4.3.6 |
| CodedObservation[\*]: CodedObservation |  |

The CODE observations in TID 2002 do not specifically include finding site, laterality, and topographical modifiers, but these modifiers are not forbidden in the template, and may be present in a SR SOP Instance being transformed to CDA.

#### C.4.3.2 Text Observations

SR TEXT Content Items are mapped to Coded Observation entries, but the code is a nullFlavor with the text content in originalText.

Table C.4-3 CDA Coded Observation mapping from SR TEXT

|  |  |
| --- | --- |
| CDA Business Name or XPath | DICOM SR |
| CodedObservation[\*]: ObsName | *Concept Name Code Sequence (0040,A043)* |
| observation/value/@nullFlavor | "NI" |
| observation/value/originalText | *Text Value (0040,A160)* |
| CodedObservation[\*]: Time | *Observation DateTime (0040,A032)* |
| CodedObservation[\*]: InterpretationCode |  |
| CodedObservation[\*]: ActionableFindingCode |  |
| CodedObservation[\*]: TargetSite |  |
| CodedObservation[\*]:Laterality |  |
| CodedObservation[\*]:Method |  |
| CodedObservation[\*]: SOPInstance | See A.4.3.5 |
| CodedObservation[\*]: QuantityMeasurement | See A.4.3.6 |
| CodedObservation[\*]: CodedObservation |  |

#### C.4.3.3 Image Observations

SR IMAGE Content Items shall be mapped to SOP Instance Observation entries.

Table C.4-4 CDA SOP Instance Observation mapping from SR IMAGE

|  |  |
| --- | --- |
| CDA Business Name | DICOM SR |
| SOPInstance[\*]:SOPInstanceUID | *Referenced SOP Sequence (0008,1199) > Referenced SOP Instance UID (0008,1155)* |
| SOPInstance[\*]:SOPClassUID | *Referenced SOP Sequence (0008,1199) > Referenced SOP Class UID (0008,1150)* |
| SOPInstance[\*]:WADOReference |  |
| SOPInstance[\*]:PurposeOfReference | *Concept Name Code Sequence (0040,A043)* |
| SOPInstance[\*]:ReferencedFrames | *Referenced SOP Sequence (0008,1199) > Referenced Frame Number (0008,1160)* |

#### C.4.3.4 Numeric Observations

SR NUM Content Items shall be mapped to Quantity Measurement entries.

Table C.4-5 CDA Quantity Measurement mapping from SR NUM

|  |  |
| --- | --- |
| CDA Business Name | DICOM SR |
| QuantityMeasurement[\*]: MeasurementName | *Concept Name Code Sequence (0040,A043)* |
| QuantityMeasurement[\*]: MeasurementValue | *Measured Value Sequence (0040,A300) > Numeric Value (0040,A30A)* |
| QuantityMeasurement[\*]: MeasurementUnits | *Measured Value Sequence (0040,A300) > Measurement Units CodeSequence (0040,08EA) > Code Value (0008,0100)* |
| QuantityMeasurement[\*]: Time | *Observation DateTime (0040,A032)* |
| QuantityMeasurement[\*]: InterpretationCode |  |
| QuantityMeasurement[\*]: ActionableFindingCode |  |
| QuantityMeasurement[\*]: TargetSite | *(G-C0E3, SRT, "Finding Site")* |
| QuantityMeasurement[\*]:Laterality | *(G-C0E3, SRT, "Finding Site") > (G-C171, SRT,"Laterality")* |
| QuantityMeasurement[\*]:Method | *(G-C036, SRT, "Measurement Method") > Concept Code Sequence (0040,A168)* |
| QuantityMeasurement[\*]:TopoModifier | *(G-A1F8, SRT, "Topographical modifier")* |
| QuantityMeasurement[\*]: SOPInstance | See A.4.3.5 |
| QuantityMeasurement[\*]: QuantityMeasurement | See A.4.3.6 |

The SR templates invoked for NUM measurements from TID 2000 do not specifically include finding site, laterality, and topographical modifiers, but these modifiers are not forbidden in the template, they are used in many other NUM value templates (e.g., TID 300 Measurement), and may be present in a SR SOP Instance being transformed to CDA.

#### C.4.3.5 Inferred From Image Observations

SR TID 2001 and 2002 allow Content Items to be INFERRED FROM IMAGE observations. The INFERRED FROM relationship is mapped to the entryRelationship with typeCode=SPRT, and the IMAGE observation is mapped to a CDA SOP Instance Observation entry subsidiary to its parent CDA Coded Observation or Quantity Measurement entry. This entryRelationship is shown in the Coded Observation and Quantity Measurement CDA Templates.

#### C.4.3.6 Inferred From Numeric Observations

SR TID 2001 and 2002 allow Content Items to be INFERRED FROM NUM observations. The INFERRED FROM relationship is mapped to the entryRelationship with typeCode=SPRT, and the NUM observation is mapped to CDA Quantity Measurement entry subsidiary to its parent CDA Coded Observation or Quantity Measurement entry. This entryRelationship is shown in the Coded Observation and Quantity Measurement CDA Templates.

#### C.4.3.7 Inferred From Spatial Coordinates Observations

SR TID 1400, 14001, 14002, and 1404 allow NUM Content Items to be INFERRED FROM SCOORD observations, which are SELECTED FROM IMAGE observations. This Annex does not specify the transformation for SCOORD observations; these would use the CDA Region Of Interest entry, which PS3.20 forbids (see [Section 9.1.2.4](#_regionOfInterest)).

### C.4.4 Specific Section Content Mapping

TID 2005 and TID 2006 specify DICOM SR templates for some specific sections, with content for particular uses.

#### C.4.4.1 Current Procedure Descriptions

SR Instances using TID 2006 have a Current Procedure Descriptions section specified using TID 2007. Source data in that template is mapped into the CDA Procedure Description section.

Table C.4-1 Current Procedure Description mapping from SR

|  |  |
| --- | --- |
| CDA Business Name | DICOM SR |
| ProcedureDescription: ProcedureTechnique: ProcedureCode | Procedure Code Sequence (0008,1032) |
| ProcedureDescription: ProcedureTechnique: EffectiveTime | *(111060, DCM, "Study Date") + (111061, DCM, "Study Time")* |
| ProcedureDescription: ProcedureTechnique: Modality | *(122142, DCM, "Acquisition Device Type"}* |
| ProcedureDescription: ProcedureTechnique: MethodCode |  |
| ProcedureDescription: ProcedureTechnique: TargetSite | *(123014, DCM,"Target Region")* |
| ProcedureDescription: ProcedureTechnique: Laterality |  |
| ProcedureDescription: ProcedureTechnique: Ref |  |

#### C.4.4.2 Radiation Exposure and Protection Information

The Radiation Exposure and Protection Information section defined in SR TID 2006 is specified using TID 2008, which provides additional source data for mapping into the equivalent CDA subsection of the Imaging Procedure Description section.

Table C.4-2 CDA Radiation Exposure and Protection Information mapping from SR

|  |  |
| --- | --- |
| CDA Business Name | DICOM SR |
| RadiationExposure: IrradiationAuthorizingID |  |
| RadiationExposure: IrradiationAuthorizingName | *(113850, DCM, "Irradiation Authorizing ")* |
| RadiationExposure: SOPInstance[doseReport] | * 1. *(113701, DCM, "X-Ray Radiation Dose Report")* [from Current Procedure Description section] |
| RadiationExposure: CodedObservation[pregnancy] | *(111532, DCM,"Pregnancy Status")* |
| RadiationExposure: CodedObservation[indication] | *(18785-6, LN, "Indications for Procedure")* |
| RadiationExposure: CodedObservation[exposure] | *(113921, DCM, "Radiation Exposure")* |
| RadiationExposure: QuantityMeasurement |  |
| RadiationExposure: RadioactivityDose |  |
| RadiationExposure: Radiopharmaceutical |  |
| RadiationExposure: FreeTextRadiopharmaceutical | *(113922, DCM, "Radioactive Substance Administered")* |

The Radiation Exposure Content Item in TID 2008 uses Value Type TEXT, not NUM, and is therefore mapped to a Coded Observation entry in accordance with Section C.4.3.2.

#### C.4.4.3 Key Images

TID 2005 Transcribed Diagnostic Imaging Report specifies a section structure for the Key Images section of an SR, which allows mapping into the equivalent CDA subsection of the Impression section.

Table B.3-4 Key Image mapping from SR

|  |  |
| --- | --- |
| CDA Business Name | DICOM SR |
| Impression: Text | *(113012, DCM, "Key Object Description")* |
| Impression: SOPInstance[\*] | See C.4.3.5 |
| Impression: Graphic[\*] |  |

## C.5 Example

*Note to editor: This example from the current PS3.20 needs to be updated for conformance to surrent templates prior to Final Text*

### C.5.1 DICOM SR "Basic Diagnostic Imaging Report" (TID 2000)

The SR sample document encoding includes information on the SR document body tree depth (column 1: SR Tree Depth), nesting level for nested artifacts such as sequences and sequence items (column 2: Nesting), DICOM attribute names (column 3: Attribute), DICOM tag (column 4: Tag), the DICOM attribute value representation (Column 5: VR as specified in [PS3.5](file:///C:\Users\212001442\Documents\Dicom\wg08\sup155\part05.pdf#PS3.5)), the hexadecimal value of value length (column 6: VL (hex)) and the sample document attribute values (column 7: Value).

**Table A.5-1. Sample document encoding**

| **SR Tree Depth** | **Nesting** | **Attribute** | **Tag** | **VR** | **VL (hex)** | **Value** |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | Instance Creation Date | (0008,0012) | DA | 0008 | 20060827 |
|  |  | Instance Creation Time | (0008,0013) | TM | 0006 | 224157 |
|  |  | Instance Creator UID | (0008,0014) | UI | 001c | 1.2.276.0.7230010.3.0.3.5.4 |
|  |  | SOP Class UID | (0008,0016) | UI | 001e | 1.2.840.10008.5.1.4.1.1.88.22 |
|  |  | SOP Instance UID | (0008,0018) | UI | 003c | 1.2.840.113619.2.62.994044785528.20060823.200608232232322.9 |
|  |  | Study Date | (0008,0020) | DA | 0008 | 20060823 |
|  |  | Content Date | (0008,0023) | DA | 0008 | 20060823 |
|  |  | Study Time | (0008,0030) | TM | 0006 | 222400 |
|  |  | Content Time | (0008,0033) | TM | 0006 | 224352 |
|  |  | Accession Number | (0008,0050) | SH | 0008 | 10523475 |
|  |  | Modality | (0008,0060) | CS | 0002 | SR |
|  |  | Manufacturer | (0008,0070) | LO | 000a | DicomWg20 |
|  |  | Referring Physician's Name | (0008,0090) | PN | 0010 | Smith^John^^^MD |
|  |  | Procedure Code Sequence | (0008,1032) | SQ | ffffffff |  |
|  | %item |  |  |  |  |  |
|  | > | Code Value | (0008,0100) | SH | 0006 | 11123 |
|  | > | Coding Scheme Designator | (0008,0102) | SH | 0008 | 99WUHID |
|  | > | Code Meaning | (0008,0104) | LO | 000c | X-Ray Study |
|  | %enditem |  |  |  |  |  |
|  | %endseq |  |  |  |  |  |
|  |  | Referenced Performed Procedure Step Sequence | (0008,1111) | SQ | ffffffff |  |
|  | %endseq |  |  |  |  |  |
|  |  | Patient's Name | (0010,0010) | PN | 0008 | Doe^John |
|  |  | Patient ID | (0010,0020) | LO | 000a | 0000680029 |
|  |  | Patient's Birth Date | (0010,0030) | DA | 0008 | 19641128 |
|  |  | Patient's Sex | (0010,0040) | CS | 0002 | M |
|  |  | Study Instance UID | (0020,000d) | UI | 002e | 1.2.840.113619.2.62.994044785528.114289542805 |
|  |  | Series Instance UID | (0020,000e) | UI | 0036 | 1.2.840.113619.2.62.994044785528.20060823223142485052 |
|  |  | Study ID | (0020,0010) | SH | 0008 | 10523475 |
|  |  | Series Number | (0020,0011) | IS | 0004 | 560 |
|  |  | Instance Number | (0020,0013) | IS | 0006 | 07851 |
| 1 |  | Value Type | (0040,a040) | CS | 000a | CONTAINER |
| 1 |  | Concept Name Code Sequence | (0040,a043) | SQ | ffffffff |  |
| 1 | %item |  |  |  |  |  |
| 1 | > | Code Value | (0008,0100) | SH | 0008 | 18782-3 |
| 1 | > | Coding Scheme Designator | (0008,0102) | SH | 0002 | LN |
| 1 | > | Code Meaning | (0008,0104) | LO | 000c | X-Ray Report |
| 1 | %enditem |  |  |  |  |  |
| 1 | %endseq |  |  |  |  |  |
| 1 |  | Continuity Of Content | (0040,a050) | CS | 0008 | SEPARATE |
|  |  | Verifying Observer Sequence | (0040,a073) | SQ | ffffffff |  |
|  | %item |  |  |  |  |  |
|  | > | Verifying Organization | (0040,a027) | LO | 001a | World University Hospital |
|  | > | Verification DateTime | (0040,a030) | DT | 000e | 20060827141500 |
|  | > | Verifying Observer Name | (0040,a075) | PN | 0012 | Blitz^Richard^^^MD |
|  | > | Verifying Observer Identification Code Sequence | (0040,a088) | SQ | ffffffff |  |
|  | %item |  |  |  |  |  |
|  | >> | Code Value | (0008,0100) | SH | 0008 | 08150000 |
|  | >> | Coding Scheme Designator | (0008,0102) | SH | 0008 | 99WUHID |
|  | >> | Code Meaning | (0008,0104) | LO | 0016 | Verifying Observer ID |
|  | %enditem |  |  |  |  |  |
|  | %endseq |  |  |  |  |  |
|  | %enditem |  |  |  |  |  |
|  | %endseq |  |  |  |  |  |
|  |  | Referenced Request Sequence | (0040,a370) | SQ | ffffffff |  |
|  | %item |  |  |  |  |  |
|  | > | Accession Number | (0008,0050) | SH | 0008 | 10523475 |
|  | > | Referenced Study Sequence | (0008,1110) | SQ | ffffffff |  |
|  | %item |  |  |  |  |  |
|  | >> | Referenced SOP Class UID | (0008,1150) | UI | 001a | 1.2.840.10008.5.1.4.1.1.1 |
|  | >> | Referenced SOP Instance UID | (0008,1155) | UI | 003c | 1.2.840.113619.2.62.994044785528.20060823.200608232232322.3 |
|  | %enditem |  |  |  |  |  |
|  | %endseq |  |  |  |  |  |
|  | > | Study Instance UID | (0020,000d) | UI | 002e | 1.2.840.113619.2.62.994044785528.114289542805 |
|  | > | Requested Procedure Description | (0032,1060) | LO | 0020 | CHEST TWO VIEWS, PA AND LATERAL |
|  | > | Requested Procedure Code Sequence | (0032,1064) | SQ | ffffffff |  |
|  | %item |  |  |  |  |  |
|  | >> | Code Value | (0008,0100) | SH | 0006 | 11123 |
|  | >> | Coding Scheme Designator | (0008,0102) | SH | 0008 | 99WUHID |
|  | >> | Code Meaning | (0008,0104) | LO | 000c | X-Ray Study |
|  | %enditem |  |  |  |  |  |
|  | %endseq |  |  |  |  |  |
|  | > | Requested Procedure ID | (0040,1001) | SH | 0006 | 123453 |
|  | > | Reason for the Requested Procedure | (0040,1002) | LO | 0014 | Suspected lung tumor |
|  | > | Placer Order Number/Imaging Service Request | (0040,2016) | LO | 0006 | 123451 |
|  | > | Filler Order Number/Imaging Service Request | (0040,2017) | LO | 0006 | 123452 |
|  | %enditem |  |  |  |  |  |
|  | %endseq |  |  |  |  |  |
|  |  | Performed Procedure Code Sequence | (0040,a372) | SQ | ffffffff |  |
|  | %item |  |  |  |  |  |
|  | > | Code Value | (0008,0100) | SH | 0006 | 11123 |
|  | > | Coding Scheme Designator | (0008,0102) | SH | 0008 | 99WUHID |
|  | > | Code Meaning | (0008,0104) | LO | 000c | X-Ray Study |
|  | %enditem |  |  |  |  |  |
|  | %endseq |  |  |  |  |  |
|  |  | Current Requested Procedure Evidence Sequence | (0040,a375) | SQ | ffffffff |  |
|  | %item |  |  |  |  |  |
|  | > | Referenced Series Sequence | (0008,1115) | SQ | ffffffff |  |
|  | %item |  |  |  |  |  |
|  | >> | Referenced SOP Sequence | (0008,1199) | SQ | ffffffff |  |
|  | %item |  |  |  |  |  |
|  | >>> | Referenced SOP Class UID | (0008,1150) | UI | 001a | 1.2.840.10008.5.1.4.1.1.1 |
|  | >>> | Referenced SOP Instance UID | (0008,1155) | UI | 003c | 1.2.840.113619.2.62.994044785528.20060823.200608232232322.3 |
|  | %enditem |  |  |  |  |  |
|  | %item |  |  |  |  |  |
|  | >>> | Referenced SOP Class UID | (0008,1150) | UI | 001a | 1.2.840.10008.5.1.4.1.1.1 |
|  | >>> | Referenced SOP Instance UID | (0008,1155) | UI | 003c | 1.2.840.113619.2.62.994044785528.20060823.200608232231422.3 |
|  | %enditem |  |  |  |  |  |
|  | %endseq |  |  |  |  |  |
|  | >> | Series Instance UID | (0020,000e) | UI | 0036 | 1.2.840.113619.2.62.994044785528.20060823223142485051 |
|  | %enditem |  |  |  |  |  |
|  | %endseq |  |  |  |  |  |
|  | > | Study Instance UID | (0020,000d) | UI | 002e | 1.2.840.113619.2.62.994044785528.114289542805 |
|  | %enditem |  |  |  |  |  |
|  | %endseq |  |  |  |  |  |
|  |  | Completion Flag | (0040,a491) | CS | 0008 | COMPLETE |
|  |  | Verification Flag | (0040,a493) | CS | 0008 | VERIFIED |
| 1 |  | Content Sequence | (0040,a730) | SQ | ffffffff |  |
| 1.1 | %item |  |  |  |  |  |
| 1.1 | > | Relationship Type | (0040,a010) | CS | 0010 | HAS CONCEPT MOD |
| 1.1 | > | Value Type | (0040,a040) | CS | 0004 | CODE |
| 1.1 | > | Concept Name Code Sequence | (0040,a043) | SQ | ffffffff |  |
| 1.1 | %item |  |  |  |  |  |
| 1.1 | >> | Code Value | (0008,0100) | SH | 0006 | [121049](file:///C:\Users\212001442\Documents\Dicom\wg08\sup155\part16.pdf#DCM_121049) |
| 1.1 | >> | Coding Scheme Designator | (0008,0102) | SH | 0004 | DCM |
| 1.1 | >> | Code Meaning | (0008,0104) | LO | 0028 | Language of Content Item and Descendants |
| 1.1 | %enditem |  |  |  |  |  |
| 1.1 | %endseq |  |  |  |  |  |
| 1.1 | > | Concept Code Sequence | (0040,a168) | SQ | ffffffff |  |
| 1.1 | %item |  |  |  |  |  |
| 1.1 | >> | Code Value | (0008,0100) | SH | 0006 | en-US |
| 1.1 | >> | Coding Scheme Designator | (0008,0102) | SH | 0008 | ISO639\_1 |
| 1.1 | >> | Code Meaning | (0008,0104) | LO | 000e | English (U.S.) |
| 1.1 | %enditem |  |  |  |  |  |
| 1.1 | %endseq |  |  |  |  |  |
| 1.1 | %enditem |  |  |  |  |  |
| 1.2 | %item |  |  |  |  |  |
| 1.2 | > | Relationship Type | (0040,a010) | CS | 0010 | HAS CONCEPT MOD |
| 1.2 | > | Value Type | (0040,a040) | CS | 0004 | TEXT |
| 1.2 | > | Concept Name Code Sequence | (0040,a043) | SQ | ffffffff |  |
| 1.2 | %item |  |  |  |  |  |
| 1.2 | >> | Code Value | (0008,0100) | SH | 0006 | [121050](file:///C:\Users\212001442\Documents\Dicom\wg08\sup155\part16.pdf#DCM_121050) |
| 1.2 | >> | Coding Scheme Designator | (0008,0102) | SH | 0004 | DCM |
| 1.2 | >> | Code Meaning | (0008,0104) | LO | 0022 | Equivalent Meaning of Concept Name |
| 1.2 | %enditem |  |  |  |  |  |
| 1.2 | %endseq |  |  |  |  |  |
| 1.2 | > | Text Value | (0040,a160) | UT | 001c | Chest X-Ray, PA and LAT View |
| 1.2 | %enditem |  |  |  |  |  |
| 1.3 | %item |  |  |  |  |  |
| 1.3 | > | Relationship Type | (0040,a010) | CS | 0010 | HAS OBS CONTEXT |
| 1.3 | > | Value Type | (0040,a040) | CS | 0004 | CODE |
| 1.3 | > | Concept Name Code Sequence | (0040,a043) | SQ | ffffffff |  |
| 1.3 | %item |  |  |  |  |  |
| 1.3 | >> | Code Value | (0008,0100) | SH | 0006 | [121005](file:///C:\Users\212001442\Documents\Dicom\wg08\sup155\part16.pdf#DCM_121005) |
| 1.3 | >> | Coding Scheme Designator | (0008,0102) | SH | 0004 | DCM |
| 1.3 | >> | Code Meaning | (0008,0104) | LO | 000e | Observer Type |
| 1.3 | %enditem |  |  |  |  |  |
| 1.3 | %endseq |  |  |  |  |  |
| 1.3 | > | Concept Code Sequence | (0040,a168) | SQ | ffffffff |  |
| 1.3 | %item |  |  |  |  |  |
| 1.3 | >> | Code Value | (0008,0100) | SH | 0006 | [121006](file:///C:\Users\212001442\Documents\Dicom\wg08\sup155\part16.pdf#DCM_121006) |
| 1.3 | >> | Coding Scheme Designator | (0008,0102) | SH | 0004 | DCM |
| 1.3 | >> | Code Meaning | (0008,0104) | LO | 0006 | Person |
| 1.3 | %enditem |  |  |  |  |  |
| 1.3 | %endseq |  |  |  |  |  |
| 1.3 | %enditem |  |  |  |  |  |
| 1.4 | %item |  |  |  |  |  |
| 1.4 | > | Relationship Type | (0040,a010) | CS | 0010 | HAS OBS CONTEXT |
| 1.4 | > | Value Type | (0040,a040) | CS | 0006 | PNAME |
| 1.4 | > | Concept Name Code Sequence | (0040,a043) | SQ | ffffffff |  |
| 1.4 | %item |  |  |  |  |  |
| 1.4 | >> | Code Value | (0008,0100) | SH | 0006 | [121008](file:///C:\Users\212001442\Documents\Dicom\wg08\sup155\part16.pdf#DCM_121008) |
| 1.4 | >> | Coding Scheme Designator | (0008,0102) | SH | 0004 | DCM |
| 1.4 | >> | Code Meaning | (0008,0104) | LO | 0014 | Person Observer Name |
| 1.4 | %enditem |  |  |  |  |  |
| 1.4 | %endseq |  |  |  |  |  |
| 1.4 | > | Person Name | (0040,a123) | PN | 0012 | Blitz^Richard^^^MD |
| 1.4 | %enditem |  |  |  |  |  |
| 1.5 | %item |  |  |  |  |  |
| 1.5 | > | Relationship Type | (0040,a010) | CS | 0008 | CONTAINS |
| 1.5 | > | Value Type | (0040,a040) | CS | 000a | CONTAINER |
| 1.5 | > | Concept Name Code Sequence | (0040,a043) | SQ | ffffffff |  |
| 1.5 | %item |  |  |  |  |  |
| 1.5 | >> | Code Value | (0008,0100) | SH | 0006 | [121060](file:///C:\Users\212001442\Documents\Dicom\wg08\sup155\part16.pdf#DCM_121060) |
| 1.5 | >> | Coding Scheme Designator | (0008,0102) | SH | 0004 | DCM |
| 1.5 | >> | Code Meaning | (0008,0104) | LO | 0008 | History |
| 1.5 | %enditem |  |  |  |  |  |
| 1.5 | %endseq |  |  |  |  |  |
| 1.5 | > | Continuity Of Content | (0040,a050) | CS | 0008 | SEPARATE |
| 1.5 | > | Content Sequence | (0040,a730) | SQ | ffffffff |  |
| 1.5.1 | %item |  |  |  |  |  |
| 1.5.1 | >> | Relationship Type | (0040,a010) | CS | 0008 | CONTAINS |
| 1.5.1 | >> | Value Type | (0040,a040) | CS | 0004 | TEXT |
| 1.5.1 | >> | Concept Name Code Sequence | (0040,a043) | SQ | ffffffff |  |
| 1.5.1 | %item |  |  |  |  |  |
| 1.5.1 | >>> | Code Value | (0008,0100) | SH | 0006 | [121060](file:///C:\Users\212001442\Documents\Dicom\wg08\sup155\part16.pdf#DCM_121060) |
| 1.5.1 | >>> | Coding Scheme Designator | (0008,0102) | SH | 0004 | DCM |
| 1.5.1 | >>> | Code Meaning | (0008,0104) | LO | 0008 | History |
| 1.5.1 | %enditem |  |  |  |  |  |
| 1.5.1 | %endseq |  |  |  |  |  |
| 1.5.1 | >> | Text Value | (0040,a160) | UT | 000c | Sore throat. |
| 1.5.1 | %enditem |  |  |  |  |  |
| 1.5 | %endseq |  |  |  |  |  |
| 1.5 | %enditem |  |  |  |  |  |
| 1.6 | %item |  |  |  |  |  |
| 1.6 | > | Relationship Type | (0040,a010) | CS | 0008 | CONTAINS |
| 1.6 | > | Value Type | (0040,a040) | CS | 000a | CONTAINER |
| 1.6 | > | Concept Name Code Sequence | (0040,a043) | SQ | ffffffff |  |
| 1.6 | %item |  |  |  |  |  |
| 1.6 | >> | Code Value | (0008,0100) | SH | 0006 | [121070](file:///C:\Users\212001442\Documents\Dicom\wg08\sup155\part16.pdf#DCM_121070) |
| 1.6 | >> | Coding Scheme Designator | (0008,0102) | SH | 0004 | DCM |
| 1.6 | >> | Code Meaning | (0008,0104) | LO | 0008 | Findings |
| 1.6 | %enditem |  |  |  |  |  |
| 1.6 | %endseq |  |  |  |  |  |
| 1.6 | > | Continuity Of Content | (0040,a050) | CS | 0008 | SEPARATE |
| 1.6 | > | Content Sequence | (0040,a730) | SQ | ffffffff |  |
| 1.6.1 | %item |  |  |  |  |  |
| 1.6.1 | >> | Relationship Type | (0040,a010) | CS | 0008 | CONTAINS |
| 1.6.1 | >> | Value Type | (0040,a040) | CS | 0004 | TEXT |
| 1.6.1 | >> | Concept Name Code Sequence | (0040,a043) | SQ | ffffffff |  |
| 1.6.1 | %item |  |  |  |  |  |
| 1.6.1 | >>> | Code Value | (0008,0100) | SH | 0006 | [121071](file:///C:\Users\212001442\Documents\Dicom\wg08\sup155\part16.pdf#DCM_121071) |
| 1.6.1 | >>> | Coding Scheme Designator | (0008,0102) | SH | 0004 | DCM |
| 1.6.1 | >>> | Code Meaning | (0008,0104) | LO | 0008 | Finding |
| 1.6.1 | %enditem |  |  |  |  |  |
| 1.6.1 | %endseq |  |  |  |  |  |
| 1.6.1 | >> | Text Value | (0040,a160) | UT | 01ae | The cardiomediastinum is within normal limits. The trachea is midline. The previously described opacity at the medial right lung base has cleared. There are no new infiltrates. There is a new round density at the left hilus, superiorly (diameter about 45mm). A CT scan is recommended for further evaluation. The pleural spaces are clear. The visualized musculoskeletal structures and the upper abdomen are stable and unremarkable. |
| 1.6.1 | >> | Content Sequence | (0040,a730) | SQ | ffffffff |  |
| 1.6.1.1 | %item |  |  |  |  |  |
| 1.6.1.1 | >>> | Relationship Type | (0040,a010) | CS | 000e | INFERRED FROM |
| 1.6.1.1 | >>> | Observation DateTime | (0040,a032) | DT | 000e | 20060823223912 |
| 1.6.1.1 | >>> | Value Type | (0040,a040) | CS | 0004 | NUM |
| 1.6.1.1 | >>> | Concept Name Code Sequence | (0040,a043) | SQ | ffffffff |  |
| 1.6.1.1 | %item |  |  |  |  |  |
| 1.6.1.1 | >>>> | Code Value | (0008,0100) | SH | 0008 | M-02550 |
| 1.6.1.1 | >>>> | Coding Scheme Designator | (0008,0102) | SH | 0004 | SRT |
| 1.6.1.1 | >>>> | Code Meaning | (0008,0104) | LO | 0008 | Diameter |
| 1.6.1.1 | %enditem |  |  |  |  |  |
| 1.6.1.1 | %endseq |  |  |  |  |  |
| 1.6.1.1 | >>> | Measured Value Sequence | (0040,a300) | SQ | ffffffff |  |
| 1.6.1.1 | %item |  |  |  |  |  |
| 1.6.1.1 | >>>> | Measurement Units Code Sequence | (0040,08ea) | SQ | ffffffff |  |
| 1.6.1.1 | %item |  |  |  |  |  |
| 1.6.1.1 | >>>>> | Code Value | (0008,0100) | SH | 0002 | mm |
| 1.6.1.1 | >>>>> | Coding Scheme Designator | (0008,0102) | SH | 0004 | UCUM |
| 1.6.1.1 | >>>>> | Code Meaning | (0008,0104) | LO | 0002 | mm |
| 1.6.1.1 | %enditem |  |  |  |  |  |
| 1.6.1.1 | %endseq |  |  |  |  |  |
| 1.6.1.1 | >>>> | Numeric Value | (0040,a30a) | DS | 0002 | 45 |
| 1.6.1.1 | %enditem |  |  |  |  |  |
| 1.6.1.1 | %endseq |  |  |  |  |  |
| 1.6.1.1 | >>> | Content Sequence | (0040,a730) | SQ | ffffffff |  |
| 1.6.1.1.1 | %item |  |  |  |  |  |
| 1.6.1.1.1 | >>>> | Referenced SOP Sequence | (0008,1199) | SQ | ffffffff |  |
| 1.6.1.1.1 | %item |  |  |  |  |  |
| 1.6.1.1.1 | >>>>> | Referenced SOP Class UID | (0008,1150) | UI | 001a | 1.2.840.10008.5.1.4.1.1.1 |
| 1.6.1.1.1 | >>>>> | Referenced SOP Instance UID | (0008,1155) | UI | 003c | 1.2.840.113619.2.62.994044785528.20060823.200608232232322.3 |
| 1.6.1.1.1 | %enditem |  |  |  |  |  |
| 1.6.1.1.1 | %endseq |  |  |  |  |  |
| 1.6.1.1.1 | >>>> | Relationship Type | (0040,a010) | CS | 000e | INFERRED FROM |
| 1.6.1.1.1 | >>>> | Value Type | (0040,a040) | CS | 0006 | IMAGE |
| 1.6.1.1.1 | >>>> | Concept Name Code Sequence | (0040,a043) | SQ | ffffffff |  |
| 1.6.1.1.1 | %item |  |  |  |  |  |
| 1.6.1.1.1 | >>>>> | Code Value | (0008,0100) | SH | 0006 | [121112](file:///C:\Users\212001442\Documents\Dicom\wg08\sup155\part16.pdf#DCM_121112) |
| 1.6.1.1.1 | >>>>> | Coding Scheme Designator | (0008,0102) | SH | 0004 | DCM |
| 1.6.1.1.1 | >>>>> | Code Meaning | (0008,0104) | LO | 0016 | Source of Measurement |
| 1.6.1.1.1 | %enditem |  |  |  |  |  |
| 1.6.1.1.1 | %endseq |  |  |  |  |  |
| 1.6.1.1.1 | %enditem |  |  |  |  |  |
| 1.6.1.1 | %endseq |  |  |  |  |  |
| 1.6.1.1 | %enditem |  |  |  |  |  |
| 1.6.1 | %endseq |  |  |  |  |  |
| 1.6.1 | %enditem |  |  |  |  |  |
| 1.6 | %endseq |  |  |  |  |  |
| 1.6 | %enditem |  |  |  |  |  |
| 1.7 | %item |  |  |  |  |  |
| 1.7 | > | Relationship Type | (0040,a010) | CS | 0008 | CONTAINS |
| 1.7 | > | Value Type | (0040,a040) | CS | 000a | CONTAINER |
| 1.7 | > | Concept Name Code Sequence | (0040,a043) | SQ | ffffffff |  |
| 1.7 | %item |  |  |  |  |  |
| 1.7 | >> | Code Value | (0008,0100) | SH | 0006 | [121072](file:///C:\Users\212001442\Documents\Dicom\wg08\sup155\part16.pdf#DCM_121072) |
| 1.7 | >> | Coding Scheme Designator | (0008,0102) | SH | 0004 | DCM |
| 1.7 | >> | Code Meaning | (0008,0104) | LO | 000c | Impressions |
| 1.7 | %enditem |  |  |  |  |  |
| 1.7 | %endseq |  |  |  |  |  |
| 1.7 | > | Continuity Of Content | (0040,a050) | CS | 0008 | SEPARATE |
| 1.7 | > | Content Sequence | (0040,a730) | SQ | ffffffff |  |
| 1.7.1 | %item |  |  |  |  |  |
| 1.7.1 | >> | Relationship Type | (0040,a010) | CS | 0008 | CONTAINS |
| 1.7.1 | >> | Value Type | (0040,a040) | CS | 0004 | TEXT |
| 1.7.1 | >> | Concept Name Code Sequence | (0040,a043) | SQ | ffffffff |  |
| 1.7.1 | %item |  |  |  |  |  |
| 1.7.1 | >>> | Code Value | (0008,0100) | SH | 0006 | [121073](file:///C:\Users\212001442\Documents\Dicom\wg08\sup155\part16.pdf#DCM_121073) |
| 1.7.1 | >>> | Coding Scheme Designator | (0008,0102) | SH | 0004 | DCM |
| 1.7.1 | >>> | Code Meaning | (0008,0104) | LO | 000a | Impression |
| 1.7.1 | %enditem |  |  |  |  |  |
| 1.7.1 | %endseq |  |  |  |  |  |
| 1.7.1 | >> | Text Value | (0040,a160) | UT | 009c | No acute cardiopulmonary process. Round density in left superior hilus, further evaluation with CT is recommended as underlying malignancy is not excluded. |
| 1.7.1 | %enditem |  |  |  |  |  |
| 1.7 | %endseq |  |  |  |  |  |
| 1.7 | %enditem |  |  |  |  |  |
| 1 | %endseq |  |  |  |  |  |

### C.5.2 Transcoded HL7 CDA Release 2 Imaging Report

<?xml version="1.0" encoding="utf-8"?>  
<?xml-stylesheet type="text/xsl" href="CDA-DIR.xsl"?>  
<ClinicalDocument xmlns="urn:hl7-org:v3" xmlns:voc="urn:hl7-org:v3/voc"  
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"  
xsi:schemaLocation="urn:hl7-org:v3 CDA.xsd">  
 <realmCode code="UV" />  
 <typeId root="2.16.840.1.113883.1.3" extension="POCD\_HD000040" />  
 <templateId root="2.16.840.1.113883.10.20.6" />  
 <id root="1.2.840.113619.2.62.994044785528.12"  
 extension="20060828170821659" />  
 <code code="18748-4" codeSystem="2.16.840.1.113883.6.1"  
 codeSystemName="LOINC" displayName="Diagnostic Imaging Report" />  
 <!-- from DICOM TID 1210 "Equivalent Meaning(s) of Concept Name"  
 (Concept Modifier to DICOM SR document report title) -->  
 <title>Chest X-Ray, PA and LAT View</title>  
 <!-- /from TID 1210 -->  
 <effectiveTime value="20060828170821" />  
 <!-- CDA DIR effective time usually will be different from SR study date  
 and SR content date and time-->  
 <confidentialityCode code="N" codeSystem="2.16.840.1.113883.5.25" />  
 <languageCode code="en-US" />  
 <recordTarget>  
 <patientRole>  
 <id root="1.2.840.113619.2.62.994044785528.10" extension="0000680029" />  
 <!-- Unique identifier for root: {root}.10 = patient ID list added based on  
 organizational policy (not present in SR sample document because root is  
 not specified by DICOM. DICOM Patient ID (0010,0020) value inserted into  
 extension -->  
 <addr nullFlavor="NI" />  
 <telecom nullFlavor="NI" />  
 <patient>  
 <name>  
 <given>John</given>  
 <family>Doe</family>  
 </name>  
 <administrativeGenderCode codeSystem="2.16.840.1.113883.5.1"  
 code="M" />  
 <birthTime value="19641128" />  
 </patient>  
 </patientRole>  
 </recordTarget>  
 <author>  
 <time value="20060823224352" />  
 <assignedAuthor>  
 <id extension="121008" root="2.16.840.1.113883.19.5" />  
 <addr nullFlavor="NI" />  
 <telecom nullFlavor="NI" />  
 <assignedPerson>  
 <name>  
 <given>Richard</given>  
 <family>Blitz</family>  
 <suffix>MD</suffix>  
 </name>  
 </assignedPerson>  
 </assignedAuthor>  
 </author>  
 <custodian>  
 <!-- custodian values have been added based on organizational policy (in  
 this case they are not mapped from the SR sample document)-->  
 <assignedCustodian>  
 <representedCustodianOrganization>  
 <id root="2.16.840.1.113883.19.5" />  
 <name>World University Hospital</name>  
 <telecom nullFlavor="NI" />  
 <addr nullFlavor="NI" />  
 </representedCustodianOrganization>  
 </assignedCustodian>  
 </custodian>  
 <!-- legal authenticator present in sample, document is VERIFIED -->  
 <legalAuthenticator>  
 <time value="20060827141500" />  
 <!-- verification date time (0040,A030)-->  
 <signatureCode code="S" />  
 <assignedEntity>  
 <id extension="08150000" root="1.2.840.113619.2.62.994044785528.33" />  
 <addr nullFlavor="NI" />  
 <telecom nullFlavor="NI" />  
 <assignedPerson>  
 <name>  
 <given>Richard</given>  
 <family>Blitz</family>  
 <suffix>MD</suffix>  
 </name>  
 </assignedPerson>  
 </assignedEntity>  
 </legalAuthenticator>  
 <!-- Mapped from Referring physicians name (0008,0090) SR sample document -->  
 <participant typeCode="REF">  
 <associatedEntity classCode="PROV">  
 <id nullFlavor="NI" />  
 <addr nullFlavor="NI" />  
 <telecom nullFlavor="NI" />  
 <associatedPerson>  
 <name>  
 <given>John</given>  
 <family>Smith</family>  
 <suffix>MD</suffix>  
 </name>  
 </associatedPerson>  
 </associatedEntity>  
 </participant>  
 <inFulfillmentOf>  
 <order>  
 <id extension="10523475" root="1.2.840.113619.2.62.994044785528.27" />  
 <!-- {root}.27 of accession number added based on organizational policy (not  
 present in SR sample document because root is not specified by DICOM).  
 Accession number value used in extension -->  
 <id extension="123452" root="1.2.840.113619.2.62.994044785528.28" />  
 <!-- {root}.28 of filler order number added based on organizational policy (not  
 present in SR sample document because root is not specified by DICOM).  
 Filler number value used in extension -->  
 <id extension="123451" root="1.2.840.113619.2.62.994044785528.29" />  
 <!-- {root}.29 of placer order number added based on organizational policy (not  
 present in SR sample document because root is not specified by DICOM).  
 Placer number value used in extension -->  
 </order>  
 </inFulfillmentOf>  
 <documentationOf>  
 <serviceEvent classCode="ACT">  
 <id root="1.2.840.113619.2.62.994044785528.114289542805" />  
 <!-- study instance UID -->  
 <code nullFlavor="NI" />  
 <effectiveTime value="20060823222400" />  
 </serviceEvent>  
 </documentationOf>  
 <!-- transformation of a DICOM SR -->  
 <relatedDocument typeCode="XFRM">  
 <parentDocument>  
 <id root="1.2.840.113619.2.62.994044785528.20060823.200608232232322.9" />  
 <!-- SOP Instance UID (0008,0018) of SR sample document-->  
 </parentDocument>  
 </relatedDocument>  
 <component>  
 <structuredBody>  
 <component>  
 <!--  
\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  
 DICOM Object Catalog Section  
\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  
 -->  
 <section classCode="DOCSECT" moodCode="EVN">  
 <templateId root="2.16.840.1.113883.10.20.6.1.1" />  
 <code code="121181" codeSystem="1.2.840.10008.2.16.4"  
 codeSystemName="DCM" displayName="DICOM Object Catalog" />  
 <entry>  
 <!--   
\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  
 Study  
\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  
 -->  
 <act classCode="ACT" moodCode="EVN">  
 <templateId root="2.16.840.1.113883.10.20.6.2.6" />  
 <id root="1.2.840.113619.2.62.994044785528.114289542805" />  
 <code code="113014" codeSystem="1.2.840.10008.2.16.4"  
 codeSystemName="DCM" displayName="Study" />  
 <!--   
\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  
 Series (Parent SR Document)  
\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  
 -->  
 <entryRelationship typeCode="COMP">  
 <act classCode="ACT" moodCode="EVN">  
 <id root="1.2.840.113619.2.62.994044785528.20060823222132232023" />  
 <code code="113015" codeSystem="1.2.840.10008.2.16.4"  
 codeSystemName="DCM" displayName="Series">  
 <qualifier>  
 <name code="121139" codeSystem="1.2.840.10008.2.16.4"  
 codeSystemName="DCM" displayName="Modality"></name>  
 <value code="CR" codeSystem="1.2.840.10008.2.16.4"  
 codeSystemName="DCM" displayName="SR Document"></value>  
 </qualifier>  
 </code>  
 <!--   
\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  
 SopInstance UID  
\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  
 -->  
 <!-- Reference to SR Document -->  
 <entryRelationship typeCode="COMP">  
 <observation classCode="DGIMG" moodCode="EVN">  
 <templateId root="2.16.840.1.113883.10.20.6.2.8" />  
 <id root="1.2.840.113619.2.62.994044785528.20060823.200608242334312.3" />  
 <code code="1.2.840.10008.5.1.4.1.1.88.22"  
 codeSystem="1.2.840.10008.2.6.1" codeSystemName="DCMUID"  
 displayName="Enhanced SR"></code>  
 <text mediaType="application/dicom">  
 <reference value="http://www.example.org/wado?requestType=WADO  
 &amp;studyUID=1.2.840.113619.2.62.994044785528.114289542805  
 &amp;seriesUID=1.2.840.113619.2.62.994044785528.20060823222132232023  
 &amp;objectUID=1.2.840.113619.2.62.994044785528.20060823.200608232232322.9  
 &amp;contentType=application/dicom" />  
 <!--reference to image 1 (PA) -->  
 </text>  
 <effectiveTime value="20060823223232" />  
 </observation>  
 </entryRelationship>  
 </act>  
 </entryRelationship>  
 <!--   
\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  
 Series (CR Images)  
\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  
 -->  
 <entryRelationship typeCode="COMP">  
 <act classCode="ACT" moodCode="EVN">  
 <id root="1.2.840.113619.2.62.994044785528.20060823223142485051" />  
 <code code="113015" codeSystem="1.2.840.10008.2.16.4"  
 codeSystemName="DCM" displayName="Series">  
 <qualifier>  
 <name code="121139" codeSystem="1.2.840.10008.2.16.4"  
 codeSystemName="DCM" displayName="Modality"></name>  
 <value code="CR" codeSystem="1.2.840.10008.2.16.4"  
 codeSystemName="DCM" displayName="Computed Radiography">  
 </value>  
 </qualifier>  
 </code>  
 <!--   
\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  
 SopInstance UID  
\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  
 -->  
 <!-- 2 References (chest PA and LAT) -->  
 <entryRelationship typeCode="COMP">  
 <observation classCode="DGIMG" moodCode="EVN">  
 <templateId root="2.16.840.1.113883.10.20.6.2.8" />  
 <id root="1.2.840.113619.2.62.994044785528.20060823.200608232232322.3" />  
 <code code="1.2.840.10008.5.1.4.1.1.1"  
 codeSystem="1.2.840.10008.2.6.1" codeSystemName="DCMUID"  
 displayName="Computed Radiography Image Storage"></code>  
 <text mediaType="application/dicom">  
 <reference value="http://www.example.org/wado?requestType=WADO  
 &amp;studyUID=1.2.840.113619.2.62.994044785528.114289542805  
 &amp;seriesUID=1.2.840.113619.2.62.994044785528.20060823223142485051  
 &amp;objectUID=1.2.840.113619.2.62.994044785528.20060823.200608232232322.3  
 &amp;contentType=application/dicom" />  
 <!--reference to image 1 (PA) -->  
 </text>  
 <effectiveTime value="20060823223232" />  
 </observation>  
 </entryRelationship>  
 <entryRelationship typeCode="COMP">  
 <observation classCode="DGIMG" moodCode="EVN">  
 <templateId root="2.16.840.1.113883.10.20.6.2.8" />  
 <id root="1.2.840.113619.2.62.994044785528.20060823.200608232231422.3" />  
 <code code="1.2.840.10008.5.1.4.1.1.1"  
 codeSystem="1.2.840.10008.2.6.1" codeSystemName="DCMUID"  
 displayName="Computed Radiography Image Storage"></code>  
 <text mediaType="application/dicom">  
 <reference value="http://www.example.org/wado?requestType=WADO  
 &amp;studyUID=1.2.840.113619.2.62.994044785528.114289542805  
 &amp;seriesUID=1.2.840.113619.2.62.994044785528.20060823223142485051  
 &amp;objectUID=1.2.840.113619.2.62.994044785528.20060823.200608232231422.3  
 &amp;contentType=application/dicom" />  
 <!--reference to image 2 (LAT) -->  
 </text>  
 <effectiveTime value="20060823223142" />  
 </observation>  
 </entryRelationship>  
 </act>  
 </entryRelationship>  
 </act>  
 </entry>  
 </section>  
 <!--   
\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  
 End of DICOM Object Catalog Section  
\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  
 -->  
 </component>  
 <component>  
 <!--  
\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  
 Reason for study Section   
\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  
The original DICOM SR document that is mapped does not contain a  
"Indications for Procedure" section. The attribute value "Reason  
for the Requested Procedure" (0040,1002) within the Referenced  
Request Sequence (0040,A370) of the SR header has been mapped under  
the assumption that the header attribute value has been displayed to  
and included by the legal authenticator.  
 -->  
 <section>  
 <code code="121109" codeSystem="1.2.840.10008.2.16.4"  
 codeSystemName="DCM" displayName="Indications for Procedure" />  
 <title>Indications for Procedure</title>  
 <text>Suspected lung tumor</text>  
 </section>  
 <!--   
\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  
 Reason for study Section  
\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  
 -->  
 </component>  
 <component>  
 <!--  
\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  
 History Section   
\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  
 -->  
 <section>  
 <code code="121060" codeSystem="1.2.840.10008.2.16.4"  
 codeSystemName="DCM" displayName="History" />  
 <title>History</title>  
 <text>  
 <paragraph>  
 <caption>History</caption>  
 <content ID="Fndng1">Sore throat.</content>  
 </paragraph>  
 </text>  
 <entry>  
 <!-- History report element (TEXT) -->  
 <observation classCode="OBS" moodCode="EVN">  
 <templateId root="2.16.840.1.113883.10.20.6.2.12" />  
 <code code="121060" codeSystem="1.2.840.10008.2.16.4"  
 codeSystemName="DCM" displayName="History" />  
 <value xsi:type="ED">  
 <reference value="#Fndng1" />  
 </value>  
 </observation>  
 </entry>  
 </section>  
 <!--   
\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  
 End of History Section  
\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  
 -->  
 </component>  
 <component>  
 <!--  
\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  
 Findings Section  
\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  
 -->  
 <section>  
 <templateId root="2.16.840.1.113883.10.20.6.1.2" />  
 <code code="121070" codeSystem="1.2.840.10008.2.16.4"  
 codeSystemName="DCM" displayName="Findings" />  
 <title>Findings</title>  
 <text>  
 <paragraph>  
 <caption>Finding</caption>  
 <content ID="Fndng2">The cardiomediastinum is within normal  
 limits. The trachea is midline. The previously described opacity  
 at the medial right lung base has cleared. There are no new  
 infiltrates. There is a new round density at the left hilus,  
 superiorly (diameter about 45mm). A CT scan is recommended for  
 further evaluation. The pleural spaces are clear. The visualized  
 musculoskeletal structures and the upper abdomen are stable and  
 unremarkable.</content>  
 </paragraph>  
 <paragraph>  
 <caption>Diameter</caption>  
 <content ID="Diam2">45mm</content>  
 </paragraph>  
 <paragraph>  
 <caption>Source of Measurement</caption>  
 <content ID="SrceOfMeas2">  
 <linkHtml href="http://www.example.org/wado?requestType=WADO  
 &amp;studyUID=1.2.840.113619.2.62.994044785528.114289542805  
 &amp;seriesUID=1.2.840.113619.2.62.994044785528.20060823223142485051  
 &amp;objectUID=1.2.840.113619.2.62.994044785528.20060823.200608232232322.3  
 &amp;contentType=application/dicom">  
 Chest\_PA</linkHtml>  
 </content>  
 </paragraph>  
 </text>  
 <entry>  
 <observation classCode="OBS" moodCode="EVN">  
 <!-- Text Observation -->  
 <templateId root="2.16.840.1.113883.10.20.6.2.12" />  
 <code code="121071" codeSystem="1.2.840.10008.2.16.4"  
 codeSystemName="DCM" displayName="Finding" />  
 <value xsi:type="ED">  
 <reference value="#Fndng2" />  
 </value>  
 <!-- inferred from measurement -->  
 <entryRelationship typeCode="SPRT">  
 <observation classCode="OBS" moodCode="EVN">  
 <templateId root="2.16.840.1.113883.10.20.6.2.14" />  
 <code code="246120007" codeSystem="2.16.840.1.113883.6.96"  
 codeSystemName="SNOMED" displayName="Nodule size">  
 <originalText>  
 <reference value="#Diam2" />  
 </originalText>  
 </code>  
 <!-- no DICOM attribute <statusCode code="completed"/> -->  
 <effectiveTime value="20060823223912" />  
 <value xsi:type="PQ" value="45" unit="mm" />  
 <!-- inferred from image -->  
 <entryRelationship typeCode="SUBJ">  
 <observation classCode="DGIMG" moodCode="EVN">  
 <templateId root="2.16.840.1.113883.10.20.6.2.8" />  
 <!-- (0008,1155) Referenced SOP Instance UID-->  
 <id root="1.2.840.113619.2.62.994044785528.20060823.200608232232322.3" />  
 <!-- (0008,1150) Referenced SOP Class UID -->  
 <code code="1.2.840.10008.5.1.4.1.1.1"  
 codeSystem="1.2.840.10008.2.6.1" codeSystemName="DCMUID"  
 displayName="Computed Radiography Image Storage"></code>  
 <text mediaType="application/dicom">  
 <!--reference to CR DICOM image (PA view) -->  
 <reference value="http://www.example.org/wado?requestType=WADO  
 &amp;studyUID=1.2.840.113619.2.62.994044785528.114289542805  
 &amp;seriesUID=1.2.840.113619.2.62.994044785528.20060823223142485051  
 &amp;objectUID=1.2.840.113619.2.62.994044785528.20060823.200608232232322.3  
 &amp;contentType=application/dicom" />  
 </text>  
 <effectiveTime value="20060823223232" />  
 <!-- Purpose of Reference -->  
 <entryRelationship typeCode="RSON">  
 <observation classCode="OBS" moodCode="EVN">  
 <templateId root="2.16.840.1.113883.10.20.6.2.9" />  
 <code code="ASSERTION"  
 codeSystem="2.16.840.1.113883.5.4" />  
 <value xsi:type="CD" code="121112"  
 codeSystem="1.2.840.10008.2.16.4"  
 codeSystemName="DCM"  
 displayName="Source of Measurement">  
 <originalText>  
 <reference value="#SrceOfMeas2" />  
 </originalText>  
 </value>  
 </observation>  
 </entryRelationship>  
 </observation>  
 </entryRelationship>  
 </observation>  
 </entryRelationship>  
 </observation>  
 </entry>  
 </section>  
 <!--   
\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  
 End of Findings Section  
\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  
 -->  
 </component>  
 <component>  
 <!--  
\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  
 Impressions Section   
\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  
 -->  
 <section>  
 <code code="121072" codeSystem="1.2.840.10008.2.16.4"  
 codeSystemName="DCM" displayName="Impressions" />  
 <title>Impressions</title>  
 <text>  
 <paragraph>  
 <caption>Impression</caption>  
 <content ID="Fndng3">No acute cardiopulmonary process. Round  
 density in left superior hilus, further evaluation with CT is  
 recommended as underlying malignancy is not excluded.</content>  
 </paragraph>  
 </text>  
 <entry>  
 <!-- Impression report element (TEXT) -->  
 <observation classCode="OBS" moodCode="EVN">  
 <!-- Text Observation -->  
 <templateId root="2.16.840.1.113883.10.20.6.2.12" />  
 <code code="121073" codeSystem="1.2.840.10008.2.16.4"  
 codeSystemName="DCM" displayName="Impression" />  
 <value xsi:type="ED">  
 <reference value="#Fndng3" />  
 </value>  
 </observation>  
 </entry>  
 </section>  
 <!--   
\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  
 End of Impressions Section  
\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  
 -->  
 </component>  
 </structuredBody>  
 </component>  
</ClinicalDocument>

PS3.1 – Introduction and Overview

*Amend PS3.1 references to PS3.20 as follows*

## 6.1 Document Structure

…

* PS3.20: ~~Transformation of DICOM to and from HL7 Standards~~ **Imaging Reports using HL7 Clinical Document Architecture**

…

## 6.20 PS3.20: Imaging Reports using HL7 Clinical Document Architecture

[PS3.20](C:\\Users\\212001442\\Documents\\Dicom\\wg08\\sup155\\part20.pdf" \l "PS3.20) of the DICOM Standard specifies templates for the encoding of imaging reports using the HL7 Clinical Document Architecture Release 2 (CDA R2, or simply CDA) Standard. Within this scope are clinical procedure reports for specialties that use imaging for screening, diagnostic, or therapeutic purposes.

PS3.20 constitutes an implementation guide for CDA, and is harmonized with the approach to standardized templates for CDA implementation guides developed by HL7. It also provides Business Names for data elements that link data in user terminology, e.g., collected by a report authoring application, to specific CDA encoded elements.

As an implementation guide for imaging reports, particular attention is given to the use and reference of data collected in imaging procedures as explicit evidence within reports. This data includes images, waveforms, measurements, annotations, and other analytic results managed as DICOM SOP Instances. Specifically, this Part includes a specification for transformation of certain DICOM Structured Report instances into CDA documents.

PS3.2 – Conformance

*Modify PS3.2 references to PS3.20 as follows*

## 7.7 Transformation of DICOM SR to CDA

DICOM specifies the transformation of DICOM SR objects to CDA documents in [PS3.20](file:///C:\Users\212001442\Documents\Dicom\wg08\sup155\part20.pdf#PS3.20).

This transformation is unidirectional (DICOM SR to HL7 CDA). Conformance statements shall at a minimum state conformance to the top level templates used **for the SR document and the CDA document.**

…

## A.6 Transformation of DICOM to CDA

The supported SR objects and corresponding template identifiers shall be described. The release version and template identifier of the generated valid CDA documents shall be documented. **The transformation process may be described by reference to a specific Annex of PS3.20.**

PS3.6 – Data Dictionary

*Add the following content to PS3.6*

1. Registry of DICOM Unique Identifiers (UIDs) (Normative)

**Table A-3. Context Group UID Values**

| **Context UID** | **Context Identifier** | **Context Group Name** |
| --- | --- | --- |
| … |  |  |
| **1.2.840.10008.6.​1.​x2** | **x7035** | **Actionable Finding Classification** |
| **1.2.840.10008.6.​1.​x3** | **x7036** | **Image Quality Assessment** |
| **1.2.840.10008.6.​1.​x4** | **x10040** | **Summary Radiation Exposure Quantities** |

**Table A-4. Template UID Values**

| **UID Value** | **UID Name** | **UID Type** | **Part** |
| --- | --- | --- | --- |
| 1.2.840.10008.​20.x1.x1 | Imaging Report | Document TemplateID | PS3.20 |
| 1.2.840.10008.20.x2.x1 | Clinical Information | Section TemplateID | PS3.20 |
| 1.2.840.10008.20.x2.x2 | Imaging Procedure Description | Section TemplateID | PS3.20 |
| 1.2.840.10008.20.x2.x3 | Comparison Study | Section TemplateID | PS3.20 |
| 1.2.840.10008.20.x2.x4 | Impression | Section TemplateID | PS3.20 |
| 1.2.840.10008.20.x2.x5 | Addendum | Section TemplateID | PS3.20 |
| 1.2.840.10008.20.x2.x6 | Request | Section TemplateID | PS3.20 |
| 1.2.840.10008.20.x2.x7 | Radiation Exposure and Protection Information | Section TemplateID | PS3.20 |
| 1.2.840.10008.20.x2.x8 | OBUS Fetus Findings | Section TemplateID | PS3.20 |
| 1.2.840.10008.20.x2.x9 | Labeled Subsection | Section TemplateID | PS3.20 |
| 1.2.840.10008.20.x2.x10 | Communication of Actionable Findings | Section TemplateID | PS3.20 |
| 1.2.840.10008.20.x2.x11 | Study Recommendation | Section TemplateID | PS3.20 |
| 1.2.840.10008.20.x3.x1 | Procedural Medication | Entry TemplateID | PS3.20 |
| 1.2.840.10008.20.x3.x2 | Imaging Procedure Technique | Entry TemplateID | PS3.20 |
| 1.2.840.10008.20.x3.x4 | Image Quality | Entry TemplateID | PS3.20 |
| 1.2.840.10008.20.x3.x5 | Study Act | Entry TemplateID | PS3.20 |
| 1.2.840.10008.20.x3.x6 | Series Act | Entry TemplateID | PS3.20 |
| 1.2.840.10008.20.x3.x7 | SOP Instance Observation | Entry TemplateID | PS3.20 |
| 1.2.840.10008.20.x4.x0 | Section Text | Element Set TemplateID | PS3.20 |
| 1.2.840.10008.20.x4.x1 | General Header Elements | Element Set TemplateID | PS3.20 |
| 1.2.840.10008.20.x4.x2 | Imaging Header Elements | Element Set TemplateID | PS3.20 |
| 1.2.840.10008.20.x4.x3 | Parent Document Header Elements | Element Set TemplateID | PS3.20 |
| 1.2.840.10008.20.x4.x4 | General Section Entries | Element Set TemplateID | PS3.20 |

PS3.16 - Content Mapping Resource

*Amend PS3.16 as follows*

# Coding Schemes

[Table 8-1](#table_8_1) lists the coding schemes (and their designators) defined for use in DICOM**; Table 8-2 lists the HL7v3 coding schemes referenced for use in DICOM**. …

**Table 8-1. Coding Schemes**

| **Coding Scheme Designator** | **Coding Scheme UID** | **Description** |
| --- | --- | --- |
| … |  |  |
| RFC3066 | 2.16.840.1.113883.6.121 | RFC 3066, Tags for the Identification of Languages, Internet Engineering Task Force  Note  HL7 uses "IETF3066" for the symbolic name.  **RFC3066 has been superseded by RFC4646.** |
| **IETF4646** |  | **RFC 4646, Tags for Identifying Languages, The Internet Society (2005)** |
|  |  |  |

**Table 8-2. HL7v3 Coding Schemes**

| **Coding Scheme Designator** | **Coding Scheme UID** | **Description** |
| --- | --- | --- |
| **ActCode** | **2.16.840.1.113883.5.4** |  |
| **ActPriority** | **2.16.840.1.113883.5.7** |  |
| **AdministrativeGender** | **2.16.840.1.113883.5.1** |  |
| **mediaType** | **2.16.840.1.113883.5.79** | **RFC2046** |
| **NullFlavor** | **2.16.840.1.113883.5.1008** |  |
| **ObservationInterpretation** | **2.16.840.1.113883.5.83** |  |
| **Confidentiality** | **2.16.840.1.113883.5.25** |  |
| **ParticipationType** | **2.16.840.1.113883.5.90** |  |

1. Structured Reporting Templates (Normative)

## TID 2000 Basic Diagnostic Imaging Report

Basic report template for general diagnostic imaging interpretation reports.

Can only be instantiated at the root node and cannot be included in other templates.

**Type: Non-Extensible**

**Order: Significant**

**Root: Yes**

**Table TID 2000. Basic Diagnostic Imaging Report**

|  | **NL** | **Rel with Parent** | **VT** | **Concept Name** | **VM** | **Req Type** | **Condition** | **Value Set Constraint** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 |  |  | CONTAINER | B[CID 7000 “Diagnostic Imaging Report Document Titles”](#sect_CID_7000) | 1 | M |  | **~~Root node~~** |
| 2 | > | HAS CONCEPT MOD | CODE | EV [(121058, DCM, "Procedure reported")](#DCM_121058) | 1-n | U |  |  |
| **3** | **>** | **HAS CONCEPT MOD** | **CODE** | **EV (122142, DCM, "Acquisition Device Type")** | **1-n** | **U** |  | **DCID 29 "Acquisition Modality"** |
| **4** | **>** | **HAS CONCEPT MOD** | **CODE** | **EV (123014, DCM, "Target Region")** | **1-n** | **U** |  |  |
| **~~3~~5** | > | HAS CONCEPT MOD | INCLUDE | D[TID 1204 “Language of Content Item and Descendants”](#sect_TID_1204) | 1 | M |  |  |
| **~~4~~6** | > | HAS CONCEPT MOD | INCLUDE | D[TID 1210 “Equivalent Meaning(s) of Concept Name”](#sect_TID_1210) | 1-n | U |  |  |
| **~~5~~7** | > | HAS OBS CONTEXT | INCLUDE | D[TID 1001 “Observation Context”](#sect_TID_1001) | 1 | M |  |  |
| **~~6~~8** | > | CONTAINS | CONTAINER | B[CID 7001 “Diagnostic Imaging Report Headings”](#sect_CID_7001) | 1-n | U |  |  |
| **~~7~~9** | >> | HAS OBS CONTEXT | INCLUDE | D[TID 1001 “Observation Context”](#sect_TID_1001) | 1 | U |  |  |
| **~~8~~10** | >> |  | INCLUDE | D[TID 2002 “Report Narrative”](#sect_TID_2002) | 1 | M |  |  |

No content items other than those defined in Observation Context [TID 1001 “Observation Context”](#sect_TID_1001) may be the target of a HAS OBS CONTEXT relationship when [TID 2000 “Basic Diagnostic Imaging Report”](#sect_TID_2000) is invoked.

**Content Item Descriptions**

|  |  |
| --- | --- |
| **Rows 2, 3, 4** | **The content of rows 2, 3, and 4 shall not be inconsistent with the meaning of the report title of row 1. If the report title does not include the concepts of the procedure type, modality, or target site (e.g., the generic “Diagnostic Imaging Report”), these rows may provide post-coordination of those concepts. If the report title does include such concepts (e.g., “CT Head Report”), they may be encoded duplicatively to support report categorization and search.** |

## TID 2005 Transcribed Diagnostic Imaging Report

Basic report template for general diagnostic imaging interpretation reports produced in a dictation/transcription workflow. SR documents encoded using this template are intended to be transformable to HL7 Clinical Document Architecture format (see [Section X.3 “Transcribed Diagnostic Imaging CDA Instance Content” in PS3.17](file:///C:\Users\212001442\Documents\Dicom\wg08\sup155\part17.pdf#sect_X.3)**, and Annexes in PS3.20**).

This template can be instantiated only at the root node, and cannot be included in other templates.

Observation Context shall be inherited from outside the SR Content tree, and shall not be changed within the Content tree. To satisfy the requirement that Observer Context is inherited, either or both the Author Observer Sequence (0040,A078) or the Verifying Observer Sequence (0040,A073) from the SR Document Module must be present in the SOP Instance.

Note

See [Section C.17.5 “Observation Context Encoding” in PS3.3](file:///C:\Users\212001442\Documents\Dicom\wg08\sup155\part03.pdf#sect_C.17.5).

**Type: Non-Extensible**

**Order: Significant**

**Root: Yes**

**Table TID 2005. Transcribed Diagnostic Imaging Report**

|  | **NL** | **Rel with Parent** | **VT** | **Concept Name** | **VM** | **Req Type** | **Condition** | **Value Set Constraint** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 |  |  | CONTAINER | B[CID 7000 “Diagnostic Imaging Report Document Titles”](#sect_CID_7000) | 1 | M |  | **~~Root node~~** |
| **2** | **>** | **HAS CONCEPT MOD** | **CODE** | **EV** [**(121058, DCM, "Procedure reported")**](#DCM_121058) | **1-n** | **U** |  |  |
| **3** | **>** | **HAS CONCEPT MOD** | **CODE** | **EV (122142, DCM, "Acquisition Device Type")** | **1-n** | **U** |  | **DCID 29 "Acquisition Modality"** |
| **4** | **>** | **HAS CONCEPT MOD** | **CODE** | **EV (123014, DCM, "Target Region")** | **1-n** | **U** |  |  |
| **~~2~~5** | > | HAS CONCEPT MOD | CODE | EV [(121049, DCM, "Language of Content Item and Descendants")](#DCM_121049) | 1 | M |  | D[CID 5000 “Languages”](#sect_CID_5000) |
| **~~3~~6** | > | CONTAINS | CONTAINER | B[CID 7001 “Diagnostic Imaging Report Headings”](#sect_CID_7001) | 1-n | M |  |  |
| **~~4~~7** | >> | CONTAINS | TEXT | B[CID 7002 “Diagnostic Imaging Report Elements”](#sect_CID_7002) | 1 | U |  |  |
| **~~5~~8** | > | CONTAINS | CONTAINER | EV [(55113-5, LN, "Key Images")](http://s.details.loinc.org/LOINC/55113-5.html) | 1-n | U |  |  |
| **~~6~~9** | >> | CONTAINS | TEXT | EV [(113012, DCM, "Key Object Description")](#DCM_113012) | 1 | U |  |  |
| **~~7~~10** | >> | CONTAINS | IMAGE | Purpose of Reference is not used | 1-n | M |  |  |

**Content Item Descriptions**

|  |  |
| --- | --- |
| **Rows 2, 3, 4** | **The content of rows 2, 3, and 4 shall not be inconsistent with the meaning of the report title of row 1. If the report title does not include the concepts of the procedure type, modality, or target site (e.g., the generic “Diagnostic Imaging Report”), these rows may provide post-coordination of those concepts. If the report title does include such concepts (e.g., “CT Head Report”), they may be encoded duplicatively to support report categorization and search.** |
| Row **~~3~~6** | CONTAINER Concept Name may be absent. |
| Row **~~7~~10** | IMAGE Concept Name shall be absent |

## TID 2007 Imaging Procedure Description

Contains information related to the procedure.

**Type: Extensible**

**Order: Non-Significant**

**Table TID 2007. Imaging Procedure Description**

|  | **NL** | **Rel with Parent** | **VT** | **Concept Name** | **VM** | **Req Type** | **Condition** | **Value Set Constraint** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 |  | HAS OBS CONTEXT | INCLUDE | D[TID 1001 “Observation Context”](#sect_TID_1001) | 1 | U |  |  |
| 2 |  | CONTAINS | TEXT | EV [(123014, DCM, "Target Region")](#DCM_123014) | 1 | MC | XOR with Row 3 |  |
| 3 |  | CONTAINS | CODE | EV [(123014, DCM, "Target Region")](#DCM_123014) | 1 | MC | XOR with Row 2 | D[CID 4028 “Craniofacial Anatomic Regions”](#sect_CID_4028),  D[CID 4030 “CT, MR and PET Anatomy Imaged”](#sect_CID_4030),  D[CID 4031 “Common Anatomic Regions”](#sect_CID_4031) |
| **4** |  | **CONTAINS** | **CODE** | **EV (122142, DCM, "Acquisition Device Type")** | **1-n** | **U** |  | **DCID 29 "Acquisition Modality"** |
| ~~4~~ |  | CONTAINS | TEXT | EV [(121065, DCM, "Procedure Description")](#DCM_121065) | 1 | M |  |  |
| ~~5~~ |  | CONTAINS | DATE | EV [(111060, DCM, "Study Date")](#DCM_111060) | 1 | M |  | Shall be equal to the Study Date (0020,0020) in the General Study Module in the images to which this report applies. |
| ~~6~~ |  | CONTAINS | TIME | EV [(111061, DCM, "Study Time")](#DCM_111061) | 1 | U |  | If present, shall be equal to the Study Time (0020,0030) in the General Study Module in the images to which this report applies. |
| ~~7~~ |  | CONTAINS | COMPOSITE | EV [(113701, DCM, "X-Ray Radiation Dose Report")](#DCM_113701) | 1-n | U |  |  |

1. DCMR Context Groups (Normative)

*Instruction to Editor: Add SNOMED CT codes to all rows of CID 11, 25, 4021, 6096, 7470, 7471, 7472*

## CID 11 Route of Administration

**Type: Extensible**

**Version: 20100608**

**Table CID 11. Route of Administration**

| **Coding Scheme Designator** | **Code Value** | **Code Meaning** | **Equivalent SNOMED CT  Concept ID** |
| --- | --- | --- | --- |
| SRT | G-D101 | Intravenous route | **47625008** |
| SRT | G-D102 | Intra-arterial route | **58100008** |
| SRT | G-D103 | Intramuscular route | **78421000** |
| … |  |  |  |

## CID 25 Radiopharmaceuticals

**Type: Extensible**

**Version: 20110224**

**Table CID 25. Radiopharmaceuticals**

| **Coding Scheme Designator** | **Code Value** | **Code Meaning** | **Equivalent SNOMED CT  Concept ID** |
| --- | --- | --- | --- |
| SRT | C-B1302 | Carbon^14^ D-xylose | **2942001** |
| SRT | C-B1300 | Carbon^14^ triolein | **42417005** |
| SRT | C-B1304 | Cholyl-carbon^14^ glycine | **70086001** |
| … |  |  |  |

## CID 4021 PET Radiopharmaceuticals

**Type: Extensible**

**Version: 20130207**

**Table CID 4021. PET Radiopharmaceuticals**

| **Coding Scheme Designator** | **Code Value** | **Code Meaning** | **Equivalent SNOMED CT  Concept ID** |
| --- | --- | --- | --- |
| SRT | C-B1043 | Acetate C^11^ | **129513004** |
| SRT | C-B103C | Ammonia N^13^ | **129508003** |
| SRT | C-B07DB | ATSM Cu^64^ | **422855001** |
| … |  |  |  |

## CID 6096 Pregnancy Status

**Type: Extensible**

**Version: 20040112**

**Table CID 6096. Pregnancy Status**

| **Coding Scheme Designator** | **Code Value** | **Code Meaning** | **Equivalent SNOMED CT  Concept ID** |
| --- | --- | --- | --- |
| SRT | F-81890 | not pregnant | **60001007** |
| SRT | F-84094 | possible pregnancy | **102874004** |
| SRT | F-84000 | patient currently pregnant | **77386006** |
| SRT | R-41198 | Unknown | **261665006** |

## CID 7470 Linear Measurements

**Type: Extensible**

**Version: 20050822**

**Table CID 7470. Linear Measurements**

| Coding Scheme Designator | Code Value | Code Meaning | Equivalent SNOMED-CT Concept ID |
| --- | --- | --- | --- |
| SRT | G-A22A | Length | **131193001** |
| DCM | [121211](#DCM_121211) | Path length |  |
| DCM | [121206](#DCM_121206) | Distance |  |
| SRT | G-A220 | Width | **103355008** |
| SRT | G-D785 | Depth | **131197000** |
| SRT | M-02550 | Diameter | **81827009** |
| SRT | G-A185 | Long Axis | **103339001** |
| SRT | G-A186 | Short Axis | **103340004** |
| SRT | G-A193 | Major Axis | **131187009** |
| SRT | G-A194 | Minor Axis | **131188004** |
| SRT | G-A195 | Perpendicular Axis | **131189007** |
| SRT | G-A196 | Radius | **131190003** |
| SRT | G-A197 | Perimeter | **131191004** |
| SRT | M-02560 | Circumference | **74551000** |
| SRT | G-A198 | Diameter of circumscribed circle | **131192006** |
| DCM | [121207](#DCM_121207) | Height |  |

## CID 7471 Area Measurements

**Type: Extensible**

**Version: 20020904**

**Table CID 7471. Area Measurements**

| Coding Scheme Designator | Code Value | Code Meaning | Equivalent SNOMED-CT Concept ID |
| --- | --- | --- | --- |
| SRT | G-A166 | Area | **42798000** |
| SRT | G-A16A | Area of defined region | **131184002** |

## CID 7472 Volume Measurements

**Type: Extensible**

**Version: 20020904**

**Table CID 7472. Volume Measurements**

| Coding Scheme Designator | Code Value | Code Meaning | Equivalent SNOMED-CT Concept ID |
| --- | --- | --- | --- |
| SRT | G-D705 | Volume | **118565006** |
| DCM | [121216](#DCM_121216) | Volume estimated from single 2D region |  |
| DCM | [121218](#DCM_121218) | Volume estimated from two non-coplanar 2D regions |  |
| DCM | [121217](#DCM_121217) | Volume estimated from three or more non-coplanar 2D regions |  |
| DCM | [121222](#DCM_121222) | Volume of sphere |  |
| DCM | [121221](#DCM_121221) | Volume of ellipsoid |  |
| DCM | [121220](#DCM_121220) | Volume of circumscribed sphere |  |
| DCM | [121219](#DCM_121219) | Volume of bounding three dimensional region |  |

*Instruction to Editor: Change descriptions for CID 82, 5000, 7001*

## CID 82 Units of Measurement

~~Not defined as a table of codes per se, but rather constructed from UCUM.~~ Context Group ID 82 comprises the case-sensitive codes of UCUM. See Section 7.2.2.

Note:

1. Equivalent to the HL7 Value Set "Units of Measure case sensitive" 2.16.840.1.113883.11.12839

## CID 5000 Languages

Context Group ID 5000 comprises the language tag coding scheme of RFC ~~3066~~4646. The Coding Scheme Designator (0008,0102) shall be ~~RFC3066~~IETF4646.

Note

1. The RFC ~~3066~~4646 coding scheme is constructed from a primary subtag component encoded using the language codes of ISO 639, plus ~~two~~ codes for extensions for languages not represented in ISO 639. The code optionally includes ~~a second~~ additional subtag components, for scripts encoded using the four letter codes of ISO 15924, and for regions encoded using the two letter country codes of ISO 3166~~, or a language code extension registered by the Internet Assigned Names Authority~~.
2. RFC ~~3066~~4646 may be obtained at http://​www.ietf.org/​rfc/​rfc~~3066~~4646.txt. RFC ~~3066~~4646 obsoletes RFC 3066 and RFC 1766, but is forward compatible with those specifications.
3. ISO 639 codes may be obtained at [http://​www.loc.gov/​standards/​iso639-2/​langhome.html](http://www.loc.gov/standards/iso639-2/langhome.html).
4. The two letter country codes of ISO 3166 may be obtained at [~~http://​www.iso.ch/​iso/​en/​prods-services/​iso3166ma/​02iso-3166-code-lists/​index.html~~](http://www.iso.ch/iso/en/prods-services/iso3166ma/02iso-3166-code-lists/index.html) https://www.iso.org/obp/ui/#search/code/
5. IANA language tag registrations may be obtained at [~~http://​www.iana.org/​assignments/​language-tags~~](http://www.iana.org/assignments/language-tags) http://www.iana.org/assignments/language-subtag-registry/language-subtag-registry
6. In previous editions of the Standard, this Context Group formerly included the three letter language codes of ISO 639-2/B, using Coding Scheme Designator ISO639\_2, or the language codes of RFC 3066, using Coding Scheme Designator RFC3066, and several IANA-registered language code extensions, using Coding Scheme Designator IANARFC1766. ~~RFC 3066 identifies a preference for the ISO 639-1 two letter codes to the ISO 639-2 three letter codes, and the ISO 639-2/T (terminology) subset to the ISO 639-2/B (bibliographic) subset.~~
7. In previous editions of the Standard, this Context Group provided only language identifiers, with national or regional variant identified in a separate attribute or Content Item.

## CID 7001 Diagnostic Imaging Report Headings

**Type: Extensible**

**Version: ~~20130806~~yyyymmdd**

**Table CID 7001. Diagnostic Imaging Report Headings**

| **Coding Scheme Designator** | **Code Value** | **Code Meaning** | **Equivalent DCMR (DCM) Code** |
| --- | --- | --- | --- |
| … |  |  |  |
| LN | [**~~18782-3~~**](http://s.details.loinc.org/LOINC/18782-3.html)**59776-5** | Findings | 121070 |
| … |  |  |  |

**Note: In a prior version of this Context Group, the code (18782-3, LN, “Study Observation”) was specified for report heading “Findings”. This has now been replaced by (59776-5, LN, “Procedure Findings”.**

*Instruction to Editor: Add the following Context Groups*

## CID x7035  Actionable Finding Classification

**Type: Extensible**

**Version: yyyymmdd**

**Table CID x7035.** **Actionable Finding Classification**

| Coding Scheme Designator | Code Value | Code Meaning |
| --- | --- | --- |
| RADLEX | RID49480 | ACR Category 1 Actionable Finding |
| RADLEX | RID49481 | ACR Category 2 Actionable Finding |
| RADLEX | RID49482 | ACR Category 3 Actionable Finding |

## CID x7036  Image Quality Assessment

**Type: Extensible**

**Version: yyyymmdd**

**Table CID x7036.** **Image Quality Assessment**

| Coding Scheme Designator | Code Value | Code Meaning |
| --- | --- | --- |
| RADLEX | RID12 | Diagnostic quality |
| RADLEX | RID13 | Limited quality |
| RADLEX | RID14 | Non-diagnostic quality |

## CID x10040  Summary Radiation Exposure Quantities

**Type: Extensible**

**Version: yyyymmdd**

**Table CID x10040. Summary Radiation Exposure Quantities**

| Coding Scheme Designator | Code | Code Meaning |
| --- | --- | --- |
| DCM | 111637 | Accumulated Average Glandular Dose (mammo) |
| DCM | 113722 | Dose Area Product Total |
| DCM | 113726 | Fluoro Dose Area Product Total |
| DCM | 113727 | Acquisition Dose Area Product Total |
| DCM | 113730 | Total Fluoro Time |
| DCM | 113731 | Total Number of Radiographic Frames |
| DCM | 113507 | Administered activity |
| DCM | 113813 | CT Dose Length Product Total |
| DCM | 113830 | Mean CTDIvol |

*Instruction to Editor: No change to the following Context Groups*

## CID 29 Acquisition Modality

This Context Group includes codes that may be used to identify an image or waveform acquisition modality, as used in Attribute Modality (0008,0060) of a Modality Worklist Scheduled Procedure Step or a Composite SOP Instance (see PS3.3). It generally corresponds to a class of diagnostic equipment, or to a specific acquisition function or technique in a device. This Context Group may be used as the value set for HL7 v2 Table 0259 (see HL7 v2.6 Chapter 8 Section 8.8.8.47).

Note

1. This Context Group is not the complete set of codes that may appear in the Attribute Modality (0008,0060); these are only the codes associated with orderable acquisition processes (not post-processing).

**Type: Extensible**

**Version: 20121129**

**Table CID 29. Acquisition Modality**

| **Coding Scheme Designator** | **Code Value** | **Code Meaning** |
| --- | --- | --- |
| DCM | AR | Autorefraction |
| DCM | BMD | Bone Mineral Densitometry |
| DCM | BDUS | Ultrasound Bone Densitometry |
| … |  |  |

## CID 244 Laterality

**Type: Non-Extensible**

**Version: 20030108**

**Table CID 244. Laterality**

| **Coding Scheme Designator** | **Code Value** | **Code Meaning** | **SNOMED-CT Concept ID** | **UMLS Concept Unique ID** |
| --- | --- | --- | --- | --- |
| SRT | G-A100 | Right | 24028007 | C0205090 |
| SRT | G-A101 | Left | 7771000 | C0205091 |
| SRT | G-A102 | Right and left | 51440002 | C0238767 |
| SRT | G-A103 | Unilateral | 66459002 | C0205092 |

## CID 7003 Diagnostic Imaging Report Purposes of Reference

**Type: Extensible**

**Version: 20100604**

**Table CID 7003. Diagnostic Imaging Report Purposes of Reference**

| **Coding Scheme Designator** | **Code Value** | **Code Meaning** |
| --- | --- | --- |
| DCM | [121079](#DCM_121079) | Baseline |
| DCM | [121080](#DCM_121080) | Best illustration of finding |
| DCM | [121112](#DCM_121112) | Source of Measurement |
| DCM | [121200](#DCM_121200) | Illustration of ROI |

1. DICOM Controlled Terminology Definitions (Normative)

| Code Value | Code Meaning | Definition | Notes |
| --- | --- | --- | --- |
| … |  |  |  |
| *121070* | *Findings* |  | *Retired. Replaced by* [*(~~18782-3~~ 59776-5, LN, "Findings")*](http://s.details.loinc.org/LOINC/18782-3.html) |
| … |  |  |  |
| 99SUP155-1 | Patient exposure to ionizing radiation | Patient exposure to ionizing radiation (procedure) |  |
| 99SUP155-5 | Results communicated | The act of communicating actionable findings to a responsible receiver |  |
| 99SUP155-7 | Fetal Study observation | Findings about a fetus from an imaging study (modality unspecified) |  |
| 99SUP155-9 | Procedure Appropriate to Indication | Assessment of whether a requested procedure is appropriate to the patient condition, relative to a set of appropriate use criteria (the method); associated value may be yes, no, not applicable. |  |

1. Externally defined Value Sets

This annex identifies those Value Sets defined externally to the DICOM Standard that are referenced by the Standard. These value sets are reproduced here for reference only, and might not be the current version.

These value sets use codes from various coding schemes or code systems, as identified in Section 8.

## N.1 HL7 Value Sets

HL7 Value Sets are reproduced with the permission of HL7 International. For the current version of HL7 Value Sets, see the HL7v3 Normative Edition (http://www.hl7.org/implement/standards/product\_brief.cfm?product\_id=186).

|  |  |  |
| --- | --- | --- |
| Value Set Name | OID | Notes |
| ActPriority | 2.16.840.1.113883.11.16866 |  |
| AdministrativeGender | 2.16.840.1.113883.11.1 |  |
| HumanLanguages | 2.16.840.1.113883.11.11526 | Equivalent to CID 5000 |
| ImageMediaType | 2.16.840.1.113883.11.14839 |  |
| NullFlavor | 2.16.840.1.113883.11.10609 |  |
| ObservationInterpretation | 2.16.840.1.113883.11.78 |  |
| x\_BasicConfidentialityKind | 2.16.840.1.113883.11.16926 |  |
| x\_serviceEventPerformer | 2.16.840.1.113883.11.19601 |  |

### ActPriority Value Set

|  |  |  |
| --- | --- | --- |
| Value Set: ActPriority 2.16.840.1.113883.11.16866 DYNAMIC | | |
| Code System(s): | ActPriority 2.16.840.1.113883.5.7 | |
| Code | Code System | Print Name |
| A | ActPriority | ASAP |
| CR | ActPriority | Callback results |
| CS | ActPriority | Callback for scheduling |
| CSP | ActPriority | Callback placer for scheduling |
| CSR | ActPriority | Contact recipient for scheduling |
| EL | ActPriority | Elective |
| EM | ActPriority | Emergency |
| P | ActPriority | Preoperative |
| PRN | ActPriority | As needed |
| R | ActPriority | Routine |
| RR | ActPriority | Rush reporting |
| S | ActPriority | Stat |
| T | ActPriority | Timing critical |
| UD | ActPriority | Use as directed |
| UR | ActPriority | Urgent |

### AdministrativeGender Value Set

|  |  |  |
| --- | --- | --- |
| Value Set: AdministrativeGender 2.16.840.1.113883.11.1 DYNAMIC | | |
| Code System(s): AdministrativeGender 2.16.840.1.113883.5.1 | | |
| Code | Code System | Print Name |
| F | AdministrativeGender | Female |
| M | AdministrativeGender | Male |
| UN | AdministrativeGender | Undifferentiated |

### ImageMediaType Value Set

|  |  |  |
| --- | --- | --- |
| Value Set: HL7 ImageMediaType 2.16.840.1.113883.11.14839 DYNAMIC | | |
| Code System(s): mediaType 2.16.840.1.113883.5.79 | | |
| Code | Code System | Print Name |
| image/g3fax | mediaType | g3fax |
| image/gif | mediaType | gif |
| image/jpeg | mediaType | jpeg |
| image/png | mediaType | png |
| image/tiff | mediaType | tiff |

### NullFlavor Value Set

|  |  |  |
| --- | --- | --- |
| Value Set: HL7 NullFlavor 2.16.840.1.113883.11.10609 DYNAMIC | | |
| Code System(s): NullFlavor 2.16.840.1.113883.5.1008 | | |
| Code | Code System | Print Name |
| NI | NullFlavor | No Information |
| OTH | NullFlavor | other |
| NINF | NullFlavor | negative infinity |
| PINF | NullFlavor | positive infinity |
| UNK | NullFlavor | unknown |
| ASKU | NullFlavor | asked but unknown |
| NAV | NullFlavor | temporarily unavailable |
| NASK | NullFlavor | not asked |
| TRC | NullFlavor | trace |
| MSK | NullFlavor | masked |
| NA | NullFlavor | not applicable |
| NP | NullFlavor | not present |

### ObservationInterpretation Value Set

|  |  |  |
| --- | --- | --- |
| Value Set: HL7 ObservationInterpretation 2.16.840.1.113883.11.78 DYNAMIC | | |
| Code System(s): ObservationInterpretation 2.16.840.1.113883.5.83 | | |
| Code | Code System | Print Name |
| B | ObservationInterpretation | better |
| D | ObservationInterpretation | decreased |
| U | ObservationInterpretation | increased |
| W | ObservationInterpretation | worse |
| < | ObservationInterpretation | low off scale |
| > | ObservationInterpretation | high off scale |
| A | ObservationInterpretation | Abnormal |
| AA | ObservationInterpretation | Abnormal alert |
| HH | ObservationInterpretation | High alert |
| LL | ObservationInterpretation | Low alert |
| H | ObservationInterpretation | High |
| L | ObservationInterpretation | Low |
| N | ObservationInterpretation | Normal |
| I | ObservationInterpretation | intermediate |
| MS | ObservationInterpretation | moderately susceptible |
| R | ObservationInterpretation | resistent |
| S | ObservationInterpretation | susceptible |
| VS | ObservationInterpretation | very susceptible |

### x\_ BasicConfidentialityKind Value Set

| Value Set: x\_ BasicConfidentialityKind 2.16.840.1.113883.11.16926 STATIC 2010-04-21 | | |
| --- | --- | --- |
| Code System(s): | Confidentiality 2.16.840.1.113883.5.25 | |
| Code | Code System | Print Name |
| N | Confidentiality | Normal |
| R | Confidentiality | Restricted |
| V | Confidentiality | Very Restricted |

### x\_serviceEventPerformer Value Set

|  |  |  |
| --- | --- | --- |
| Value Set: HL7 x\_serviceEventPerformer 2.16.840.1.113883.11.19601 DYNAMIC | | |
| Code System(s): ParticipationType 2.16.840.1.113883.5.90 | | |
| Code | Code System | Print Name |
| PRF | ParticipationType | Performer |
| PPRF | ParticipationType | Principal performer |
| SPRF | ParticipationType | Secondary performer |

## N.2 LOINC Value Sets

LOINC Value Sets are available from Regenstrief Institute, Inc. For the current version, see the LOINC web site (http://loinc.org/oids).

|  |  |  |
| --- | --- | --- |
| Value Set Name | OID | Notes |
| LOINC Imaging Document Codes | 1.3.6.1.4.1.12009.10.2.5 |  |
| LOINC Y/N/NA |  | LL2850-7 |

### LOINC Imaging Document Codes (examples)

|  |  |  |
| --- | --- | --- |
| Value Set: LOINC Imaging Document Codes 1.3.6.1.4.1.12009.10.2.5 DYNAMIC | | |
| Code System(s): LOINC 2.16.840.1.113883.6.1 | | |
| Code | Code System | Print Name |
| 11525-3 | LOINC | US Pelvis and Fetus for pregnancy |
| 17787-3 | LOINC | Thyroid Scan Study report |
| 18744-3 | LOINC | Bronchoscopy study |
| 18746-8 | LOINC | Colonoscopy study |
| 18748-4 | LOINC | Diagnostic imaging study |
| … |  |  |

### LOINC Y/N/NA

|  |  |  |
| --- | --- | --- |
| Value Set: LOINC Y/N/NA STATIC | | |
| Code System(s): LOINC 2.16.840.1.113883.6.1 | | |
| Code | Code System | Print Name |
| LA33-6 | LOINC | Yes |
| LA32-8 | LOINC | No |
| LA4720-4 | LOINC | Not Applicable |

1. CDA® is a registered trademark of HL7 International. [↑](#footnote-ref-2)
2. HL7 greenCDA: An Implementation Methodology for CDA, Release 1 Draft Standard for Trial Use (<http://www.hl7.org/implement/standards/product_brief.cfm?product_id=136>) [↑](#footnote-ref-3)
3. <http://radreport.org/> [↑](#footnote-ref-4)
4. <http://www.ihe.net/Technical_Framework/upload/IHE_RAD_Suppl_MRRT.pdf> [↑](#footnote-ref-5)
5. HL7 Version 3 Clinical Document Architecture, Release 2 (<http://www.hl7.org/implement/standards/product_brief.cfm?product_id=7>). CDA® is a registered trademark of HL7 International. [↑](#footnote-ref-6)