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HL7 Implementation Guide for CDA Release 2: Healthcare Associated Infection (HAI) Reports, DSTU Release 8 (US Realm)

HL7 Draft Standard for Trial Use

July 2012

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The best standards are those driven by business requirements. A strong set of Healthcare Associated Infection (HAI) surveillance application vendors monitor, evaluate, and test each release of this guide.

Past contributors: The vendors who participated in the 2007-2008 pilot activities of Bloodstream Infection Reports and Surgical Site Infection deserve special thanks and acknowledgment: MedMined™ services from Cardinal Health, EpiQuest, ICPA, Premier, TheraDoc, and Vecna Technologies. Throughout the development of this guide, Marla Albitz provided essential translation of NHSN business and technical requirements so that Kate Hamilton, Bob Dolin, Rick Geimer, and Susan Hardy could turn those requirements into a CDA-compliant specification. Liora Alschuler provided oversight and review. Additional contributors to the DSTU releases have been Jonathan Edwards, Maggie Dudeck, Dawn Sievert, Teresa Horan, Mary Andrus, Melinda Neuhauser, Ruby Phelps, Mindy Durrance, and Alicia Shugart (data specifications); Wenkai Li, Pavla Frazier, Gaye Dolin, Margaret Marshburn, Rob Hausam, and Denny Cordy (vocabulary); Sundak Ganesan (vocabulary); Kelly Peterson (database administration); Venu Sarraff (data importation); and Brett Marquard and Lauren Wood (project management and technical editing). We also thank Ted Klein, Cecil Lynch, and Daniel Vreeman for timely issuance of identifiers and codes.

This specification is a set of constraints on existing work, and the extent to which it can accommodate the expressive requirements of HAI reporting over time is a function of the richness of the model on which it is built, the Health Level Seven (HL7) Reference Information Model (RIM) and the RIM document standard, and the Clinical Document Architecture Release 2 (CDA R2). We thank all those who have worked for over a decade to produce these fundamental specifications; we especially thank structured documents co-chairs Bob Dolin, Keith Boone, Calvin Beebe, and Grahame Grieve for their support of this project.

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□ On January 1, 2011, Alschuler Associates, LLC and Semantically Yours, LLC became Lantana Consulting Group

Revision History

Release	Date	Notes
1	February 28, 2008	First release of the DSTU
2	August 6, 2008	Updated four reports, added one report
	December 4, 2008	Updated five reports, added eight reports
	February 27, 2009	Integrated January 2009 ballot resolutions
3	March 30, 2009	Added two reports
	June 25, 2009	Integrated May 2009 ballot resolutions Replaced fine-grained NHSN codeSystems with a single NHSN vocabulary Replaced temporary NHSN code values with final NHSN code values
4	August 7, 2009	Added one report, updated population-summary to include a new form. Converted to Templates Database constraints format.
	October 30, 2009	Integrated September 2009 ballot resolutions.
4.1	January 14, 2010	Updated UTI Urinary Catheter Observation. Added History of Object Presence Observation.
5	April 7, 2010	Added Hemovigilance Incident Report (HI). In the Population-summary Report, added a code in the header to distinguish types of summary report; added values to support summary reporting for hemovigilance incidents and blood-product usage; converted some value sets to lists of single-value bindings. Modified data reported in the CLIP, Procedure, and LIO Reports as requested by NHSN.
	June 28, 2010	Incorporated May 2010 ballot resolutions.
6	August 27, 2010	Added Hemovigilance Adverse Reaction Report (HAR). In the Population-summary Report, added values to support antimicrobial usage and resistance data (AUP). Adapted several clinical statements to support nullFlavor or text.
	January 20, 2011	Incorporated September 2010 ballot resolutions
7	August 5, 2011	Added Dialysis Event Numerator Report. In Population-summary Report, added values for dialysis reporting. Removed the MDRO/CDAD Report and the clinical statements uniquely identified with it Replaced the MDRO Observation with an MDRO/CDI Observation. Updated the Findings Section in infection-type reports to require the new MDRO/CDI Observation, and in Generic Infection Report also to require a Significant Pathogens Observation. Updated the LIO Report to require a Significant Pathogens Observation.
	January 15, 2012	Updated vocabulary and value sets per CDC/NHSN requirements. Updated the top-level templateId. Removed the Generic Infection Report (not used). Updated the templateId for Findings Section in a LIO Report and Findings Section in infection-type reports, plus the templateIds of those reports. Updated Dialysis Event Numerator Report, renamed as Evidence of Infection (Dialysis) Report.

		Converted some value sets from STATIC to DYNAMIC bindings.
8	July 2012	No new reports in this release. Minor revisions to several templates. Updated the top-level templateId. Recast the population-summary body templates and created a separate section for them, in response to user ease-of-use wishes (no modeling change). Refactored the distribution of header constraints between header templates, to remove exceptions that have accumulated over time (no modeling change). Edited constraints to contain only one XML node per constraint (no modeling change).

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1 INTRODUCTION

1.1 Purpose

This document specifies a standard for electronic submission of Healthcare Associated Infection (HAI) Reports to the National Healthcare Safety Network (NHSN) of the Centers for Disease Control and Prevention (CDC). This document defines the overall approach and method of electronic submission and develops constraints defining specific HAI report types. As reports are modified and new report types are defined, CDC and Health Level Seven (HL7) will develop and publish additional constraints.

Throughout this process, CDC remains the authority on NHSN data collection protocols. When healthcare enterprises choose to participate in NHSN, they must report to CDC occurrences such as specific reportable procedures, even those without complications, and events such as a bloodstream infection, either confirmed by a positive blood culture or supported by a patient's clinical symptoms. This specification opens the channel for data submission by all applications compliant with the data coding requirements defined here.

Note that participation in the NHSN requires enrollment and filing of reporting plans, which are not defined by this specification. For an overview of NHSN and full information on NHSN participation requirements, see: http://www.cdc.gov/nhsn/

Note that provisions of the Public Health Service Act protect all data reported to NHSN from discovery through the Freedom Of Information Act.

1.2 Audience

The audience for this work is all developers of software systems who want to enable their systems for reporting HAI data to the NHSN.

1.3 Approach

Overall, the approach taken here is consistent with balloted IGs for the Clinical Document Architecture (CDA). These publications view the ultimate implementation specification as a series of layered constraints. CDA itself is a set of constraints on the HL7 Reference Information Model (RIM) defined in the CDA Release 2 (CDA R2) Refined Message Information Model (RMIM). Implementation guides such as this and the Continuity of Care Document (CCD) add constraints to CDA through conformance statements that further define and restrict the sequence and cardinality of CDA objects and the vocabulary sets for coded elements.

1.3.1 CDA R2

CDA R2 is "… a document markup standard that specifies the structure and semantics of 'clinical documents' for the purpose of exchange" [CDA R2, Section 1.1; see References]. Clinical documents, according to CDA, have the following characteristics:

- Persistence
- Stewardship
- Potential for authentication
- Context
- Wholeness
- Human readability

CDA defines a header that is used for classification and management, and a document body that carries the clinical record. While the header metadata are prescriptive and designed for consistency across all instances, the body is highly generic, leaving the designation of semantic requirements to implementation.

1.3.2 Development of This Specification

In the development of this specification, we compared the baseline requirements for HAI reporting against CDA R2 to determine initially whether CDA—designed for clinical reports that become part of a patient chart—was suitable for HAI reporting or whether significant modifications would be required. That analysis showed that the only anomaly between the two was the requirement for a single-record target (patient), which is appropriate for single-patient-focused reports such as the Bloodstream Infection (BSI) Report, and not appropriate for population-summary reports that summarize data for many patients over a period of time. This implementation guide (IG) addresses this issue in population-summary reports through use of a null flavor for the record target and a participant defined as a "group".

After the initial evaluation, we analyzed and mapped four HAI report types to the CDA header and body, noting similarities and differences between the report types. From this analysis, we developed the first in a set of "straw man" instances illustrating the proposed approach. These initial samples were reviewed informally by the Structured Documents Working Group (SDWG), which is the sponsor of this guide within HL7; the stakeholders in HAI exchange; the NHSN, which is the overall sponsor of the activity; and the software vendors whose systems will use the specification for NHSN reporting.

Design considerations included consistency with published CDA IGs and with the RMIMs of related domain committees, specifically those for laboratory reporting, while retaining fidelity with the data structures of the NHSN database.

An implementation pilot that ran in late July 2007 tested a preliminary design for the BSI and Intensive Care Unit (ICU) Summary (now part of Population Summary) forms. Later releases incorporated findings from that pilot.

In response to comments received on the first ballot for Draft Standard for Trial Use (DSTU), a rigorous evaluation ensured use of standard codes in every instance where their use was fully expressive and supported by NHSN. The criteria for this evaluation are described in the Appendix on Vocabulary Heuristics for Codes and Value Sets (Non-normative). We incorporated changes through the reconciliation process from the second ballot for DSTU held in December 2007 and January 2008.

A second development cycle updated the constraints on several reports and added a new Multi-drug-resistant Organism (MDRO) Infection report. These updates were reviewed informally by the SDWG and balloted in September 2008. We incorporated

changes through the reconciliation process, and published Release 2 of the DSTU in March 2009.

Subsequent releases have added new report types and extended the population-summary report to encompass additional data sets. For an overview of the changes in each release, see section 1.10 Summary of Changes. For details of changes in this release, see the Appendix on Changes in Release 7.

1.3.3 Change Notification Process

CDC maintains an e-mail list of contacts at organizations interested in or responsible for implementations of CDA for HAI reporting to NHSN. To be added to the list, send a request with your contact information to nhsn@cdc.gov. CDC uses the list for e-mail notifications of changes, including new data requirements. Changes may apply to this IG and to other documents such as business rules that are needed to implement and support CDA for HAI reporting to NHSN. In addition, the CDA tab at the NHSN members' website (http://www.cdc.gov/nhsn/) provides access to the current version of this IG.

1.4 Future Work

This implementation guide was the first use of the CDA R2 for public health reporting. Future work on HAI reporting will continue to expand the set of forms covered by the specification.

1.5 Organization of This Implementation Guide

The requirements as laid out in the body of this document are subject to change per the policy on DSTU; see "13.02 Draft Standard for Trial Use (DSTU)" within the HL7 Governance and Operations Manual[1].

1.5.1 Generic HAI Report Requirements

Generic HAI report requirements apply to any HAI CDA document. They apply to constraints on the CDA header and sections, and include the requirement that the body be represented by a `structuredBody` element.

The header requirements for single-person reports and for population-summary reports differ significantly. HAI defines a header template for these two sets of requirements.

[1] http://www.hl7.org/documentcenter/public/membership/HL7_Governance_and_Operations_Manual.pdf

1.5.2 Report-specific Requirements

This section contains constraints specific to each report type, such as the Bloodstream Infection (BSI) Report. These include the template identifier (`templateId`), any report-specific header constraints, and the required sections.

1.5.3 Section Library

This section specifies section-level constraints. For example, the Infection Details Section in a BSI Report an Infection-type Observation and a Death Observation.

1.5.4 Clinical Statement Library

This section specifies the templates used in single-person reports. Each template is a set of conformance requirements for a CDA clinical statement, including associated value sets.

1.5.5 Population-Summary Body

This section defines the few templates used in the body of population-summary reports. There is no overlap with the templates used in single-person reports.

1.5.6 Vocabularies and Value Sets

The templates in this document use terms from several code systems. Those controlled vocabularies are defined in various supporting specifications and may be maintained by other bodies, as is the case for the LOINC® and SNOMED CT® vocabularies.

A value set is a set of terms chosen as appropriate for HAI reporting to NHSN. The terms may come from vocabularies in general use (standard vocabularies) or from a vocabulary created by NHSN specifically for HAI reporting (NHSN local codes). Note that in CDA document instances a term is identified by the identifier for the vocabulary it comes from (codeSystem object identifier [OID]), not by the value-set identifier for a subset of terms in this implementation guide.

The Excel vocabulary spreadsheet hai_voc.xls, which accompanies this document, lists in full the value sets used in this implementation guide, with the exception of three, for which external links are provided. For ease of reference, value sets in this document are shown with the templates to which they pertain.

A value set can have a **STATIC** binding or a **DYNAMIC** binding. With a **STATIC** binding, the members of the value set are fixed as of the date of IG publication. With a **DYNAMIC** binding, such as for a list of pathogens or a list of symptoms, the members of the value set can be updated between IG publications. For updates to value sets with a **DYNAMIC** binding, please contact NHSN@cdc.gov.

The appendix on Vocabulary Heuristics for Codes and Value Sets (Non-normative) explains principles regarding choice of vocabularies and value sets.

1.5.7 TemplateIds

The appendix on Template IDs (Non-normative) lists the template identifiers assigned for use in HAI reporting to NHSN. These template identifiers are assigned at the document, section, and entry level. Use of Templates describes the role of templates and template identifiers in CDA.

1.5.8 Change Appendix

The appendix on Changes in Release 8 lists in detail the changes made for this release. The section below on Summary of Changes provides a higher-level overview of changes in all releases.

1.5.9 Example Instance Identifiers

Much of the initial development of this guide was driven by a pilot project in July 2007. The pilot project used object identifiers (OIDs) assigned to a fictional facility and vendor to illustrate the numbering schemes for which facilities and vendors are responsible.

Except for the example patient IDs, the example code in this document, and the accompanying sample files, use these pilot OIDs. Example patient IDs use the HL7 example OID. In practice, the identifiers will be assigned by facilities and software applications submitting reports to NHSN.

These pilot instance identifiers begin with `2.16.840.1.113883.3.117.1.1.5`; HL7 example identifiers begin with `2.16.840.1.113883.19.5.` They are used throughout this guide and are documented in the appendix on Example Instance Identifiers (Non-normative).

1.6 Conventions Used in This Implementation Guide

1.6.1 Keywords

The keywords **SHALL, SHOULD, MAY, NEED NOT, SHOULD NOT,** and **SHALL NOT** in this document are to be interpreted as described in the HL7 Version 3 Publishing Facilitator's Guide[2]:

- **SHALL**: an absolute requirement
- **SHALL NOT**: an absolute prohibition against inclusion
- **SHOULD/SHOULD NOT**: valid reasons to include or ignore a particular item, but must be understood and carefully weighed
- **MAY/NEED NOT**: truly optional; can be included or omitted as the author decides with no implications

The keyword **SHALL** implies a lower cardinality of 1, but allows NULL values. If NULL values are to be excluded, it will be via an additional explicit conformance statement.

1.6.2 Constraints

HAI templates are, with one exception, closed templates. This means that the template constraints specify everything that is allowed. In open templates, by contrast, all of the features of the CDA R2 base specification are allowed except as constrained by the templates.

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[2] http://www.hl7.org/v3ballot/html/help/pfg/pfg.htm

The exception to closed templates in HAI reports is that the `structuredBody` is open: it may contain sections not specified in this guide. The content of such unspecified sections is not processed by NHSN. See also Document Body.

Beginning with Release 4, this document uses a new format for CDA conformance statements. An algorithm converts constraints recorded in a Templates Database to a printable presentation.

Figure 1: Constraints format example

Immunocompromised Observation
[`observation`: templateId `2.16.840.1.113883.10.20.5.6.19` (closed)]

[description of the template]

1. **SHALL** contain [1..1] **`@classCode`**="`OBS`" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:2348)
2. **SHALL** contain [1..1] **`@moodCode`**="`EVN`" Event (CodeSystem: `2.16.840.1.113883.5.1001 HL7ActMood`) (CONF:2349)
3. **SHALL** contain [1..1] **`code/@code`**="`ASSERTION`" Assertion (CodeSystem: `2.16.840.1.113883.5.4 HL7ActCode`) (CONF:2350)
4. **SHALL** contain [1..1] **`statusCode/@code`**="`completed`" (CodeSystem: `2.16.840.1.113883.5.14 HL7ActStatus`) (CONF:2351)
5. **SHALL** contain [1..1] **`value/@code`**="`370388006`" Patient immunocompromised (CodeSystem: `2.16.840.1.113883.6.96 SNOMEDCT`) (CONF:2352)

Each constraint is uniquely identified by an identifier at or near the end of the constraint (e.g., CONF:2605). These identifiers are persistent not sequential.

The conformance verb keyword at the start of a constraint (**SHALL**, **SHOULD**, **MAY**, etc.) indicates business conformance, whereas the cardinality indicator (0..1, 1..1, 1..*, etc.) specifies the allowable occurrences within a document instance. The cardinality indicators may be interpreted as follows:

- 0..1 as zero to one present
- 1..1 as one and only one present
- 1..* as one or more present
- 0..* as zero to many present

Value set bindings adhere to HL7 Vocabulary Working Group best practices, and include both a conformance verb (**SHALL**, **SHOULD**, **MAY**, etc.) and an indication of **DYNAMIC** vs. **STATIC** binding. If an HL7 "null" value such as other (OTH) or unknown (UNK) is allowed, the constraints state this explicitly. 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. A simplified constraint, used when the binding is to a single code, includes the meaning of the code, for example "**`@moodCode`**="`EVN`" Event (CodeSystem: `2.16.840.1.113883.5.1001 HL7ActMood`)".

Some constraints cannot be expressed in the format shown above. They are represented as ordinary sentences, and most often represent conditional constraints or alternatives.

Figure 2: Constraints format – narrative constraints

1. If the patient is an inpatient (componentOf/encompassingEncounter /code/@code ="IMP"), an entry element **SHALL** be present containing an ASA Class Observation (templateId:2.16.840.1.113883.10.20.5.2.2.7.4) (CONF:4479).

If a template is a specialization of another template, its first constraint indicates the more general template. In all cases where a more specific template conforms to a more general template, asserting the more specific template also implies conformance to the more general template.

Figure 3: Constraints format – specialization of another template

1. Conforms to Header Constraints, HAI Single-person Reports Template (templateId: 2.16.840.1.113883.10.20.5.4.1).

When a constraint has subordinate clauses, the scope of the cardinality of the parent constraint must be clear. Here is how that is done:

The constraint in the following figure says that only one participant is to be present in total. The subordinate constraint specifies an additional requirement for that participant.

Figure 4: Constraints format – only one allowed

1. **SHALL** contain [1..1] **participant** (CONF:2777).
    a. This participant **SHALL** contain [1..1] **@typeCode**="LOC" (CodeSystem: 2.16.840.1.113883.5.90 HL7ParticipationType) (CONF:2230).

The constraint in the next figure says that only one location participant is to be present; other participant elements with different requirements can also be specified.

Figure 5: Constraints format – only one* like this *allowed

1. **SHALL** contain [1..1] **participant** (CONF:2777) such that it
    a. **SHALL** contain [1..1] **@typeCode**="LOC" (CodeSystem: 2.16.840.1.113883.5.90 HL7ParticipationType) (CONF:2230).

1.6.3 Explanatory Remarks

Text that explains a constraint is usually included in the paragraphs that introduce the template, but may appear immediately preceding the constraint it describes. Like the template introduction, this information is shown in Roman type, as follows:

This entry records whether the patient died and, if so, whether the event being reported contributed to that death.

An indented paragraph followed by an abbreviated reference indicates extracts or paraphrases to clarify adherence to or differences from constraints based on the base CDA R2 or other specifications. For example:

> The immunization is recorded as a `substanceAdministration` element where the value of `@moodCode` is `EVN`. To record that the immunization was not administered, set the value of `@negationInd` to true. [HITSP]

1.6.4 Example XML Code

Boxed figures show examples of Extensible Markup Language (XML) code. Portions of the XML content may be elided for brevity, as shown here.

Figure 6: Example XML code

```
<ClinicalDocument xmlns='urn:hl7-org:v3'>
      ...
</ClinicalDocument>
```

1.6.5 Succession Management

CDA-conformant HAI instances use the elements defined in the CDA header (`documentId`, `setId`, version number, and `relatedDocument/typeCode`) to manage replacements and updates of the documents. As with all CDA documents, the `ClinicalDocument/id` uniquely identifies a document instance (an electronic file). Incremented version numbers identify subsequent versions of the document.

NHSN assigns each participating vendor a root OID. The vendor system generates the `ClinicalDocument/setId`. The vendor is responsible for extending its OID as necessary to support the several unique numbering schemes it must generate; these include document IDs and facility-generated procedure IDs.

1.6.6 XPath Notation

This IG uses XPath notation to identify the XML elements and attributes within the CDA document instance to which various constraints are applied.

Throughout the text, a monospace font indicates element names and their content, and attribute names and their values, as shown in the examples above.

1.7 Use of Templates

When valued in an instance, the template identifier (`templateId`) signals the imposition of a set of template-defined constraints. The value of this attribute provides a unique identifier for the templates in question.

1.7.1 Originator Responsibilities: General Case

An originator can apply a `templateId` if there is a desire to assert conformance with a particular template.

In the most general forms of CDA exchange, an originator need not apply a `templateId` for every template that an object in an instance document conforms to.

1.7.2 Recipient Responsibilities: General Case

A recipient may reject an instance that does not contain a particular `templateId` (e.g., a recipient looking to only receive CCD documents can reject an instance without the appropriate `templateId`).

A recipient may process objects in an instance document that do not contain a `templateId` (e.g., a recipient can process entries that contain substanceAdministration acts within a Medications section, even if the entries do not have `templateId`s).

1.7.3 Templates for NHSN Validation

Template identifiers are critical to the validation methods chosen at this time for submissions to the NHSN. NHSN may reject as nonconformant instances that do not conform to the template identifier constraints defined here.

Please reference the NHSN webpage to identify which HAI release NHSN currently supports for a given report.

1.8 Supporting Tools

1.8.1 Overview

Implementers participating in CDA reporting to NHSN have access to supporting tools through NHSN.

1.8.2 Validation

This guide expresses CDA R2 constraints in a technology-neutral formalism. The release when published also provides a non-normative set of Schematron schemas based on the technology-neutral formalism, which can test template conformance.

The schemas provided for this package support two-stage validation. The first stage checks basic structural and semantic requirements of any CDA instance, as recorded in the W3C schema CDA.xsd. The second stage, using a set of Schematron files, checks the specific requirements of this guide. (Schematron is a language for making assertions about patterns found in XML documents. For information on Schematron, see http://www.schematron.com.)

Validation services are provided through the NHSN import mechanism and by Lantana Group's CDA Validator—an on-line application that tests a CDA document's conformance to several standards and IGs, at http://www.lantanagroup.com/validator.

1.8.3 Generation of Narrative Block

Clinical documents generated by clinicians for a patient chart can assume an almost infinite set of semantic structures. For this reason, CDA relies on a narrative block (`section/text`) to convey the comprehensive clinical report, i.e., all the information that a human reader would consider the definitive, legal content of the record. (Human readability and rendering requirements are described in CDA R2, Section 1.2.3. See References.)

In contrast, the structure and semantics of HAI reports to the NHSN are tightly constrained for unambiguous insertion into the NHSN database. Few elements allow unstructured, uncoded narrative. Unlike most CDA instances, the definitive, human-readable, legal contents of a report can be derived entirely from the CDA titles and coded entries. Therefore, for the convenience of implementers, this project created a transform that derives the narrative block from the CDA entries. Use of this transform is not required; implementers can use local methods to create the CDA narrative block.

1.8.4 Display Transforms

The content required for correct interpretation by a human reader of a compliant instance must be displayable using any CDA stylesheet. Thus, instances conforming to this IG can be viewed using CDA.xsl or any other stylesheet.

In addition, this project has a customized stylesheet that conforms more closely to the display format typical of such records.

1.9 Content of this Package

The following files comprise this package:

Table 1: Content of the Package

Documents	
CDAR2L3_IG_HAIRPT_DSTU_R8_2012MAY.doc	This implementation guide
hai_voc.xls	Vocabulary spreadsheet
Sample files	
bsi-num.xml	Bloodstream infection (BSI) numerator
ssi-num.xml	Surgical site infection (SSI) numerator
pneu-num.xml	Pneumonia infection (PNEU) numerator
uti-num.xml	Urinary tract infection (UTI) numerator
immunize-num.xml	Immunization numerator
immunize-num-HCW.xml	Immunization numerator – for healthcare worker
proc-denom.xml	Procedure denominator
clip-num.xml	Central line insertion practice (CLIP) numerator
lio-num.xml	Laboratory-identified organism (LIO) numerator
eoid-num.xml	Dialysis numerator
har-num.xml	Hemovigilance Adverse Reaction (HAR) numerator
HI-num.xml	Hemovigilance incident
pop_sum-denom.xml	Summary data – denominator (example for ICU)
pop_sum-denom-NICU.xml	Summary data – denominator (example for NICU)
pop_sum-denom-POM.xml	Summary data – denominator for prevention process and outcome measures monthly monitoring (POM)
pop_sum-HI.xml	Summary data – denominator for hemovigilance incidents
pop_sum-denom-AUP.xml	Summary data – denominator for antimicrobial usage
pop-sum-denom-SCA.xml	Summary data – denominator for specialty care area

pop-sum-denom-BPU.xml	Summary data – denominator for blood product usage
pop-sum-denom-VAT.xml	Summary data – denominator for chronic hemodialysis patients
Transforms and associated files	
hai-display.xsl	Stylesheet for display of HAI instances
nhsnlogo_small.gif	Graphic logo for hai-display.xsl

1.10 Summary of Changes

1.10.1 Release 3

Release 3 updated the value set in the population-summary report to include the Specialty Care Area (SCA) and Neonatal Intensive Care Unit (NICU) Monthly forms.

To accommodate the recording of sub-groups in the NICU Monthly form, the Summary Encounter now allows a `participant` element specifying the characteristic of the subgroup (e.g., birth weight under 750g).

A single NHSN code system replaced the finer-grained NHSN code systems.

Final values replaced temporary values in the NHSN code system.

Final values were assigned to two temporary value-set OIDs.

An influenza immunization report no longer records the in-facility location and type.

1.10.2 Release 4

Release 4 introduced the Laboratory-identified Organisms (LIO) report and updated the population-summary report to include the Prevention Process and Outcome Measures Monthly Monitoring (POM) form.

To accommodate the grouping of information in the POM monthly form, the Summary Data Observation may now contain subordinate observations.

In population-summary reports, in-facility location and code are now recorded as a participant in the Summary Encounter. Previously, this information was recorded in the header.

A population-summary report that does not report in-facility ID and type now records them with nullFlavors.

In several observations, the values for `@classCode`, `@moodCode`, and `statusCode/@code` were made explicit, making the representation of these templates consistent with the approach elsewhere in this guide.

The guide now uses the Templates Database constraints format.

Resolutions from the September 2009 ballot have been incorporated.

In future releases, an appendix referenced by this summary section will document detailed changes to constraints.

1.10.3 Release 4.1

Release 4.1 made minor updates to the Urinary Tract Infection (UTI) Report. The Urinary Catheter Observation now conditionally requires a (new) History of Object Presence Observation.

1.10.4 Release 5

Release 5 included a new report type, the Hemovigilance Incident (HI) Report, and extended the population-summary report to support reporting hemovigilance incident summary data and blood-product usage data.

In the Population-summary Report, a code in the header of the report now identifies the data content of the report.

In the Population-summary Report, the representation of terms was converted from a value set to tables of single-value bindings.

The NHSN Healthcare Service Location value set changed from **STATIC** to **DYNAMIC**.

Release 5 also implemented NHSN changes to data requirements in the Central-line Insertion Practices (CLIP), Procedure, and LIO Reports.

1.10.5 Release 6

Release 6 included a new report type, Hemovigilance Adverse Reaction (HAR) Report, extended the population-summary report to support reporting antimicrobial usage and resistance data (AUP) and C.difficile days in a POM report, and made minor changes within existing templates.

Finally, beginning with this release, hai_voc.xls is a new, reader-friendly resource for value-set information, substituting for the Word tables previously provided at the end of this implementation guide.

1.10.6 Release 7

Release 7 included a new report type, Evidence of Infection (Dialysis) Report (EOID), and updates to the tables of values for Population-summary Reports to support summary reporting for maintenance (also known as chronic) hemodialysis patients.

The guide no longer includes the MDRO/CDAD Report or the clinical statements uniquely associated with it. The MDRO Observation, used in the Findings Section, is updated to also report C. difficile infections. The guide no longer includes the Generic Infection Report.

Several value set bindings changed from **STATIC** to **DYNAMIC**.

1.10.7 Release 8

There are no new reports in this release.

A small number of templates are updated to reflect changes in data collected by the CDC.

The population-summary reports are recast for ease of use. This does not change the modeling.

The header templates are refactored for ease of use. This does not change the modeling.

Constraints have been edited to record only one element per constraint. This does not change the modeling.

2 NHSN HAI GENERIC CONSTRAINTS

This section of the guide specifies general CDA constraints that apply to all HAI Report types, and requirements related to reporting on a single patient or on a group.

The table Sequence of Sections / Templates within Report Types is an overview of the `body` requirements for each report type.

In most cases a CDA Report type corresponds directly to an NHSN form.

2.1 Healthcare Associated Infection Report

`[ClinicalDocument:` templateId `2.16.840.1.113883.10.20.5.4.23 (open)]`

This template records constraints on all NHSN Healthcare Associated Infection Reports (generic constraints). Further constraints are found in the specialization templates for single-patient and population-summary reports, and in the templates for specific report types.

Annotations before some constraints provide additional information for the implementer.

Elements required by CDA that are not further constrained in this guide are noted in paragraph text but are not presented as HAI-specific constraints.

2.1.1 Top-level Element

In a CDA document, the top-level element, also called the document element, is `ClinicalDocument`, in the `urn:hl7-org:v3` namespace.

The examples in this specification assume that this is the default namespace, and accordingly show all elements without a namespace prefix. This IG does not require use of any specific namespace prefix.

Header constraints are expressed in relation to the document element.

2.1.2 Document Information

The first header information in a CDA document is about the document itself—what kind of document it is; its language, confidentiality status, and title; and its succession management detail.

The `ClinicalDocument` must have a `templateId` representing conformance to the general constraints of the HAI guide, and an additional `templateId` representing conformance to a specific report type.

The templateId for HAI r8 is `2.16.840.1.113883.10.20.5.4.23`.

1. A `templateId` element **SHALL** be present representing conformance to this release of the Implementation Guide. (CONF: 4543).
    a. This templateId **SHALL NOT** contain [0..0] @extension. (CONF:16148)
2. A `templateId` element **SHALL** be present representing conformance to the constraints for a specific report type. (CONF:4544).
    a. This templateId **SHALL NOT** contain [0..0] @extension. (CONF:4545)

This specification is for the US realm.

3. **SHALL** contain [1..1] **realmCode.** (CONF:16107)

    a. This realmCode **SHALL** contain [1..1] **@code**="US" (CONF:4546)

CDA requires that a ClinicalDocument/typeId be present to identify the constraints imposed by CDA Release 2.0, essentially acting as a CDA version identifier. The effect of the CDA Release 2.0 requirements is:

> The value of typeId/@root shall be 2.16.840.1.113883.1.3 and the value of typeId/@extension shall be POCD_HD000040. [CDA R2]

Figure 7: CDA header – template identifiers example

```
<ClinicalDocument
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:mif="urn:hl7-org:v3/mif" xmlns="urn:hl7-org:v3">

  <realmCode code="US"/>

  <typeId root="2.16.840.1.113883.1.3" extension="POCD_HD000040"/>

  <!-- Conformant to HAI Generic Constraints -->
  <templateId root="2.16.840.1.113883.10.20.5.4.23" />

  <!-- Conformant to the HAI Constraints for BSI Numerator Report -->
  <templateId root="2.16.840.1.113883.10.20.5.26" />

  ...
</ClinicalDocument>
```

CDA requires a code element that specifies the type of the clinical document.

4. **SHALL** contain [1..1] code (CONF:16138)

    a. This code **SHALL** contain [1..1] **@code**="51897-7" Healthcare Associated Infection Report (CodeSystem: 2.16.840.1.113883.6.1 LOINC) (CONF:4547)

The preferred title content for each report type is given in Report-specific Constraints.

5. **SHALL** contain [1..1] **title** (CONF:4548)

CDA requires an effectiveTime element representing the time of document creation.

6. **SHALL** contain [1..1] **effectiveTime** (CONF:4549)

CDA requires a confidentiality code that indicates the sensitivity of the document. All HAI submissions carry the same value of "normal". Note that this designation does not affect local policy on safeguarding confidentiality of patient-identifiable personal health information.

7. **SHALL** contain [1..1] **confidentialityCode** (CONF:16141)

a. This **confidentialityCode SHALL** contain [1..1] **@code**="N" Normal (CodeSystem: 2.16.840.1.113883.5.25 HL7 Confidentiality Code) (CONF:4550).

8. **SHALL** contain [1..1] **languageCode** (CONF:16139)
    a. This languageCode **SHALL** contain [1..1] **@code**="en-US" (CONF:4551).

CDA requires a `ClinicalDocument/id` element representing a unique identifier for the document. The `id` may be represented by either `@root` or `@root` plus `@extension`, so long as the resulting `id` is globally unique.

CDA provides `id`, `setId`, `versionNumber`, and `relatedDocument` elements to support succession management (document versioning). The `id` element identifies the CDA document instance (the electronic file). It is independent of the `setId` and `versionNumber` elements.

Since NHSN HAI documents are sometimes updated, this IG requires `setId` and `versionNumber` to ensure that succession management can be easily performed.

The `setId` element identifies the set of documents in a version tree and is consistent across all versions; The `versionNumber` element stores the version number as an integer (the first version is 1, the second is 2, etc.). The vendor software is responsible for generating the necessary values and for ensuring uniqueness.

9. **SHALL** contain [1..1] **setId** (CONF:4552)
10. **SHALL** contain [1..1] **versionNumber** (CONF:4553)

In a replacement document, the `relatedDocument` element stores the `id` of the parent document and the `typeCode` attribute stores the type of document relationship. CDA supports several document relationship typecodes. If present in an HAI report, the value of a document relationship `typecode` must be `RPLC (replace)`.

11. If `versionNumber/@value` is greater than 1, a `relatedDocument` element **SHALL** be present where the value of `@typeCode` **SHALL** be `RPLC` (replace) and the value of `parentDocument/id` **SHALL** be populated with the `ClinicalDocument/id` of the document being replaced. In all cases (regardless of the version number), values of `APND` and `XFRM` **SHALL NOT** be used for `relatedDocument/@typeCode`. (CONF:4554).

Figure 8: CDA header – document information example

```
<ClinicalDocument
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:mif="urn:hl7-org:v3/mif" xmlns="urn:hl7-org:v3">
  ...
  <id root="2.16.840.1.113883.3.117.1.1.5.2.1.1.2"
      extension="20202201"/>

  <code codeSystem="2.16.840.1.113883.6.1"
        codeSystemName="LOINC"
        code="51897-7"
        displayName="Healthcare Associated Infection Report"/>

  <title>Bloodstream Infection Report (BSI)</title>

  <effectiveTime value="20061219"/>

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

  <languageCode code="en-US"/>

  <setId root="2.16.840.1.113883.3.117.1.1.5.2.1.1.1"
         extension="31"/>
  <versionNumber value="1"/>

   ...

</ClinicalDocument>
```

2.1.3 The Patient

CDA requires a `recordTarget` element that must contain a `patientRole` element. This is represented differently in single-patient and population-summary reports. See the subsections for single-person and population-summary reports for details of how to represent the patient or group subject.

2.1.4 The Author, Custodian and Legal Authenticator

In a single-patient report, the author may be software or may be a person in the role of infection control professional (ICP). In a population-summary report, the author will be the software forming the message. The effect of the CDA Release 2.0 requirements is:

> An `author` element shall be present. The `author` element shall contain a `time` element that represents the time of authoring of the information, and an `assignedAuthor` element that represents the author of the information. The `assignedAuthor` element shall contain an `id` element. [CDA R2]

When the report author is vendor software, it can record the software installation id, an email address, and the vendor name.

Figure 9: CDA header – Device author example

```
<author>
  <!-- authoring time is same as document creation date -->
  <time value="20080807"/>
  <assignedAuthor>
    <!-- author identifier, e.g., software site installation ID -->
    <id extension="KP00017" root="2.16.840.1.113883.19.5"/>
    <!-- telecom is optional, repeatable -->
    <telecom use="PUB" value="mailto:somealias@somesite.com"/>
    <assignedAuthoringDevice>
      <softwareName>Vendor Software Name v1.3</softwareName>
    </assignedAuthoringDevice>
  </assignedAuthor>
</author>
```

CDA requires that the document custodian be recorded. The NHSN is the `custodian` of NHSN HAI Reports.

12. **SHALL** contain [1..1] **`custodian`** (CONF:16142)
    a. This custodian **SHALL** contain [1..1] **`assignedCustodian`** (CONF:16143)
        i. This assignedCustodian **SHALL** contain [1..1] **`representedCustodianOrganization`** (CONF:16143)
            1. This representedCustondianOrganization **SHALL** contain [1..1] **`id (CONF:16144)`**
                a. This id **SHALL** contain [1..1] **`@root`**="`2.16.840.1.114222.4.3.2.11`" (CONF:4555).

CDA requires that a `legalAuthenticator` element be present if the document has been legally authenticated. Local policy may delegate the function of legal authentication to a device or system that generates the CDA document. In these cases, the legal authenticator must still be a person accepting responsibility for the document content, not the device or system. The effect of the CDA Release 2.0 requirements is:

> The `legalAuthenticator` element shall contain a `time` element that represents the time of authentication of the document, a `signatureCode` element where the value of `@code` is `S`, and an `assignedEntity` element that represents the authenticator of the document. The `assignedEntity` element shall contain an `id` element. [CDA R2]

HAI Reports are not signed reports and do not require a `legalAuthenticator`.

Figure 10: CDA header – custodian and legalAuthenticator example

```
<ClinicalDocument
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:mif="urn:hl7-org:v3/mif" xmlns="urn:hl7-org:v3">
  ...
  <author>
    ....
  </author>

  <custodian>
    <assignedCustodian>
      <representedCustodianOrganization>
        <id root="2.16.840.1.114222.4.3.2.11"/>
      </representedCustodianOrganization>
    </assignedCustodian>
  </custodian>

  <legalAuthenticator>
    <time value="20061224"/>
    <signatureCode code="S"/>
    <assignedEntity>
      <id root="2.16.840.1.113883.3.117.1.1.5.1.1.2"
          extension="aLegalAuthenticatorID"/>
    </assignedEntity>
  </legalAuthenticator>
  ...
</ClinicalDocument>
```

2.1.5 Document Body

An HAI Report uses the CDA `structuredBody`. Specified sections are required in each report type; see the section on Report-specific Constraints. Additional sections may be present but their content will not be processed by NHSN.

13. **SHALL** contain [1..1] **`component`** (CONF:16146)
    a. This component **SHALL** contain [1..1] **`structuredBody`** (CONF:4556)
14. The `structuredBody` element **SHALL** contain a `component` element for each section required by the particular report type. Additional sections may be present but their content will not be processed by NHSN. (CONF:4557).

Figure 11: Structured body example

```
<ClinicalDocument
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:mif="urn:hl7-org:v3/mif" xmlns="urn:hl7-org:v3">
  ...
  <component>
    <structuredBody>
      <component>
        <section>
          ...
        </section>
        ...
      </component>
    </structuredBody>
  </component>
</ClinicalDocument>
```

2.1.6 Data Constraints

NHSN imposes data constraints on the admission date, on the facility and location identifier, and on the combination of location type and gender.

In a single-patient report, admission date is recorded in `componentOf/encompassingEncounter/effectiveTime/low`. Admission date is not recorded in a population-summary report. "Event date", in the context of the following conformance statement, refers to the event most pertinent to the report. For each report type, the location of this date in the CDA document is noted in the Report-specific Constraints.

15. If the admission date is recorded, its value **SHALL NOT** be earlier than January 1, 1986; **SHALL NOT** be earlier than the date of birth; and **SHALL NOT** be later than the event date. (CONF:4558).

NHSN provides a data constraint on the identifier of an in-facility location such as a ward ID, which appears in `componentOf/encompassingEncounter/location` in a single-person report, and in encounter/`participant/associatedEntity` in a population-summary report.

16. The value of at least one `healthCareFacility/id/@extension`, if required, **SHALL** be a value previously registered with NHSN. (CONF:4559).

NHSN provides a data constraint on the content of the `name` element.

17. In a `name` element in any context, the sub-elements **SHOULD** be in the following order: `family`, `given`, and optionally a second `given` representing the middle name(s). A `name` element **SHALL NOT** contain mixed content. (CONF:4560).

NHSN also provides a data constraint on the combination of location type and gender.

18. If the value of the NHSN location type (in single-patient reports, `healthCareFacility/code/@code`) is one of the following, the patient's `administrativeGenderCode` **SHALL NOT** be a code representing male (for example, "`M`" from code system `2.16.840.1.113883.5.1 AdministrativeGender complete`): (CONF:4561).

HL7 HealthcareServiceLocation 2.16.840.1.113883.6.259	
1034-8	Prenatal Critical Care
1057-9	Inpatient Gynecology ward
1058-7	Labor and Delivery Ward
1059-5	Labor, Delivery, Recovery, Postpartum Suite (LDRP)
1068-6	Inpatient Postpartum Ward
1095-9	Cesarean Section Room/Suite
1121-3	Gynecology Clinic
1156-9	Prenatal Clinic

2.2 Single-person and Population-summary Header Constraints

2.2.1 Summary of Differences

The CDA header constraints differ for single-patient reports and population-summary reports. (Note that this distinction does not correspond exactly to the distinction between numerator and denominator reports; for example, the Procedure Denominator Report is a single-patient report.)

Single-patient reports are reports about an individual patient and may be either numerator or denominator reports. Population-summary reports cover defined groups of patients. The final calculation for numerator and denominator calculations can be drawn from both single-patient and population-summary reports. The inclusion and exclusion criteria used to refine the numerators and denominators for the reports are available from the NHSN.

The table below summarizes the differences between single-patient and population-summary reports in an HAI CDA document.

Table 2: Generic Header in Single-patient and Population-summary Reports

CDA Element in a ...	**Single-patient Report**	**Population-summary Report**
recordTarget/patientRole id patient administrativeGenderCode	 Has a value Is required Is required	 Has nullFlavor Is not used Is not used
author	May be software or ICP	Will be software
componentOf/encompassingEncounter id effectiveTime location/healthCareFacility id @root @extension code/@code	 Is optional Is required (admission date) Is required (facility ID) Is required in most reports (ward) Is required in most reports (location type)	Is not used
participant @typeCode = LOC @contextControlCode = OP associatedEntity @classCode = SDLOC id @root	Is not used	Is required (facility ID)
participant @typeCode = SBJ @contextControlCode = OP associatedEntity @classCode = PRS code @code 389109008 @codeSystem 2.16.840.1.113883.6.96	Is not used	Is required (records that subject is a group)
documentationOf/serviceEvent	Is not used	Is required: • the period documented (effectiveTime) • the summary report content (code)

2.2.2 Header Constraints, HAI Single-person Reports

`[ClinicalDocument: templateId 2.16.840.1.113883.10.20.5.4.1 (open)]`

This template records the constraints for HAI single-person reports. It is used by all numerator reports covered by this guide except the Hemovigilance Incident Report. It is also used by the Procedure Denominator Report.

A single-person report must conform to the Generic HAI Requirements above. In addition:

- Key data about the patient is recorded in the recordTarget element.
    - A patient identifier representing the facility-assigned patient ID is required. Other identifiers for the person, can also be present, such as a United States Social Security Number (`id/@root = 2.16.840.1.113883.4.1`), a Medicare beneficiary identifier (`id/@root = 2.16.840.1.113883.4.338`), or secondary patient IDs (`id/@root` = the appropriate facility OID for patient IDs).
    - The patient name is optional; consult the NHSN reporting requirements.
    - Patient gender and birthdate are required.

The report-specific requirements specify the encounter data to record for each single-person report type. This data always includes an identifier for the reporting facility, and usually includes the encounter type (inpatient or outpatient); the admission date or encounter date; and the facility unit identifier and type.

1. Conforms to Healthcare Associated Infection Report Template (`templateId: 2.16.840.1.113883.10.20.5.4.23`).
2. **SHALL** contain [1..1] **`recordTarget`** (CONF:16148)
    a. This recordTarget **SHALL** contain [1..1] **`patientRole`** (CONF:3084).
        i. This patientRole **SHALL** contain [1..*] **`id`** (CONF:3085).
            1. Such ids **SHALL** contain **`@root`** (CONF:3087).
            2. Such ids **SHALL** contain **`@extension`** (CONF:3088).
        ii. This patientRole **SHALL** contain [1..1] **`patient`** (CONF:3220).
            1. This patient **MAY** contain [0..1] **`name`** (CONF:3221).
            2. This patient **SHALL** contain [1..1] **`administrativeGenderCode (CONF:16153)`**
                a. `This` **`administrativeGenderCode`** **SHALL** contain [1..1] **`@code`** (CodeSystem: `2.16.840.1.113883.5.1 HL7 Gender Codes`) **STATIC** (CONF:3222).
            3. This patient **SHALL** contain [1..1] **`birthTime`** (CONF:16147).
                a. This birthTime **SHALL** contain [1..1] **`@value`** (CONF:3223).
3. The author **MAY** be software or **MAY** be a person in the role of infection control professional (ICP). (CONF:3089).

Figure 12: CDA header – recordTarget example

```
<ClinicalDocument
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:mif="urn:hl7-org:v3/mif" xmlns="urn:hl7-org:v3">
  ...
  <recordTarget>
    <patientRole>
      <!-- Patient ID - scoped by facility -->
      <id root="2.16.840.1.113883.3.117.1.1.5.1.1.1"
          extension="123456"/>
      <patient>
        <name>
          <family>Nuclear</family>
          <given>Ned</given>
        </name>
        <administrativeGenderCode
          codeSystem="2.16.840.1.113883.5.1"
          codeSystemName="HL7 Gender codes"
          code="M"/>
        <birthTime value="19320924"/>
      </patient>
    </patientRole>
  </recordTarget>
  ...
</ClinicalDocument>
```

Figure 13: CDA header – single-patient report example

```
<ClinicalDocument
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:mif="urn:hl7-org:v3/mif" xmlns="urn:hl7-org:v3">
  ...
  <componentOf>
    <encompassingEncounter>

      <id root="2.16.840.1.113883.3.117.1.1.5.2.1.1.3"
          extension="31737"/>

      <code codeSystem="2.16.840.1.113883.5.4"
            codeSystemName="HL7 ActCode"
            code=”AMB"
            displayName="Ambulatory"/>

      <effectiveTime>
        <!-- Date Admitted to Facility -->
        <low value="20061218"/>
      </effectiveTime>

      <location>
        <healthCareFacility>
          <!-- Facility ID and unit ID-->
          <id root="2.16.840.1.113883.3.117.1.1.5.1.1" extension="9W"/>
          <!-- unit type -->
          <code codeSystem="2.16.840.1.113883.6.259"
                codeSystemName="HL7 HealthcareServiceLocation"
                code="1029-8"
                displayName="Medical/Surgical critical care"/>
        </healthCareFacility>
      </location>
    </encompassingEncounter>
  </componentOf>
  ...
</ClinicalDocument>
```

2.2.3 Header Constraints, HAI Population Summary Reports

`[ClinicalDocument:` templateId `2.16.840.1.113883.10.20.5.4.4 (open)]`

A Population Summary Report records summary data for a group, such as the patients in a particular ward, or the hemovigilance incidents or blood-product usage in a facility, during a specified period. There are several differences from single-person reports:

- The header requirements for reporting on a group are set out in HAI Population Summary Reports Template (`templateId: 2.16.840.1.113883.10.20.5.4.4`).
- This report type, with just three body templates, is used to record many different data sets. The body templates for this report type are:

  Summary Section

  Summary Encounter: Record the location to which

the data pertain

Summary Observations: Record data as code/value pairs

- The data set reported is identified by a code in the CDA header; for example, the cdcNHSN concept "1880-4" identifies the data set "Summary data reporting catheter and ventilator use in a NICU".
    - The codes for these data sets are listed in Value set NHSNPopulationSummaryReportTypeCode (2.16.840.1.114222.4.11.3595) in the header template for summary reports (templateId `2.16.840.1.113883.10.20.5.4.4`).
    - The concepts to report for each data set are listed with the Summary Data Observation.

  Note that a few data sets are stratified. For example, the NICU data set is stratified by birthweight; the Antimicrobial Usage data set is stratified by antimicrobial and by route of administration. The stratifying factor is recorded as a CDA element in the Summary Encounter or Summary Data Observation. For example, in an Antimicrobial Usage report the antimicrobial is represented as a participant. The requirements for each data set are provided in subsections of the template for the Summary Data Observation.
- Most of the concepts reported are defined for the NHSN protocol and are not expected to see widespread external use: the codes for these concepts come from the NHSN code system.

The data requirements for Population Summary Report headers (`templateId: 2.16.840.1.113883.10.20.5.4.4`) are summarized here for convenience:

Key header data

- Facility id is required (the reporting facility—the location to which the data pertain, such as a unit—is recorded in the Summary Encounter).
- A code identifying the data set is required.
- The period reported is required.

1. Conforms to Healthcare Associated Infection Report Template (`templateId: 2.16.840.1.113883.10.20.5.4.21`).
2. **SHALL** contain [1..1] **`recordTarget`** `(CONF:16154)`
    a. This recordTarget **SHALL** contain [1..1] **`patientRole`** `(CONF:16155)`
        i. This patientRole **SHALL** contain [1..1] **`id`** (CONF:4344).
            1. This id **SHALL** contain [1..1] **`@nullFlavor=`**"NA" not applicable (CONF:4345).
3. The author **SHALL** represent the software forming the message. (CONF:4346).
4. **SHALL** contain [1..1] `documentationOf` (CONF:16156).
    a. This `documentationOf` **SHALL** contain [1..1] **`serviceEvent`** (CONF:4347).
        i. This serviceEvent **SHALL** contain [1..1] **`@classCode`**="CASE" (CONF:4348).

ii. This serviceEvent **SHALL** contain [1..1] **code** (CONF:17015).
    1. This code **SHALL** contain [1..1] **@code**, which **SHALL** be selected from ValueSet 2.16.840.1.114222.4.11.3595 NHSNPopulationSummaryReportTypeCode **DYNAMIC** (CONF:4364).
iii. This serviceEvent **SHALL** contain [1..1] **effectiveTime** (CONF:4349).
    1. This effectiveTime **SHALL** contain [1..1] **low** (CONF:4350).
    2. This effectiveTime **SHALL** contain [1..1] **high** (CONF:4351).

5. **SHALL** contain [1..1] **participant** (CONF:4352) such that it
    a. **SHALL** contain [1..1] **@typeCode**="SBJ" Subject (CodeSystem: 2.16.840.1.113883.5.90 HL7ParticipationType) (CONF:4353).
    b. **SHALL** contain [1..1] **@contextControlCode**="OP" (CodeSystem: 2.16.840.1.113883.5.1057 HL7 Context Control Code) (CONF:4354).
    c. **SHALL** contain [1..1] **associatedEntity** (CONF:4355).
        i. This associatedEntity **SHALL** contain [1..1] **@classCode**="PRS" Person (CodeSystem: 2.16.840.1.113883.5.41 HL7EntityClass) (CONF:4356).
        ii. This associatedEntity **SHALL** contain [1..1] **code** (CONF:16157)
            1. This code **SHALL** contain [1..1] **@code**="389109008" Group (CodeSystem: 2.16.840.1.113883.6.96 SNOMEDCT) (CONF:4357).
6. **SHALL** contain [1..1] **participant** (CONF:4358) such that it
    a. **SHALL** contain [1..1] **@typeCode**="LOC" Location (CodeSystem: 2.16.840.1.113883.5.90 HL7ParticipationType) (CONF:4359).
    b. **SHALL** contain [1..1] **@contextControlCode**="OP" (CodeSystem: 2.16.840.1.113883.5.1057 HL7 Context Control Code) (CONF:4360).
    c. **SHALL** contain [1..1] **associatedEntity** (CONF:4361).
        i. This associatedEntity **SHALL** contain [1..1] **@classCode**="SDLOC" Service delivery location (CodeSystem: 2.16.840.1.113883.5.110 HL7RoleClass) (CONF:4362).
        ii. This associatedEntity **SHALL** contain [1..1] **id** (CONF:16158)
            1. This id **SHALL** contain [1..1] **@root** (CONF:4363).

Table 3: Population Summary Report Type Value Set

Value Set: NHSNPopulationSummaryReportTypeCode 2.16.840.1.114222.4.11.3595 Code System: cdcNHSN 2.16.840.1.113883.6.277		
Code	**Code System**	**Print Name**
1879-6	cdcNHSN	Summary data reporting catheter and ventilator use in an ICU
1880-4	cdcNHSN	Summary data reporting catheter and ventilator use in an SCA
1881-2	cdcNHSN	Summary data reporting catheter and ventilator use in an NICU

1882-0	cdcNHSN	Summary data reporting vaccinations - detailed
1883-8	cdcNHSN	Summary data reporting vaccinations - short
1884-6	cdcNHSN	Summary data reporting Active Surveillance Testing
1885-3	cdcNHSN	Summary data reporting blood-product incidents
1886-1	cdcNHSN	Summary data reporting blood-product usage
1887-9	cdcNHSN	Summary data reporting antimicrobial usage
2316-8	cdcNHSN	Summary dialysis data reporting vascular access types in maintenance (chronic) hemodialysis patients

Figure 14: CDA header – population-summary report example

```
<ClinicalDocument>
  ...
  <participant typeCode="LOC" contextControlCode="OP">
      <associatedEntity classCode="SDLOC">
        <!--ID of facility -->
        <id root="2.16.840.1.113883.3.117.1.1.5.1.1"/>
      </associatedEntity>
  </participant>

  <participant typeCode="SBJ" contextControlCode="OP">
    <associatedEntity classCode="PRS">
      <code codeSystem="2.16.840.1.113883.6.96"
            codeSystemName="SNOMED"
            code="389109008"
            displayName="group"/>
    </associatedEntity>
  </participant>
  ...

  <documentationOf>
    <serviceEvent classCode="CASE">
      <code codeSystem="2.16.840.1.113883.6.277"
            codeSystemName="cdcNHSN"
            code="1885-3"
            displayName="Summary data reporting blood-product incidents"/>
      <effectiveTime>
        <!-- the first day of the period reported -->
        <low value="20080601"/>
        <!-- the last day of the period reported -->
        <high value="20080630"/>
      </effectiveTime>
    </serviceEvent>
  </documentationOf>
  ...
</ClinicalDocument>
```

2.3 Generic Section Constraints

2.3.1 HAI Section Generic Constraints

`[section: templateId 2.16.840.1.113883.10.20.5.4.3 (closed)]`

This template records the constraints that apply to all sections specified in the NHSN HAI Implementation Guide. Each `section` element conforming to constraints in this guide will have a `templateId`, a `code`, a `title`, a narrative block (`text` element), and the specific entries required by the report type. Top-level sections conforming to other guides are allowed and need not conform to these constraints.

1. **SHALL** contain [1..1] **`code`** (CONF:11535).
    a. This code **SHALL** contain [1..1] **`@code`** (CodeSystem: `2.16.840.1.113883.6.1 LOINC`) (CONF:3171).
2. **SHALL** contain [1..1] **`title`** (CONF:3172).
3. **SHALL** contain [1..1] **`text`** (CONF:3173).
4. **SHALL** contain [1..*] **`entry`** (CONF:3174).

Figure 15: Section example

```
<section>
  <templateId root="2.16.840.1.113883.10.20.5.5.28"/>
  <code codeSystem="2.16.840.1.113883.6.1"
        codeSystemName="LOINC"
        code="18769-0"
        displayName="Findings Section"/>
  <title>Bug-Drug Tests</title>
  <text>
    ...
  </text>
  <entry>
    ...
  </entry>
</section>
```

2.3.2 Narrative Block and @typeCode="DRIV"

In a CDA document, when the narrative block is derived solely from `entry` elements, the `entry` elements should have a `@typeCode` attribute with the value `DRIV` indicating that the narrative block is the equivalent of the entries. The sample files use this attribute. It is the sender's responsibility to ensure that the narrative block is the equivalent of the entries, regardless of how the narrative block was created.

3 REPORT-SPECIFIC CONSTRAINTS

This section of the guide lists the reports covered by this guide and defines the report-specific requirements for each. These report-specific requirements are:

- The document-level `templateId` value that identifies the report type;
- The preferred report title;
- The header template and any report-specific header constraints; and
- The report's sections.

A summary table at the end of this section provides an overview of the section-level content for each report type.

3.1 Summary of HAI Report Types

The following table summarizes the NHSN forms covered by this guide. In most cases a CDA report corresponds directly to an NHSN form.

Table 4: HAI Report Types

Report Type	Abbreviation	NHSN Form	Single-person	Population-summary
Bloodstream Infection Numerator Report	BSI Report	57.108	y	
Surgical Site Infection Numerator Report	SSI Report	57.120	y	
Pneumonia Infection Numerator Report	PNEU Report		y	
Urinary Tract Infection Numerator Report	UTI Report	57.114	y	
Immunization Numerator Report, covering 3 NHSN forms: • Healthcare Worker Influenza Vaccination • High Risk Inpatient Influenza Vaccination Method B Form, Parts 1 and 2 • High Risk Inpatient Influenza Vaccination, Standing Orders Form	Immunization Report		y	
Procedure Denominator Report	Procedure Report	57.121	y	
Central-line Insertion Practices Numerator Report	CLIP Report	57.125	y	
Evidence of Infection (Dialysis) Report	EOID Report	57.109	y	
Hemovigilance Adverse Reaction Report	HAR Report		y	
Hemovigilance Incident Report	HI Report	57.305		uses pop-sum header
Laboratory-identified Organism Report	LIO Report	57.128	y	
Population Summary Denominator Report, covering the following NHSN forms:	Population Summary Report			y

Report Type	Abbreviation	NHSN Form	Single-person	Population-summary
• Intensive Care Unit (ICU)/Other Locations (not NICU or SCA) Denominator		57.118		
• Influenza Vaccination Method A Denominator				
• Influenza Vaccination Method B Denominator				
• Neonatal Intensive Care Unit (NICU) Denominator		57.116		
• Specialty Care Area (SCA) Denominator		57.117		
• Prevention Process and Outcome Measures Monthly Monitoring (POM)		57.127		
• Blood Product Incidents Reporting – Summary Data (Hemovigilance Module)				
• Blood Product Incidents Monthly Reporting Denominators (Hemovigilance Module)				
• Antimicrobial Use Report (AUR), Pharmacy Option				
• Maintenance Hemodialysis Patients Stratified by Vascular Access Type (VAT)		57.119		

3.2 HAI Bloodstream Infection Report (BSI)

[`ClinicalDocument`: templateId `2.16.840.1.113883.10.20.5.26 (closed)`]

This report type records a bloodstream infection event.

Preferred document title: "Bloodstream Infection Report (BSI)"

Key encounter data:

- A value for admission date is required.
- The facility id, unit identifier, and unit type are required.

Other dates and locations: The date of the infection event is recorded as `effectiveTime` in the Infection-type Observation (`templateId 2.16.840.1.113883.10.20.5.6.23`).

Sections required: Risk Factors (BSI) section, Details (BSI) section, Findings section

1. Conforms to Header Constraints, HAI Single-person Reports Template (`templateId: 2.16.840.1.113883.10.20.5.4.1`).
2. **SHALL** contain [1..1] **`componentOf`** (CONF:11507).

a. This componentOf **SHALL** contain [1..1] **encompassingEncounter** (CONF:11508).
    i. This encompassingEncounter **SHALL** contain [1..1] **effectiveTime** (CONF:17302).
        1. This effectiveTime **SHALL** contain [1..1] **low** (CONF:17303).
            a. This low **SHALL** contain [1..1] **@value** (CONF:17304).
    ii. This encompassingEncounter **SHALL** contain [1..1] **location** (CONF:11509).
        1. This location **SHALL** contain [1..1] **healthCareFacility** (CONF:11510).
            a. This healthCareFacility **SHALL** contain [1..1] **id** (CONF:11512).
                i. This id **SHALL** contain [1..1] **@root** (CONF:17305).
                ii. This id **SHALL** contain [1..1] **@extension** (CONF:3114).
            b. This healthCareFacility **SHALL** contain [1..1] **code** (CONF:11511).
                i. This code **SHALL** contain [1..1] **@code**, which **SHALL** be selected from ValueSet NHSNHealthcareServiceLocationCode 2.16.840.1.113883.13.19 **DYNAMIC** (CONF:3115).

3. **SHALL** contain [1..1] **component** (CONF:11513).
    a. **This component SHALL** contain [1..1] **structuredBody** (CONF:2848).
        i. This structuredBody **SHALL** contain [1..1] **component** (CONF:2849) such that it
            1. **SHALL** contain [1..1] **Infection Risk Factors Section in a BSI Report** (templateId:2.16.840.1.113883.10.20.5.5.1) (CONF:2850).
        ii. This structuredBody **SHALL** contain [1..1] **component** (CONF:2851) such that it
            1. **SHALL** contain [1..1] **Infection Details Section in a BSI Report** (templateId:2.16.840.1.113883.10.20.5.5.6) (CONF:2852).
        iii. This structuredBody **SHALL** contain [1..1] **component** (CONF:2853) such that it
            1. **SHALL** contain [1..1] **Findings Section in an Infection-type Report** (templateId:2.16.840.1.113883.10.20.5.5.28) (CONF:2854).

Table 5: Healthcare Service Location Value Set (excerpt)

Value Set: NHSNHealthcareServiceLocationCode 2.16.840.1.113883.13.19
Code System: HL7 HealthcareServiceLocation 2.16.840.1.113883.6.259
or NHSN Local Coding System 2.16.840.1.113883.6.277

The full table is shown in the hai_voc.xls file provided with this package.

		NHSN Location Class		
Code	**Meaning**	**ICU/Other**	**NICU**	**SCA**
Inpatient Locations: Critical Care Units				
1026-4	Burn Critical Care	X		
1028-0	Medical Cardiac Critical Care	X		
…				

Figure 16: Report-specific constraints example

```
<ClinicalDocument
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:mif="urn:hl7-org:v3/mif" xmlns="urn:hl7-org:v3">
  ...
  <templateId root="2.16.840.1.113883.10.20.5.26">
  ...
  <title>Bloodstream Infection Report (BSI)</title>
  ...
  <component>
    <structuredBody>
      <component>
        <section>
          <templateId root="2.16.840.1.113883.10.20.5.5.1"/>
          ...
        </section>
    </component>

    <component>
        <section>
          <templateId root="2.16.840.1.113883.10.20.5.5.6"/>
          ...
        </section>
    </component>

    <component>
        <section>
          <templateId root="2.16.840.1.113883.10.20.5.5.28"/>
          ...
        </section>
      </component>
```

```
    </structuredBody>
  </component>
</ClinicalDocument>
```

3.3 HAI Surgical Site Infection Report (SSI)

[ClinicalDocument: templateId 2.16.840.1.113883.10.20.5.27 (closed)]

This report type records a surgical site infection event.

Preferred document title: "Surgical Site Infection Report (SSI)".

Key encounter data:

- The encounter type (inpatient or outpatient) is required.
- If the patient was an inpatient, a value for admission date is required.
- The facility id is required.

Other dates and locations: The date of the infection is recorded as `effectiveTime` in the Infection-type Observation (`templateId 2.16.840.1.113883.10.20.5.6.23`).

Sections required: Details section (SSI), Findings section

Other notes: The procedure id is recorded in the Infection Details Section. NHSN uses this to establish a link between Procedure and SSI Reports.

1. Conforms to Header Constraints, HAI Single-person Reports Template (`templateId: 2.16.840.1.113883.10.20.5.4.1`).
2. **SHALL** contain [1..1] **`componentOf`** (CONF:16890).
    a. This componentOf **SHALL** contain [1..1] **`encompassingEncounter`** (CONF:16891).
        i. This encompassingEncounter **SHALL** contain [1..1] **`code`** (CONF:16892).
            1. This code **SHALL** contain [1..1] **`@code`** (ValueSet: `NHSNEncounterTypeCode 2.16.840.1.113883.13.1` **STATIC** 2009-01-30) (CONF:2862).
        ii. If the patient is an inpatient (encompassingEncounter/code/@code='IMP'), an effectiveTime element **SHALL** be present. This effectiveTime element **SHALL** [1..1] contain a low element. This low element **SHALL** [1..1] contain @value (CONF:17315).
        iii. This encompassingEncounter **SHALL** contain [1..1] **`location`** (CONF:17306).
            1. This location **SHALL** contain [1..1] **`healthCareFacility`** (CONF:17307).
                a. This healthCareFacility **SHALL** contain [1..1] **`id`** (CONF:17308).
                    i. This id **SHALL** contain [1..1] **`@root`** (CONF:17309).

ii. This id **MAY** contain [0..1] **@extension** (CONF:17310).

b. This healthCareFacility **MAY** contain [0..1] **code** (CONF:17311).

i. The code, if present, **SHALL** contain [1..1] **@code**, which **SHALL** be selected from ValueSet `NHSNHealthcareServiceLocationCode 2.16.840.1.113883.13.19` (CONF:17312).

3. **SHALL** contain [1..1] **component** (CONF:16893).

a. This component **SHALL** contain [1..1] **structuredBody** (CONF:2855).

i. This structuredBody **SHALL** contain [1..1] **component** (CONF:2856) such that it

1. **SHALL** contain [1..1] **Infection Details Section in an SSI Report** (`templateId:2.16.840.1.113883.10.20.5.5.7`) (CONF:2857).

ii. This structuredBody **SHALL** contain [1..1] **component** (CONF:2858) such that it

1. **SHALL** contain [1..1] **Findings Section in an Infection-type Report** (`templateId:2.16.840.1.113883.10.20.5.5.28`) (CONF:2859).

Table 6: Encounter Type Value Set

Value Set: NHSNEncounterTypeCode 2.16.840.1.113883.13.1 Code System: HL7 ActCode 2.16.840.1.113883.5.4		
Code	**Code System**	**Print Name**
AMB	HL7 ActCode	Ambulatory
IMP	HL7 ActCode	Inpatient

3.4 HAI Pneumonia Infection Numerator Report (PNEU)

[`ClinicalDocument`: templateId `2.16.840.1.113883.10.20.5.28 (closed)`]

This report records a pneumonia infection event.

Preferred document title: "Pneumonia Infection Report (PNEU)"

Key encounter data:

- A value for admission date is required.
- The facility id, unit identifier, and unit type are required.

Other dates and locations: The date of the infection is recorded as `effectiveTime` in the Infection-type Observation (`templateId 2.16.840.1.113883.10.20.5.6.23`).

Sections required: Risks section (PNEU), Details section (PNEU), Findings section

1. Conforms to Header Constraints, HAI Single-person Reports Template (templateId: 2.16.840.1.113883.10.20.5.4.1).
2. **SHALL** contain [1..1] **componentOf** (CONF:16895).
    a. This componentOf **SHALL** contain [1..1] **encompassingEncounter** (CONF:16896).
        i. This encompassingEncounter **SHALL** contain [1..1] **effectiveTime** (CONF:17319).
            1. This effectiveTime **SHALL** contain [1..1] **low** (CONF:17320).
                a. This low **SHALL** contain [1..1] **@value** (CONF:17321).
        ii. This encompassingEncounter **SHALL** contain [1..1] **location** (CONF:16897).
            1. This location **SHALL** contain [1..1] **healthCareFacility** (CONF:16898).
                a. This healthCareFacility **SHALL** contain [1..1] **id** (CONF:16899).
                    i. This id **SHALL** contain [1..1] **@root** (CONF:17316).
                    ii. This id **SHALL** contain [1..1] **@extension** (CONF:3122).
                b. This healthCareFacility **SHALL** contain [1..1] **code** (CONF:17317).
                    i. This code **SHALL** contain [1..1] **@code** (ValueSet: NHSNHealthcareServiceLocationCode 2.16.840.1.113883.13.19 **DYNAMIC**) (CONF:17318).
3. **SHALL** contain [1..1] **component** (CONF:16894).
    a. This component **SHALL** contain [1..1] **structuredBody** (CONF:2868).
        i. This structuredBody **SHALL** contain [1..1] **component** (CONF:2869) such that it
            1. **SHALL** contain [1..1] **Infection Risk Factors Section in a Pneumonia Infection Report** (templateId:2.16.840.1.113883.10.20.5.5.3) (CONF:2870).
        ii. This structuredBody **SHALL** contain [1..1] **component** (CONF:2871) such that it
            1. **SHALL** contain [1..1] **Infection Details Section in a Pneumonia Infection Report** (templateId:2.16.840.1.113883.10.20.5.5.9) (CONF:2872).
        iii. This structuredBody **SHALL** contain [1..1] **component** (CONF:2873) such that it
            1. **SHALL** contain [1..1] **Findings Section in an Infection-type Report** (templateId:2.16.840.1.113883.10.20.5.5.28) (CONF:2874).

3.5 HAI Urinary Tract Infection Numerator Report (UTI)

[ClinicalDocument: templateId 2.16.840.1.113883.10.20.5.29 (closed)]

This report records a urinary tract infection event.

Preferred document title: "Urinary Infection Report (UTI)"

Key encounter data:

- A value for admission date is required.
- The facility id, unit identifier, and unit type are required.

Other dates and locations: The date of the infection is recorded as effectiveTime in the Infection-type Observation (templateId 2.16.840.1.113883.10.20.5.6.23).

Sections required: Risks section (UTI), Details section (UTI), Findings section

1. Conforms to Header Constraints, HAI Single-person Reports Template (templateId: 2.16.840.1.113883.10.20.5.4.1).
2. **SHALL** contain [1..1] **componentOf** (CONF:16906).
    a. This componentOf **SHALL** contain [1..1] **encompassingEncounter** (CONF:16907).
        i. This encompassingEncounter **SHALL** contain [1..1] **effectiveTime** (CONF:17325).
            1. This effectiveTime **SHALL** contain [1..1] **low** (CONF:17326).
                a. This low **SHALL** contain [1..1] **@value** (CONF:17327).
        ii. This encompassingEncounter **SHALL** contain [1..1] **location** (CONF:16908).
            1. This location **SHALL** contain [1..1] **healthCareFacility** (CONF:16909).
                a. This healthCareFacility **SHALL** contain [1..1] **id** (CONF:16910).
                    i. This id **SHALL** contain [1..1] **@root** (CONF:17322).
                    ii. This id **SHALL** contain [1..1] **@extension** (CONF:3126).
                b. This healthCareFacility **SHALL** contain [1..1] **code** (CONF:17323).
                    i. This code **SHALL** contain [1..1] **@code** (ValueSet: NHSNHealthcareServiceLocationCode 2.16.840.1.113883.13.19 **DYNAMIC**) (CONF:17324).
3. **SHALL** contain [1..1] component (CONF:16905).
    a. This component **SHALL** contain [1..1] structuredBody (CONF:2875).
        i. This structuredBody **SHALL** contain [1..1] **component** (CONF:2876) such that it
            1. **SHALL** contain [1..1] **Infection Risk Factors Section in a UTI Report**

(templateId:2.16.840.1.113883.10.20.5.5.4) (CONF:2877).

ii. This structuredBody **SHALL** contain [1..1] component (CONF:2878) such that it

1. **SHALL** contain [1..1] **Infection Details Section in a UTI Report** (templateId:2.16.840.1.113883.10.20.5.5.10) (CONF:2879).

iii. This structuredBody **SHALL** contain [1..1] component (CONF:2880) such that it

1. **SHALL** contain [1..1] **Findings Section in an Infection-type Report** (templateId:2.16.840.1.113883.10.20.5.5.28) (CONF:2881).

3.6 HAI Procedure Denominator Report

[ClinicalDocument: templateId 2.16.840.1.113883.10.20.5.30(closed)]

This report records a procedure performed.

Preferred document title: "Denominator for Procedure Report"

Key encounter data:

- The encounter type (inpatient or outpatient) is required.
- If the patient was an inpatient, a value for admission date is required.
- The facility id is required. Unit identifier and unit type are not reported.

Other dates and locations: The date of the procedure is recorded as effectiveTime in the Procedure Details Clinical Statement in a Procedure Report (templateId 2.16.840.1.113883.10.20.5.6.33).

Sections required: Risks section (Procedure), Details section (Procedure), Findings section

Other notes: The procedure id is recorded in the Procedure Details Section. NHSN uses this to establish a link between Procedure and SSI Reports.

1. Conforms to Header Constraints, HAI Single-person Reports Template (templateId: 2.16.840.1.113883.10.20.5.4.1).
2. **SHALL** contain [1..1] **componentOf** (CONF:17016).
    a. This componentOf **SHALL** contain [1..1] **encompassingEncounter** (CONF:17017).
        i. This encompassingEncounter **SHALL** contain [1..1] **code** (CONF:17018).
            1. This code **SHALL** contain [1..1] **@code** (ValueSet: NHSNEncounterTypeCode 2.16.840.1.113883.13.1 **STATIC** 2009-01-30) (CONF:4484).
        ii. If the patient is an inpatient (code/@code='IMP'), admission date is recorded: An effectiveTime element **SHALL** be present. This

effectiveTime **SHALL** [1..1] contain a low element. This low element **SHALL** [1..1] contain @value (CONF:17334).

iii. This encompassingEncounter **SHALL** contain [1..1] **location** (CONF:17330).

1. This location **SHALL** contain [1..1] **healthCareFacility** (CONF:17331).
    a. This healthCareFacility **SHALL** contain [1..1] **id** (CONF:17332).
        i. This id **SHALL** contain [1..1] **@root** (CONF:17333).
        ii. This id **MAY** contain [0..1] **@extension** (CONF:17371).
    b. This healthCareFacility **MAY** contain [0..1] **code** (CONF:17372).
        i. The code, if present, **SHALL** contain [1..1] **@code**, which **SHALL** be selected from ValueSet `NHSNHealthcareServiceLocationCode 2.16.840.1.113883.13.19` **DYNAMIC** (CONF:17373).

3. **SHALL** contain [1..1] **component** (CONF:17028).
    a. This component **SHALL** contain [1..1] **structuredBody** (CONF:4487).
        i. This structuredBody **SHALL** contain [1..1] **component** (CONF:4488) such that it
            1. **SHALL** contain [1..1] **Procedure Details Section in a Procedure Report** (`templateId:2.16.840.1.113883.10.20.5.5.31`) (CONF:4489).
        ii. This structuredBody **SHALL** contain [1..1] **component** (CONF:4490) such that it
            1. **SHALL** contain [1..1] **Infection Risk Factors Section in a Procedure Report** (`templateId:2.16.840.1.113883.10.20.5.5.30`) (CONF:4491).

3.7 HAI Central-line Insertion Practice Numerator Report

[`ClinicalDocument`: templateId `2.16.840.1.113883.10.20.5.5.18 (closed)`]

This report records whether the steps in a central-line insertion practice protocol were followed in the required order.

Preferred document title: "Central-line Insertion Practices (CLIP) Report"

Key encounter data:

- Admission date is recorded as nullFlavor NI (no information).
- Facility id, unit identifier, and unit type are required.

Other dates and locations: None

Sections required: Risks section (CLIP), Details section (CLIP)

1. Conforms to Header Constraints, HAI Single-person Reports Template (templateId: 2.16.840.1.113883.10.20.5.4.1).
2. **SHALL** contain [1..1] **componentOf** (CONF:11515).
    a. This componentOf **SHALL** contain [1..1] **encompassingEncounter** (CONF:11516).
        i. This encompassingEncounter **SHALL** contain [1..1] **effectiveTime** (CONF:11517).
            1. This effectiveTime **SHALL** contain [1..1] **low** (CONF:11518).
                a. This low **SHALL** contain [1..1] **@nullFlavor**="NI" No information (CodeSystem: HL7NullFlavor 2.16.840.1.113883.5.1008) (CONF:4808).
        ii. This encompassingEncounter **SHALL** contain [1..1] **location** (CONF:11519).
            1. This location **SHALL** contain [1..1] **healthCareFacility** (CONF:11520).
                a. This healthCareFacility **SHALL** contain [1..1] **id** (CONF:11521).
                    i. This id **SHALL** contain [1..1] **@root** (CONF:17335).
                    ii. This id **SHALL** contain [1..1] **@extension** (CONF:4282).
                b. This healthCareFacility **SHALL** contain [1..1] **code** (CONF:11522).
                    i. This code **SHALL** contain [1..1] **@code**, which **SHALL** be selected from ValueSet NHSNHealthcareServiceLocationCode 2.16.840.1.113883.13.19 **DYNAMIC** (CONF:4283).
3. **SHALL** contain [1..1] **component** (CONF:4284).
    a. This structuredBody **SHALL** contain [1..1] **component** (CONF:4285) such that it
        i. **SHALL** contain [1..1] **Infection Risk Factors Section in a CLIP Report** (templateId:2.16.840.1.113883.10.20.5.5.19) (CONF:4286).
    b. This structuredBody **SHALL** contain [1..1] **component** (CONF:4287) such that it
        i. **SHALL** contain [1..1] **Procedure Details Section in a CLIP Report** (templateId:2.16.840.1.113883.10.20.5.5.18) (CONF:4288).

3.8 HAI Evidence of Infection (Dialysis) Report

`[ClinicalDocument: templateId 2.16.840.1.113883.10.20.5.25 (closed)]`

The report records evidence of infection in a chronic hemodialysis patient.

Preferred document title: "Evidence of Infection, Dialysis Report (EOID)"

Key encounter data:

- Encounter type is recorded as outpatient (AMB).
- Admission date is recorded as nullFlavor NA (Not applicable).
- Facility id, unit identifier, and unit type are required.

Other dates and locations: None

Sections required: Risks section (EOID), Details section (EOID), and (if a positive blood culture was obtained) Findings section

1. Conforms to Header Constraints, HAI Single-person Reports Template (`templateId: 2.16.840.1.113883.10.20.5.4.1`).
2. **SHALL** contain [1..1] **`componentOf`** (CONF:16968).
    a. This componentOf **SHALL** contain [1..1] **`encompassingEncounter`** (CONF:16969).
        i. This encompassingEncounter **SHALL** contain [1..1] **`code`** (CONF:16970).
            1. This code **SHALL** contain [1..1] **`@code`**`="AMB"` Ambulatory (CodeSystem: `ActCode 2.16.840.1.113883.5.4`) (CONF:10365).
        ii. This encompassingEncounter **SHALL** contain [1..1] **`effectiveTime`** (CONF:17336).
            1. This effectiveTime **SHALL** contain [1..1] **`low`** (CONF:17345).
                a. This low **SHALL** contain [1..1] **`@value`**`="NA"` (CodeSystem: `HL7NullFlavor 2.16.840.1.113883.5.1008`) (CONF:17346).
        iii. This encompassingEncounter **SHALL** contain [1..1] **`location`** (CONF:17338).
            1. This location **SHALL** contain [1..1] **`healthCareFacility`** (CONF:17339).
                a. This healthCareFacility **SHALL** contain [1..1] **`id`** (CONF:17340).
                    i. This id **SHALL** contain [1..1] **`@root`** (CONF:17341).
                    ii. This id **SHALL** contain [1..1] **`@extension`** (CONF:17342).
                b. This healthCareFacility **SHALL** contain [1..1] **`code`** (CONF:17343).

i. This code **SHALL** contain [1..1] **@code** (ValueSet: NHSNHealthcareServiceLocationCode 2.16.840.1.113883.13.19 **DYNAMIC**) (CONF:17344).

3. **SHALL** contain [1..1] component (CONF:16981).
    a. This component **SHALL** contain [1..1] structuredBody (CONF:10368).
        i. This structuredBody **SHALL** contain [1..1] **component** (CONF:10369) such that it
            1. **SHALL** contain [1..1] **Risk Factors Section in an Evidence of Infection (Dialysis) Report** (2.16.840.1.113883.10.20.5.5.26) (CONF:10370).
        ii. This structuredBody **SHALL** contain [1..1] **component** (CONF:10371) such that it
            1. **SHALL** contain [1..1] **Details Section in a Evidence of Infection (Dialysis) Report** (2.16.840.1.113883.10.20.5.5.27) (CONF:10372).
        iii. If a positive blood culture was obtained, this component/structuredBody **SHALL** contain [1..1] component (CONF: 10373) such that it
            1. **SHALL** contain [1..1] **Findings Section in an Infection-type Report** (2.16.840.1.113883.10.20.5.5.28) (CONF:10374)

3.9 HAI Hemovigilance Incident Report

[ClinicalDocument: templateId 2.16.840.1.113883.10.20.5.21 (closed)]

The Hemovigilance Incident Report records the details of a hemovigilance incident and its discovery. Unlike other single-person reports, the header requirements conform to the header requirements of a population-summary report. The report body records details of a single incident that may have affected one or more patients.

Preferred document title: "Hemovigilance Incident Report (HI)"

Key service event data:

- Incident date is required.
- Facility id is required (recorded as a participant). Unit identifier and unit type are not reported.

Other dates and locations: The date of first incident discovery is recorded as effectiveTime in the First Discovery Observation.

Sections required: Incident Details section

Other notes: The time of the incident and the time of the discovery of the incident may be reported as precise times or as approximate times. To record that a time is approximate and the degree of approximation is unknown, use effectiveTime/center with width unknown.

1. Conforms to Header Constraints, HAI Population-summary Reports Template (templateId: 2.16.840.1.113883.10.20.5.4.4).
2. **SHALL** contain [1..1] **documentationOf** (CONF:17347).
    a. This documentationOf **SHALL** contain [1..1] **serviceEvent** (CONF:17348).
        i. This serviceEvent **SHALL** contain [1..1] **effectiveTime** (CONF:17349).
            1. To record incident date as a precise time, use @value. To record incident date as an approximate time, use center/@value and width/@value='UNK' (CONF:17350).
3. **SHALL** contain [1..1] component (CONF:16957).
    a. This component **SHALL** contain [1..1] structuredBody (CONF:4458).
        i. This structuredBody **SHALL** contain [1..1] **component** (CONF:4459).
            1. This component **SHALL** contain [1..1] **Incident Details Section** (templateId:2.16.840.1.113883.10.20.5.5.20) (CONF:4460).

3.10 HAI Hemovigilance Adverse Reaction Report (HAR)

[ClinicalDocument: templateId 2.16.840.1.113883.10.20.5.24 (closed)]

This report records the details of a transfusion, an adverse reaction, and the high-level results of an investigation into their relationship.

Preferred document title: "Hemovigilance Adverse Reaction Report (HAR)"

Key encounter data:

- Admission date is required.
- Facility identifier is required. Unit identifier and unit type are not reported.

Other dates and locations:

- The date of the adverse reaction is recorded as effectiveTime in the Hemovigilance Adverse Reaction Observation (templateId 2.16.840.1.113883.10.20.5.6.76).
- The facility location where the reaction occurred is recorded in the Hemovigilance Adverse Reaction Observation (templateId 2.16.840.1.113883.10.20.5.6.76).
- The date of each component's transfusion is recorded as effectiveTime in the Blood Product Transfused Observation (templateId 2.16.840.1.113883.10.20.5.6.74).

Sections required: Details (HAR) section; if the adverse reaction was TA-GVHD, Encounters section (HAR)

1. Conforms to Header Constraints, HAI Single-person Reports Template (templateId: 2.16.840.1.113883.10.20.5.4.1).
2. **SHALL** contain [1..1] **componentOf** (CONF:16942).

a. This componentOf **SHALL** contain [1..1] **encompassingEncounter** (CONF:16943).
    i. This encompassingEncounter **SHALL** contain [1..1] **effectiveTime** (CONF:17351).
        1. This effectiveTime **SHALL** contain [1..1] **low** (CONF:17352).
            a. This low **SHALL** contain [1..1] **@value** (CONF:17353).
    ii. This encompassingEncounter **SHALL** contain [1..1] **location** (CONF:16944).
        1. This location **SHALL** contain [1..1] **healthCareFacility** (CONF:16945).
            a. This healthCareFacility **SHALL** contain [1..1] **id** (CONF:16946).
                i. This id **SHALL** contain [1..1] **@root** (CONF:17354).

3. **SHALL** contain [1..1] `component` (CONF:16947).
    a. This `component` **SHALL** contain [1..1] `structuredBody` (CONF:4781).
        i. This `structuredBody` **SHALL** contain [1..1] **component** (CONF:4784) such that it
            1. **SHALL** contain [1..1] **Details Section in an HAR Report** (`templateId:2.16.840.1.113883.10.20.5.5.25`) (CONF:4785).
        ii. If the adverse reaction was TA-GVHD (transfusion-associated graft vs. host disease) (templateId 2.16.840.1.113883.10.20.5.6.76, code 2511-4 cdcNHSN), the NHSN protocol requires that, if the patient received non-irradiated blood products within the prior two months, this `structuredBody` **SHALL** contain [1..1] **component** (CONF:4809) such that it
            1. **SHALL** contain [1..1] **Encounters Section in an HAR Report** (`templateId:2.16.840.1.113883.10.20.5.5.24`). (CONF:4809).

3.11 HAI Immunization Numerator Report

[`ClinicalDocument`: templateId `2.16.840.1.113883.10.20.5.13 (closed)`]

This report records an offer to immunize for influenza, with the reason for the offer (the person is either an inpatient who meets criteria for high risk of contracting influenza, or is a healthcare worker); and, if the offer was accepted, details of the immunization; or, if the offer was declined, the reasons for declining.

Preferred document title: "Immunization Offer (IMM)"

Key encounter data:

- If the offer was made to an inpatient, the encounter type (inpatient) is required.
- Admission date is recorded as NI (No information).
- The facility id is required. Unit identifier and unit type are not reported.

Other dates and locations:

- If the immunization was administered onsite, the date of immunization is recorded as `effectiveTime` in the Immunization Clinical Statement (templateId 2.16.840.1.113883.10.20.5.6.17).
- If the patient was a healthcare worker, a participant in the Immunization Clinical Statement (templateId 2.16.840.1.113883.10.20.5.6.17) records whether the immunization was administered onsite or offsite.

Sections required: Details (IMM)

Other notes:

- If the person was a healthcare worker, some details are required about the that person's work.
- If the person was a healthcare worker and the immunization was administered offsite, some details of the immunization are not required. The differences are summarized in the table below.

1. Conforms to Header Constraints, HAI Single-person Reports Template (`templateId: 2.16.840.1.113883.10.20.5.4.1`).
2. **SHALL** contain [1..1] **`componentOf`** (CONF:16925).
    a. This componentOf **SHALL** contain [1..1] **`encompassingEncounter`** (CONF:16926).
        i. This encompassingEncounter **MAY** contain [0..1] **`code`** (CONF:17355).
            1. If the immunization was offered because the person is an inpatient who meets criteria for being at high risk of contracting influenza, set the value of @code to IMP Inpatient 2.16.840.1.113883.5.4 HL7 ActCode **STATIC** (CONF:17360).
        ii. This encompassingEncounter **SHALL** contain [1..1] **`effectiveTime`** (CONF:16927).
            1. This effectiveTime **SHALL** contain [1..1] **`low`** (CONF:16928).
                a. This low **SHALL** contain [1..1] **`@nullFlavor`**`="NI"` No information (CodeSystem: `HL7NullFlavor` `2.16.840.1.113883.5.1008`) (CONF:4819).
        iii. This encompassingEncounter **SHALL** contain [1..1] **`location`** (CONF:17356).
            1. This location **SHALL** contain [1..1] **`healthCareFacility`** (CONF:17357).
                a. This healthCareFacility **SHALL** contain [1..1] **`id`** (CONF:17358).
                    i. This id **SHALL** contain [1..1] **`@root`** (CONF:17359).
3. **SHALL** contain [1..1] `component` (CONF:16925).
    a. This `component` **SHALL** contain [1..1] `structuredBody` (CONF:2903).
        i. This `structuredBody` **SHALL** contain [1..1] `component` (CONF:2904).

1. This component **SHALL** contain [1..1] **Procedure Details Section in an Immunization Report** (templateId:2.16.840.1.113883.10.20.5.5.12) (CONF:2905).

Table 7: Inpatient and Healthcare Worker Immunization Details

In inpatient reports	In healthcare worker reports
Header: Is inpatient	
Immunization Offer	Required
Eligibility Criterion (several)	One. Also contains: Work location (as participant) Patient Care Observation Occupation Observation
Offer Declined Reason Declined (Personal or Medical)	 Single list of codes
Immunization code (general influenza vaccine) if administered – effectiveTime routeCode code lotNumberText performer Vaccination Information Statement Type	Required if administered onsite if administered onsite if administered onsite if administered onsite if administered onsite if administered onsite Also contains: given on/offsite (as participant) Seasons Immunized Adverse Reaction

3.12 HAI Laboratory-identified Organism (LIO) Report

[ClinicalDocument: templateId 2.16.840.1.113883.10.20.5.17 (closed)]

This report records the laboratory identification of a microorganism in a specimen. This is not an infection-type report: the presence of the organism is not equivalent to the presence of an infection. These reports are submitted if the facility is monitoring the organism identified. Each report records a single organism.

Preferred document title: "Laboratory-identified Organism Report (LIO)"

Key encounter data:

- The encounter type (inpatient/outpatient) is required.
- An admission date or encounter date is required. (If the patient is an outpatient, the date of specimen collection is also used in the header as the date of admission.)

- The facility identifier is required. Unit identifier and unit type are not recorded in the header.

Other dates and locations:

- Date of admission to the in-facility location where the specimen was collected
- Date of specimen collection (also recorded as admission date if the patient was an outpatient).

Sections required: Findings section (LIO); conditionally (when the patient was discharged from this facility within the prior three months), Encounters section (LIO)

1. Conforms to Header Constraints, HAI Single-person Reports Template (`templateId: 2.16.840.1.113883.10.20.5.4.1`).
2. **SHALL** contain [1..1] **`componentOf`** (CONF:16930).
    a. This componentOf **SHALL** contain [1..1] **`encompassingEncounter`** (CONF:16931).
        i. This encompassingEncounter **SHALL** contain [1..1] **`code`** (CONF:3079).
            1. This code **SHALL** contain [1..1] **`@code`**, which **SHALL** be selected from ValueSet `NHSNEncounterTypeCode 2.16.840.1.113883.13.1` (CONF:17361).
        ii. This encompassingEncounter **SHALL** contain [1..1] **`effectiveTime`** (CONF:17362).
            1. This effectiveTime **SHALL** contain [1..1] **`low`** (CONF:17363).
                a. This low **SHALL** contain [1..1] **`@value`** (CONF:17364).
        iii. This encompassingEncounter **SHALL** contain [1..1] **`location`** (CONF:17365).
            1. This location **SHALL** contain [1..1] **`healthCareFacility`** (CONF:17366).
                a. This healthCareFacility **SHALL** contain [1..1] **`id`** (CONF:17367).
                    i. This id **SHALL** contain [1..1] **`@root`** (CONF:17368).
3. **SHALL** contain [1..1] **`component`** (CONF:16941).
    a. This `component` **SHALL** contain [1..1] `structuredBody` (CONF:3207).
        i. This structuredBody **SHALL** contain [1..1] **`component`** (CONF:3081) such that it
            1. **SHALL** contain [1..1] **`Findings Section (LIO)`** (`templateId:2.16.840.1.113883.10.20.5.5.29`) (CONF:3082).
4. When the patient was discharged from this facility within the prior three months, a `component` element containing an Encounters Section (LIO) (`templateId 2.16.840.1.113883.10.20.5.5.16`) **SHALL** be present. (CONF:3080).

3.13 HAI Population Summary Report

[ClinicalDocument: templateId 2.16.840.1.113883.10.20.5.23 (closed)]

A Population Summary Report records summary data for a group, such as the patients in a particular ward, or the hemovigilance incidents or blood-product usage in a facility, during a specified period. This report type differs in several ways from the HAI single-person reports:

- The header requirements for reporting on a group are set out in HAI Population Summary Reports Template (templateId: 2.16.840.1.113883.10.20.5.4.4).
- This report type, with just three body templates, is used to record many different data sets. The body templates for this report type are:

  Summary Section
  Summary Encounter: records the location to which the data pertain
  Summary Observations: records data as code/value pairs

- The data set reported is identified by a code in the CDA header; for example, the cdcNHSN concept "1880-4" identifies the data set "Summary data reporting catheter and ventilator use in a NICU".
  - The codes for these data sets are listed in Value set NHSNPopulationSummaryReportTypeCode (2.16.840.1.114222.4.11.3595) in the header template for summary reports (templateId 2.16.840.1.113883.10.20.5.4.4).
  - The concepts to report for each data set are listed with the Summary Data Observation.

  Note that a few data sets are stratified. For example, the NICU data set is stratified by birthweight; the Antimicrobial Usage data set is stratified by antimicrobial and by route of administration. The stratifying factor is recorded as a CDA element in the Summary Encounter or Summary Data Observation. For example, in an Antimicrobial Usage report the antimicrobial is represented as a participant. The requirements for each data set are provided in subsections of the template for the Summary Data Observation.
- Most of the concepts reported are defined for the NHSN protocol and are not expected to see widespread external use—the codes for these concepts come from the NHSN code system.

The header requirements are set out in Constraints, HAI Population Summary Reports Template (templateId: 2.16.840.1.113883.10.20.5.4.4), and are summarized here for convenience:

Preferred title: The preferred title identifies the data set being reported. A list of the preferred titles is provided at the end of this section.

Key encounter data:

- Facility id is required. This represents the reporting facility. The location to which the data pertain, such as a unit, is recorded with the data in the Summary Encounter.
- A code identifying the data set is required.
- The period reported is required.

1. Conforms to Header Constraints, HAI Population-summary Reports Template (`templateId: 2.16.840.1.113883.10.20.5.4.4`).
2. **SHALL** contain [1..1] **`component`** (CONF:16967).
    a. This `component` **SHALL** contain [1..1] **`structuredBody`** (CONF:4601).
        i. This structuredBody **SHALL** contain [1..1] **`component`** (CONF:4602).
            1. This component **SHALL** contain [1..1] **`Summary Data Section (templateId:2.16.840.1.113883.10.20.5.5.23)`** (CONF:4603).

cdcNHSN Dataset Code	Report Acronym	Preferred Document Title
1879-6	ICU	Denominator for Intensive Care Unit (ICU)/Other Locations (not NICU or SCA) Report
1880-4	SCA	Denominator for Specialty Care Area (SCA)
1881-2	NICU	Denominator for Neonatal Intensive Care Unit (NICU)
1882-0	IMMA	Influenza Vaccination Method A Denominator Report
1883-8	IMMB	Influenza Vaccination Method B Denominator Report
1884-6	POM	Prevention Process and Outcome Measures (POM) Monthly Monitoring
1885-3	HIS	Hemovigilance Incidents (HIS) Summary Report
1886-1	BPU	Blood Products Usage (BPU) Summary Report".
1887-9	AUP	Antimicrobial Use, Pharmacy Option (AUP) Summary Report
2316-8	VAT	Maintenance Hemodialysis Patients Stratified by Vascular Access Type Report

4 SECTION LIBRARY

The Section Library provides the requirements for sections and their entries in NHSN HAI Reports. Several types of sections and entries are used in more than one type of HAI Report. For example, the Findings Section for pathogen susceptibility results is used in the BSI, SSI, and several other infection reports. To avoid repeating identical details for each report, the section-level requirements are provided in a single location, which is this Section Library. The requirements for the specified clinical statements are provided in the Clinical Statement Library.

Where section-level requirements vary minimally by report type, the same LOINC code and `templateId` are used, and the variance is expressed in a conformance statement as "If the Report is a BSI Report...".

Where section-level requirements vary substantially by report type, the section has the same LOINC code in each report but the `templateId` is different for each report type. For example, the Infection Risk Factors Section in a BSI Report carries different information than the Infection Risk Factors Section in a Procedure Report.

A NHSN CDA document may also contain top-level sections conformant to other guides.

4.1 Summary Table of Section Requirements

The following table summarizes the sequence of sections/templates within the report types covered by this guide.

Table 8: Sequence of Sections / Templates within Report Types

Italics indicate conditional or alternative requirements. All other items are required. An "or" indicates a choice between sets of required items.

HAI Implementation Guide (2.16.840.1.113883.10.20.5.4.21)	
Document	Section and Clinical Statements Libraries
Infection-type Reports	
Bloodstream Infection Report (2.16.840.1.113883.10.20.5.26)	Infection Risk Factors (BSI) Section (2.16.840.1.113883.10.20.5.5.1) • Infection Risk Factors Observation(s) (2.16.840.1.113883.10.20.5.2.1.1.1) and/or Infection Risk Factors Measurement Observation(s) (2.16.840.1.113883.10.20.5.2.1.1.2) (dependent on location type) Infection Details (BSI) Section (2.16.840.1.113883.10.20.5.5.6) • Infection-type Observation (2.16.840.1.113883.10.20.5.6.23) o Criteria of Diagnosis Organizer (2.16.840.1.113883.10.20.5.6.11) ▪ Criterion of Diagnosis Observation (2.16.840.1.113883.10.20.5.6.10 o Bloodstream Infection Evidence Type Observation (2.16.840.1.113883.10.20.5.6.4) *(If patient died)* ▪ *Death Observation (2.16.840.1.113883.10.20.5.6.12)* o *Infection Contributed to Death Observation (2.16.840.1.113883.10.20.5.6.22)* Findings Section (2.16.840.1.113883.10.20.5.5.28) ▪ *Pathogen Identified Observation (no pathogens identified) (2.16.840.1.113883.10.20.5.2.5.1)* ***or*** ▪ *Findings Organizer(s) (2.16.840.1.113883.10.20.5.6.14)* o Pathogen Identified Observation (2.16.840.1.113883.10.20.5.2.5.1) o Pathogen Ranking Observation (2.16.840.1.113883.10.20.5.2.5.1.1) o Drug-susceptibility Test Observation(s) (2.16.840.1.113883.10.20.5.2.5.1.2) ▪ *MDRO/CDI Observation (2.16.840.1.113883.10.20.5.6.90)*
Surgical Site Infection Report (2.16.840.1.113883.10.20.5.27)	Infection Details (SSI) Section (2.16.840.1.113883.10.20.5.5.7) ▪ Infection-type Observation (2.16.840.1.113883.10.20.5.6.23) o Criteria of Diagnosis Organizer (2.16.840.1.113883.10.20.5.6.11) ▪ Criterion of Diagnosis Observation (2.16.840.1.113883.10.20.5.6.10 o Occasion of HAI Detection Observation (2.16.840.1.113883.10.20.5.6.27) o Infection Condition Observation (2.16.840.1.113883.10.20.5.6.21) o Secondary Bloodstream Infection Observation (2.16.840.1.113883.10.20.5.2.2.7.15) ▪ Procedure Details (2.16.840.1.113883.10.20.5.6.34)[3] *(If patient died)*

[3] SSI Location Type is recorded in an Infection Condition Observation.

	▪ *Death Observation (2.16.840.1.113883.10.20.5.6.12)* o *Infection Contributed to Death Observation (2.16.840.1.113883.10.20* Findings Section (2.16.840.1.113883.10.20.5.5.28)) ▪ *Pathogen Identified Observation (no pathogens identified) (2.16.840.1.113883.10.20.5.2.5.1)* ***or*** • *Findings Organizer(s) (2.16.840.1.113883.10.20.5.6.14)* o Pathogen Identified Observation (2.16.840.1.113883.10.20.5.2.5.1) o Pathogen Ranking Observation (2.16.840.1.113883.10.20.5.2.5.1.1) o Drug-susceptibility Test Observation(s) (2.16.840.1.113883.10.20.5. • MDRO/CDI Observation (*2.16.840.1.113883.10.20.5.6.90*)
Pneumonia Infection Report (PNEU) (2.16.840.1.113883.10.20.5.28)	Infection Risk Factors (PNEU) Section (2.16.840.1.113883.10.20.5.5.3) • Ventilator Observation (2.16.840.1.113883.10.20.5.6.50) • Immunocompromised Observation (2.16.840.1.113883.10.20.5.6.19) *(if in NICU)* • *Infection Risk Factors Measurement Observation(s) (2.16.840.1.113883.10.20.5.2.1.1.2)* Infection Details Section (PNEU) (2.16.840.1.113883.10.20.5.5.9) • Infection-type Observation (2.16.840.1.113883.10.20.5.6.23) o Criteria of Diagnosis Organizer (2.16.840.1.113883.10.20.5.6.11) ▪ Criterion of Diagnosis Observation (2.16.840.1.113883.10.2 o Post-Procedure Observation (2.16.840.1.113883.10.20.5.6.31) o Secondary Bloodstream Infection Observation (2.16.840.1.113883.10.20.5.2.2.7.15) o Infection Condition Observation (2.16.840.1.113883.10.20.5.6.21) *(If patient died)* • *Death Observation (2.16.840.1.113883.10.20.5.6.12)* o *Infection Contributed to Death Observation (2.16.840.1.113883.10.20* Findings Section (2.16.840.1.113883.10.20.5.5.28)) • *Pathogen Identified Observation (no pathogens identified) (2.16.840.1.113883.10.20.5.2.5.1)* ***or*** • *Findings Organizer(s) (2.16.840.1.113883.10.20.5.6.14)* o Pathogen Identified Observation (2.16.840.1.113883.10.20.5.2.5.1) o Pathogen Ranking Observation (2.16.840.1.113883.10.20.5.2.5.1.1) o Drug-susceptibility Test Observation(s) (2.16.840.1.113883.10.20.5. • MDRO/CDI Observation (*2.16.840.1.113883.10.20.5.6.90*)
Urinary Tract Infection Report (2.16.840.1.113883.10.20.5.29)	Infection Risk Factors (UTI) Section (2.16.840.1.113883.10.20.5.5.4) • Urinary Catheter Observation (2.16.840.1.113883.10.20.5.6.48) o *History of Object Presence Observation (2.16.840.1.113883.10.20.5.6* Infection Details (UTI) Section (2.16.840.1.113883.10.20.5.5.10) • Infection-type Observation (2.16.840.1.113883.10.20.5.6.23) o Criteria of Diagnosis Organizer (2.16.840.1.113883.10.20.5.6.11) ▪ Criterion of Diagnosis Observation (2.16.840.1.113883.10.2 o Secondary Bloodstream Infection Observation

	(2.16.840.1.113883.10.20.5.2.2.7.15) o Infection Condition Observation (2.16.840.1.113883.10.20.5.6.21) *(If patient died)* • *Death Observation (2.16.840.1.113883.10.20.5.6.12)* o *Infection Contributed to Death Observation (2.16.840.1.113883.10.20.5.6.22)* Findings Section (2.16.840.1.113883.10.20.5.5.28)) • *Pathogen Identified Observation (no pathogens identified) (2.16.840.1.113883.10.20.5.2.5.1)* ***or*** • *Findings Organizer(s) (2.16.840.1.113883.10.20.5.6.14)* o Pathogen Identified Observation (2.16.840.1.113883.10.20.5.2.5.1) o Pathogen Ranking Observation (2.16.840.1.113883.10.20.5.2.5.1.1) o Drug-susceptibility Test Observation(s) (2.16.840.1.113883.10.20.5.2.5.1.2) • MDRO/CDI Observation (*2.16.840.1.113883.10.20.5.6.90*)
Other Single-person Report Types	
Evidence of Infection (Dialysis) Report (2.16.840.1.113883.10.20.5.25)	Risk Factors Section in an Evidence of Infection (Dialysis) Report (2.16.840.1.113883.10.20.5.5.26) • Dialysis Patient Observation (2.16.840.1.113883.10.20.5.6.85) o Transient Patient Observation (2.16.840.1.113883.10.20.5.6.91) • Vascular Access Type Observation (5) (2.16.840.1.113883.10.20.5.6.84) *if type is fistula,* o *Buttonhole Cannulation Observation (2.16.840.1.113883.10.20.5.6.96)* Details Section in an Evidence of Infection (Dialysis) Report (20.5.5.27) • Infection Indicator Organizer (2.16.840.1.113883.10.20.5.6.86) o Pus, Redness, or Increased Swelling Observation (2.16.840.1.113883.10.20.5.6.92) o IV Antibiotic Start Clinical Statement (2.16.840.1.113883.10.20.5.6.93) o IV Antifungal Start Clinical Statement (2.16.840.1.113883.10.20.5.6.94) o Positive Blood Culture Observation (2.16.840.1.113883.10.20.5.6.95) *if present,* • *Suspected Source Observation (2.16.840.1.113883.10.20.5.6.87)* • Criteria of Diagnosis Organizer (2.16.840.1.113883.10.20.5.6.11) o Criterion of Diagnosis Observation (2.16.840.1.113883.10.20.5.6.10) • Hospital Admission Act (2.16.840.1.113883.10.20.5.6.88) • Death Observation in an Evidence of Infection (Dialysis) Report (2.16.840.1.113883.10.20.5.6.89) Findings Section (2.16.840.1.113883.10.20.5.5.28)) • *Pathogen Identified Observation (no pathogens identified) (2.16.840.1.113883.10.20.5.2.5.1)* ***or*** • *Findings Organizer(s) (2.16.840.1.113883.10.20.5.6.14)* o Pathogen Identified Observation (2.16.840.1.113883.10.20.5.2.5.1) o Pathogen Ranking Observation (2.16.840.1.113883.10.20.5.2.5.1.1) o Drug-susceptibility Test Observation(s) (2.16.840.1.113883.10.20.5.2.5.1.2)

	• MDRO/CDI Observation (*2.16.840.1.113883.10.20.5.6.90*)
Procedure Denominator Report (2.16.840.1.113883.10.20.5.30)	Infection Risk Factors (Procedure) Section (2.16.840.1.113883.10.20.5.5.30) • Procedure Risk Factors Clinical Statement (Procedure Report) (2.16.840.1.113883.10.20.5.6.68)[4] o Wound Class Observation (2.16.840.1.113883.10.20.5.2.1.2) o Endoscope Used Clinical Statement (2.16.840.1.113883.10.20.5.2.1 • (*If inpatient) ASA Class Observation (2.16.840.1.113883.10.20.5.2.2.7.4)* • Trauma Observation (2.16.840.1.113883.10.20.5.2.2.7.5) *(If procedure = spinal fusion or refusion)* • *Diabetes Mellitus Observation (2.16.840.1.113883.10.20.5.2.2.7.7)* *(If procedure = Cesarean)* • *Height Observation (2.16.840.1.113883.10.20.5.2.2.7.9)* • *Weight Observation (2.16.840.1.113883.10.20.5.2.2.7.10)* • *Duration of Labor Observation (2.16.840.1.113883.10.20.5.2.2.7.11)* Procedure Details Section (2.16.840.1.113883.10.20.5.5.31) • Procedure Details Clinical Statement in a Procedure Report (2.16.840.1.113883.10.20.5.6.97) o Anesthesia Administration (2.16.840.1.113883.10.20.5.2.2.7.3) o Implant Observation (2.16.840.1.113883.10.20.5.6.20) *(If procedure = fusion/refusion)* • *Spinal Fusion Level Observation (2.16.840.1.113883.10.20.5.2.2.7.8)*
Central-line Insertion Practices Report (2.16.840.1.113883.10.20.5.18)	Infection Risk Factors (CLIP) Section (2.16.840.1.113883.10.20.5.5.19) • Central-line Insertion Practice Clinical Statement (2.16.840.1.113883.10.20 o Central-line Insertion Preparation Organizer (seq 1) (2.16.840.1.113883.10.20.5.6.8) ▪ Hand Hygiene Performed Clinical Statement (2.16.840.1.113883.10.20.5.6.16) ▪ Skin Preparation Solutions Applied Organizer (2.16.840.1.113883.10.20.5.6.43) • Skin Preparation Clinical Statements (2.16.840.1.113883.10.20.5.6.101) *(If chlorhexidrine was not applied)* • Contraindicated (2.16.840.1.113883.10.20. ▪ Sterile Barriers Applied Clinical Statement (2.16.840.1.113883.10.20.5.6.45) o Solutions Dried Observation (seq 2) (2.16.840.1.113883.10.20.5.6.4 Procedure Details (CLIP) Section (2.16.840.1.113883.10.20.5.5.18) • Procedure Details Clinical Statement (CLIP Report) (2.16.840.1.113883.10.20.5.6.100) [Includes catheter type as participant] o Recorder Observation (2.16.840.1.113883.10.20.5.6.39) o PICC/IV Team Observation (2.16.840.1.113883.10.20.5.6.98) o Reason for Procedure Observation (2.16.840.1.113883.10.20.5.6.38

[4] Whether the procedure was an emergency is recorded in a `methodCode` element. Whether the patient was an outpatient is recorded in the CDA Header in a Procedure Report.

	(If an existing central line where infection was suspected) ▪ *Guidewire Used Clinical Statement (2.16.840.1.113883.10.20.5.6.15*
Hemovigilance Incident Report (2.16.840.1.113883.10.20.5.21)	Incident Details Section (2.16.840.1.113883.10.20.5.5.20) • Incident Detail Clinical Statement (2.16.840.1.113883.10.20.5.6.61) *(If actual transfusion)* o *Adverse Reaction Observation (2.16.840.1.113883.10.20.5.6.62)* o Non-product Action Observation (2.16.840.1.113883.10.20.5.6.63) o Root Cause Type Observation (2.16.840.1.113883.10.20.5.6.64) o First Discovery Observation (2.16.840.1.113883.10.20.5.6.67) ▪ Recovery Type Observation (2.16.840.1.113883.10.20.5.6.65) ▪ Blood Product Disposition Observation (2.16.840.1.113883.10.20.5.6.66)
Hemovigilance Adverse Reaction Report (2.16.840.1.113883.10.20.5.24)	[*If reaction was a transfusion associated graft vs. host disease (TA-GVHD) and a transfusion of non-irradiated blood in the last two months]* *Encounters Section in an HAR Report (2.16.840.1.113883.10.20.5.5.24)* • *Prior Transfusion Encounter (2.16.840.1.113883.10.20.5.6.72)* Details Section in an HAR Report (2.16.840.1.113883.10.20.5.5.25) • *Blood Group Observation (2.16.840.1.113883.10.20.5.6.71)* ***or*** *two procedure elements stating blood typing and crossmatching were not done* • Transfusion Clinical Statement (2.16.840.1.113883.10.20.5.6.73) o Blood Product Transfused Observation (2.16.840.1.113883.10.20.5.6.74) *(at least one)* ▪ Blood Group Observation (2.16.840.1.113883.10.20.5.6.71) *[If the number of units reported is 1]* ▪ *Implicated Observation (2.16.840.1.113883.10.20.5.6.75)* o Reason for Procedure Observation (2.16.840.1.113883.10.20.5.6.38) o Hemovigilance Adverse Reaction Observation (2.16.840.1.113883.10.20.5.6.76) ▪ Severity Observation (2.16.840.1.113883.10.20.5.6.77) ▪ Outcome Observation (2.16.840.1.113883.10.20.5.6.79) ▪ Case Definition Relationship Observation (2.16.840.1.113883.10.20.5.6.78) ▪ Criteria of Diagnosis Organizer (2.16.840.1.113883.10.20.5.6.11) • Criterion of Diagnosis Observation (2.16.840.1.113883.10.20.5.6.10) *[If adverse reaction is Infection]* ▪ *Patient Pathogens Organizer (2.16.840.1.113883.10.20.5.6.80)* • *Pathogen Identified Observation (2.16.840.1.113883.10.20.5.2.5.1) (1-3)* *[If adverse reaction is Infection]* ▪ *Donor and Donation Pathogens Organizer (2.16.840.1.113883.10.20.5.6.81)* • *Pathogen Identified Observation in an HAR Report (1-3 each) (2.16.840.1.113883.10.20.5.6.83)* • Imputability Observation (2.16.840.1.113883.10.20.5.6.82) *(1-2)*
Immunization Report	Procedure Details Section (Immunization) (2.16.840.1.113883.10.20.5.5.12)

(2.16.840.1.113883.10.20.5.13)	• Immunization Offer Clinical Statement (2.16.840.1.113883.10.20.5.6.18) o Eligibility Criterion Observation(s) (2.16.840.1.113883.10.20.5.6.13) *[If healthcare worker]* ▪ *Patient Care Observation (2.16.840.1.113883.10.20.5.6.30)* ▪ *Occupation and Clinical Specialty Observation (2.16.840.1.113883.10.20.5.6.28)* *(If physician, intern, or resident)* • *Clinical Specialty Observation (2.16.840.1.113883.10.20.5.6.9)* o Offer Declined Observation (negatable) (2.16.840.1.113883.10.20.5. ▪ *Reason Offer Declined Observation(s) (2.16.840.1.113883.10.20.5.6.37)* ***or*** ▪ *Immunization clinical statement (HITSP template) (2.16.840.1.113883.10.20.5.6.17)* *(If administered onsite)* • *Vaccine Information Statement Type Observation (2.16.840.1.113883.10.20.5.6.49)* *(If healthcare worker)* • *Seasons Immunized Observation (2.16.840.1.113883.10.20.5.6.40)* • *Adverse Reaction Type Observation (2.16.840.1.113883.10.20.5.6.2)*
Laboratory-identified Organism Report (2.16.840.1.113883.10.20.5.17)	Findings Section (LIO) (2.16.840.1.113883.10.20.5.5.29) • Pathogen Identified Observation (LIO) (2.16.840.1.113883.10.20.5.6.52) o Specimen Collection Procedure (LIO) (2.16.840.1.113883.10.20.5.6.5 ▪ Specimen Collection Encounter (LIO) (2.16.840.1.113883.10.20.5.6.54) • Significant Pathogens Observation (2.16.840.1.113883.10.20.5.6.41) *To record a prior discharge within the past 3 months* Encounters Section (LIO) (2.16.840.1.113883.10.20.5.5.16)
Other Reports	
Population Summary Report (2.16.840.1.113883.10.20.5.23)	Summary Data Section (2.16.840.1.113883.10.20.5.5.23) • Summary Encounter (2.16.840.1.113883.10.20.5.6.70) o Summary Data Observations (2.16.840.1.113883.10.20.5.6.69)

4.2 Infection Risk Factors Section

The Infection Risk Factors Section is required in several reports. The information requirements are substantially different in each. Therefore, although the section has the same LOINC code in all reports, the `templateId` that represents the constraints is specific to the report type.

4.2.1 Infection Risk Factors Section in a BSI Report

[section: templateId 2.16.840.1.113883.10.20.5.5.1 (closed)]

In a BSI Report, the Infection Risk Factors Section contains Infection Risk Factors Observations and/or Infection Risk Factors Measurement Observations (templateIds 2.16.840.1.113883.10.20.5.2.1.1.1 and 2.16.840.1.113883.10.20.5.2.1.1.2). The particular observations required depend on the location type, specified by ClinicalDocument/componentOf/encompassingEncounter/location/healthcareFacility/code.

Some information requirements in this template depend on the location reporting the infection: ICU/Other (ICU or any other location except for Specialty Care Areas), SCA (Specialty Care Areas), or NICU (Neonatal Intensive Care Unit).

1. Conforms to HAI Section Generic Constraints Template (templateId: 2.16.840.1.113883.10.20.5.4.3).
2. **SHALL** contain [1..1] **code** (CONF:11201).
    a. This code **SHALL** contain [1..1] **@code**="51898-5" Risk Factors Section (CodeSystem: 2.16.840.1.113883.6.1 LOINC) (CONF:2131).
3. If the location type represents an "ICU/Other location" (ICU or any other location except for SCA or NICU), an entry element **SHALL** be present containing a Risk Factors Observation (templateId 2.16.840.1.113883.10.20.5.2.1.1.1) representing whether a central line was present. (CONF:2132).
4. If the location type represents an SCA location, an entry element **SHALL** be present containing a Risk Factors Observation (templateId 2.16.840.1.113883.10.20.5.2.1.1.1) representing whether a permanent central line was present, and an entry element containing a Risk Factors Observation (templateId 2.16.840.1.113883.10.20.5.2.1.1.1) representing whether a Temporary Central Line was present. (CONF:2133).
5. If the location type represents an NICU location, an entry element **SHALL** be present containing an Infection Risk Factors Observation (templateId 2.16.840.1.113883.10.20.5.2.1.1.1) representing whether a central line was present, and an entry element **SHALL** be present containing an Infection Risk Factors Measurement Observation (templateId 2.16.840.1.113883.10.20.5.2.1.1.2) representing the birth weight. (CONF:2134).

Figure 17: Risk factors section in a BSI report example

```
<section>
  <templateId root="2.16.840.1.113883.10.20.5.5.1"/>
  <code codeSystem="2.16.840.1.113883.6.1"
        codeSystemName="LOINC"
        code="51898-5"
        displayName=" Risk Factors Section"/>
  <title>Risk Factors</title>
  ...
</section>
```

4.2.2 Infection Risk Factors Section in a Pneumonia Infection Report

[section: templateId 2.16.840.1.113883.10.20.5.5.3 (closed)]

In a Pneumonia Infection Report, the Infection Risk Factors Section contains an Infection Risk Factors Measurement Observations dependent on the location type, specified by ClinicalDocument/componentOf/encompassingEncounter/location/healthcareFacility/code.

The location types as specified here will be mapped to the service locations in Healthcare Service Location Value Set. When this mapping is available, it will be posted to http://www.cdc.gov/nhsn/ and the Schematron rule set will be updated to validate this mapping.

1. Conforms to HAI Section Generic Constraints Template (templateId: 2.16.840.1.113883.10.20.5.4.3).
2. **SHALL** contain [1..1] **code** (CONF:11203).
    a. This code **SHALL** contain [1..1] **@code**="51898-5" Risk Factors Section (CodeSystem: 2.16.840.1.113883.6.1 LOINC) (CONF:2776).
3. **SHALL** contain [1..1] **entry** (CONF:2777) such that it
    a. **SHALL** contain [1..1] **Ventilator Observation** (templateId:2.16.840.1.113883.10.20.5.6.50) (CONF:2778).
4. **SHALL** contain [1..1] **entry** (CONF:2779) such that it
    a. **SHALL** contain [1..1] **Immunocompromised Observation** (templateId:2.16.840.1.113883.10.20.5.6.19) (CONF:2780).
5. If the location type represents a Neonatal Intensive Care Unit (NICU), an entry element **SHALL** be present containing an Infection Risk Factors Measurement Observation (templateId 2.16.840.1.113883.10.20.5.2.1.1.2) representing the birth weight. (CONF:2781).

4.2.3 Infection Risk Factors Section in a UTI Report

[section: templateId 2.16.840.1.113883.10.20.5.5.4 (closed)]

In a Urinary Tract Infection Report, the Infection Risk Factors Section contains a single Urinary Catheter Observation.

1. Conforms to HAI Section Generic Constraints Template (templateId: 2.16.840.1.113883.10.20.5.4.3).
2. **SHALL** contain [1..1] **code** (CONF:11205).
    a. This code **SHALL** contain [1..1] **@code**="51898-5" Risk Factors Section (CodeSystem: 2.16.840.1.113883.6.1 LOINC) (CONF:2782).
3. **SHALL** contain [1..1] **entry** (CONF:2783).
    a. This entry **SHALL** contain [1..1] **Urinary Catheter Observation** (templateId:2.16.840.1.113883.10.20.5.6.48) (CONF:2784).

4.2.4 Infection Risk Factors Section in a CLIP Report

[section: templateId 2.16.840.1.113883.10.20.5.5.19 (closed)]

In a Central Line Insertion Practice Report, the Infection Risk Factors Section contains a single Central-line Insertion Practice clinical statement, which contains a set of sequenced events.

1. Conforms to HAI Section Generic Constraints Template (templateId: 2.16.840.1.113883.10.20.5.4.3).
2. **SHALL** contain [1..1] **code** (CONF:11202).
    a. This code **SHALL** contain [1..1] **@code**="51898-5" Risk Factors Section (CodeSystem: 2.16.840.1.113883.6.1 LOINC) (CONF:4279).
3. **SHALL** contain [1..1] **entry** (CONF:4280).
    a. This entry **SHALL** contain [1..1] **Central-line Insertion Practice Clinical Statement** (templateId:2.16.840.1.113883.10.20.5.6.57) (CONF:4281).

Figure 18: Risk factors section in a CLIP report example

```
<section>
  <templateId root="2.16.840.1.113883.10.20.5.5.19"/>
  <code codeSystem="2.16.840.1.113883.6.1"
        codeSystemName="LOINC"
        code="51898-5"
        displayName="Risk Factors Section"/>
  <title>Risk Factors</title>
  ...
  <entry>
    <act>
      <templateId root="2.16.840.1.113883.10.20.5.6.57"/>
      ...
      <entryRelationship>
        <sequenceNumber value="1"/>
        <organizer>
          <templateId root="2.16.840.1.113883.10.20.5.6.8"/>
          ...
          <component>
            <procedure>
              <templateId root="2.16.840.1.113883.10.20.5.6.16"/>
              ...
            </procedure>
          </component>
          <component>
                   <organizer>
              <templateId root="2.16.840.1.113883.10.20.5.6.43"/>
              ...
                <component>
                  <substanceAdministration>
                  <templateId root="2.16.840.1.113883.10.20.5.6.101"/>
                  ...
                  </substanceAdiminstration>
                </component>
                ...
            </organizer>
          </component>
          <component>
            <procedure>
              <templateId root="2.16.840.1.113883.10.20.5.6.45"/>
              ...
            </procedure>
          </component>
        </organizer>
      </entryRelationship>
      <entryRelationship>
        <sequenceNumber value="2"/>
        <observation>
          <templateId root="2.16.840.1.113883.10.20.5.6.44"/>
          ...
        </observation>
      </entryRelationship>
    </act>
  </entry>
</section>
```

4.2.5 Infection Risk Factors Section in a Procedure Report

[section: templateId 2.16.840.1.113883.10.20.5.5.30 (closed)]

The following table summarizes how the infection risk factors in a Procedure Report are represented.

Table 9: Requirements for Risk Factors Section in a Procedure Report

Within an entry/procedure	As entry/observations
Emergency (as methodCode) Wound Class Endoscope	*If inpatient* ASA Class Trauma *If spinal fusion or refusion:* Diabetes mellitus *If Cesarean:* Height Weight Labor duration

1. Conforms to HAI Section Generic Constraints Template (templateId: 2.16.840.1.113883.10.20.5.4.3).
2. **SHALL** contain [1..1] **code** (CONF:11204).
    a. This code **SHALL** contain [1..1] **@code**="51898-5" Risk Factors Section (CodeSystem: 2.16.840.1.113883.6.1 LOINC) (CONF:4475).
3. **SHALL** contain [1..1] **entry** (CONF:4476) such that it
    a. **SHALL** contain [1..1] **Procedure Risk Factors Clinical Statement in a Procedure Report** (templateId:2.16.840.1.113883.10.20.5.6.68) (CONF:4477).
4. **SHALL** contain [1..1] **entry** (CONF:4480) such that it
    a. **SHALL** contain [1..1] **Trauma Observation** (templateId:2.16.840.1.113883.10.20.5.2.2.7.5) (CONF:4481).
5. If the patient is an inpatient (componentOf/encompassingEncounter/code/@code ="IMP"), an entry element **SHALL** be present containing an ASA Class Observation (templateId:2.16.840.1.113883.10.20.5.2.2.7.4) (CONF:4479).
6. If the procedure, recorded in the Details Section of the report, was a Cesarean (code/@code is 2115-4), an entry element **SHALL** be present for each of the following: Height Observation (templateId 2.16.840.1.113883.10.20.5.2.2.7.9), Weight Observation (templateId 2.16.840.1.113883.10.20.5.2.2.7.10) and Duration of Labor Observation (templateId 2.16.840.1.113883.10.20.5.2.2.7.11). (CONF:4482).
7. If the procedure, recorded in the Details Section of the report, was a spinal fusion or refusion (code/@code is either 2137-8 or 2135-2), an entry element **SHALL** be present containing a Diabetes Mellitus Observation (templateId 2.16.840.1.113883.10.20.5.2.2.7.7). (CONF:4483).

Figure 19: Risk factors section in a procedure report example

```
<entry>
  <procedure classCode="PROC" moodCode="EVN">
    <templateId root="2.16.840.1.113883.10.20.5.6.68"/>
    <id root="2.16.840.1.113883.3.117.1.1.5.2.1.1.4" extension=”92”/>
    <methodCode codeSystem="2.16.840.1.113883.6.96"
                codeSystemName="SNOMED"
                code="373110003"
                displayName="Emergency"/>
    <entryRelationship>
      <observation>
        <templateId root="2.16.840.1.113883.10.20.5.2.1.2"/>
        ...
      </observation>
    </entryRelationship>
    <entryRelationship>
      <procedure>
        <templateId root="2.16.840.1.113883.10.20.5.2.1.3"/>
        ...
      </procedure>
    </entryRelationship>
      </procedure>
</entry>
<!-- if inpatient -->
<entry>
  <observation>
    <templateId root=”2.16.840.1.113883.10.20.5.2.2.7.4”/>
    ...
  </observation>
</entry>
<entry>
  <observation>
    <templateId root=”2.16.840.1.113883.10.20.5.2.2.7.5”/>
    ...
  </observation>
</entry>
```

4.2.6 Risk Factors Section in an Evidence of Infection (Dialysis) Report [section: templateId 2.16.840.1.113883.10.20.5.5.26 (closed)]

In an Evidence of Infection (Dialysis) Report, the Risk Factors Section contains at least one Vascular Access Type Observation for each value in the NHSNVascularAccessTypeCode Value Set. An additional such observation records whether a vascular access type other than those listed is present.

1. Conforms to HAI Section Generic Constraints Template (templateId: 2.16.840.1.113883.10.20.5.4.3).
2. **SHALL** contain [1..1] **code** (CONF:11180).
    a. This code **SHALL** contain [1..1] **@code**="51898-5" Risk Factors Section (CodeSystem: LOINC 2.16.840.1.113883.6.1) (CONF:10360).
3. **SHALL** contain [1..1] **entry** (CONF:10361) such that it
    a. **SHALL** contain [1..1] **Dialysis Patient Observation** (2.16.840.1.113883.10.20.5.6.85) (CONF:10362).

The NHSN protocol requires a Vascular Access Type Observation for each of the four values in the Vascular Access Type value set, and an additional such observation recording whether any other vascular access type is present.

4. **SHALL** contain [5..5] **`entry`** (CONF:10363) such that each
    a. **SHALL** contain [1..1] **`Vascular Access Type Observation`** (`2.16.840.1.113883.10.20.5.6.84`) (CONF:10364).

4.3 Details Section

The Details Section is used in several report types. The information requirements are slightly different in each. Therefore, although the section has the same LOINC code in all reports, the `templateId` that represents the constraints is specific to the report type.

In the infection-type reports such as BSI, SSI, the information requirements within the section are very similar. The table below shows the differing data requirements in the Details section of infection-type reports.

Table 10: Details Section in Infection-type Reports

BSI Report	**SSI Report**
Infection-type Observation *If patient died:* Death (+ Contributed to Death)	Infection-type Observation Procedure Details *If patient died:* Death (+ Contributed to Death)
PNEU Report	**UTI Report**
Infection-type Observation *If patient died:* Death (+ Contributed to Death)	Infection-type Observation *If patient died:* Death (+ Contributed to Death)

Figure 20: Details section example

```
<section>
  <templateId root="2.16.840.1.113883.10.20.5.5.6"/>
  <code codeSystem="2.16.840.1.113883.6.1"
        codeSystemName="LOINC"
        code="51899-3"
        displayName="Details Section"/>
  <title>Details</title>
  ...
</section>
```

4.3.1 Incident Details Section

[section: templateId 2.16.840.1.113883.10.20.5.5.20 (closed)]

This section is used in an Incident Report to record the details of an incident and its discovery. It is currently specific to a Hemovigilance Incident Report; it can be generalized to handle other incident types.

1. Conforms to HAI Section Generic Constraints Template (templateId: 2.16.840.1.113883.10.20.5.4.3).
2. **SHALL** contain [1..1] **code** (CONF:115872).
    a. This code **SHALL** contain [1..1] @**code**="51899-3" (Event) Detail (CodeSystem: LOINC 2.16.840.1.113883.6.1) (CONF:4453).
3. **SHALL** contain [1..1] **entry** (CONF:4454) such that it
    a. **SHALL** contain [1..1] **Incident Detail Clinical Statement** (2.16.840.1.113883.10.20.5.6.61) (CONF:4455).

4.3.2 Infection Details Section in a BSI Report

[section: templateId 2.16.840.1.113883.10.20.5.5.6 (closed)]

This section records the infection type, with details. If the patient died, NHSN protocol requires that the death be recorded.

1. Conforms to HAI Section Generic Constraints Template (templateId: 2.16.840.1.113883.10.20.5.4.3).
2. **SHALL** contain [1..1] **code** (CONF:11578).
    a. This code **SHALL** contain [1..1] **@code**="51899-3" Details Section (CodeSystem: 2.16.840.1.113883.6.1 LOINC) (CONF:2129).
3. **SHALL** contain [1..1] **entry** (CONF:2197) such that it
    a. **SHALL** contain [1..1] **Infection-type Observation** (templateId:2.16.840.1.113883.10.20.5.6.23) (CONF:2130).
4. An entry element **MAY** be present containing a Death Observation (templateId 2.16.840.1.113883.10.20.5.6.12) . (CONF:2163).

4.3.3 Infection Details Section in an SSI Report

[section: templateId 2.16.840.1.113883.10.20.5.5.7 (closed)]

This section records the infection type, with details. If the patient died, NHSN protocol requires that the death be recorded.

1. Conforms to HAI Section Generic Constraints Template (templateId: 2.16.840.1.113883.10.20.5.4.3).
2. **SHALL** contain [1..1] **code** (CONF:11193).
    a. This code **SHALL** contain [1..1] **@code**="51899-3" Details Section (CodeSystem: 2.16.840.1.113883.6.1 LOINC) (CONF:2165).
3. **SHALL** contain [1..1] **entry** (CONF:2198) such that it
    a. **SHALL** contain [1..1] **Infection-type Observation** (templateId:2.16.840.1.113883.10.20.5.6.23) (CONF:2166).
4. **SHALL** contain [1..1] **entry** (CONF:2199) such that it
    a. **SHALL** contain [1..1] **Procedure Details Clinical Statement in an SSI Report** (templateId:2.16.840.1.113883.10.20.5.6.34) (CONF:2167).

5. An entry element **MAY** be present containing a Death Observation (templateId 2.16.840.1.113883.10.20.5.6.12). (CONF:2168).

4.3.4 Infection Details Section in a Pneumonia Infection Report

[section: templateId 2.16.840.1.113883.10.20.5.5.9 (closed)]

This section records the infection type, with details. If the patient died, NHSN protocol requires that the death be recorded.

1. Conforms to HAI Section Generic Constraints Template (templateId: 2.16.840.1.113883.10.20.5.4.3).
2. **SHALL** contain [1..1] **code** (CONF:11580).
    a. This code **SHALL** contain [1..1] **@code**="51899-3" Details Section (CodeSystem: 2.16.840.1.113883.6.1 LOINC) (CONF:2802).
3. **SHALL** contain [1..1] **entry** (CONF:2803) such that it
    a. **SHALL** contain [1..1] **Infection-type Observation** (templateId:2.16.840.1.113883.10.20.5.6.23) (CONF:2804).
4. An entry element **MAY** be present containing a Death Observation (templateId 2.16.840.1.113883.10.20.5.6.12). (CONF:2806).

4.3.5 Infection Details Section in a UTI Report

[section: templateId 2.16.840.1.113883.10.20.5.5.10 (closed)]

This section records the infection type, with details. If the patient died, NHSN protocol requires that the death be recorded.

1. Conforms to HAI Section Generic Constraints Template (templateId: 2.16.840.1.113883.10.20.5.4.3).
2. **SHALL** contain [1..1] **code** (CONF:11655).
    a. This code **SHALL** contain [1..1] **@code**="51899-3" Details Section (CodeSystem: 2.16.840.1.113883.6.1 LOINC) (CONF:2807).
3. **SHALL** contain [1..1] **entry** (CONF:2808) such that it
    a. **SHALL** contain [1..1] **Infection-type Observation** (templateId:2.16.840.1.113883.10.20.5.6.23) (CONF:2809).
4. An entry element **MAY** be present containing a Death Observation (templateId: 2.16.840.1.113883.10.20.5.6.12). (CONF:2810).

4.3.6 Details Section in an HAR Report

[section: templateId 2.16.840.1.113883.10.20.5.5.25 (closed)]

This section reports the patient's blood group, the details of a transfusion and adverse reaction, and the results of an investigation into the relationship of the adverse reaction to the transfusion.

1. Conforms to HAI Section Generic Constraints Template (templateId: 2.16.840.1.113883.10.20.5.4.3).
2. **SHALL** contain [1..1] **code** (CONF:11346).

a. This code **SHALL** contain [1..1] **@code**="51899-3" (Event) Detail (CodeSystem: 2.16.840.1.113883.6.1 LOINC) (CONF:4770).

3. To record the patient's blood group, (CONF:4810).
    a. If the patient's blood group is known, an entry element **SHALL** be present containing a Blood Group Observation (templateId: 2.16.840.1.113883.10.20.5.6.71) (CONF:4771).
    b. Or, if blood typing and crossmatching on the patient were not done, (CONF:4772).
        i. An entry element **SHALL** be present containing a procedure element where the value of @classCode is PROC, the value of @moodCode is EVN, and the value of @negationInd is true. (CONF:4811).
            1. This procedure element **SHALL** contain a code element where the value of @code is 44608003 Blood group typing (codeSystem: 2.16.840.1.113883.6.96). (CONF:4812)
            2. This procedure element **SHALL** contain a statusCode element where the value of @code is completed. (CONF:14382).
        ii. Another entry element **SHALL** be present containing a procedure element where the value of @classCode is PROC, the value of @moodCode is EVN, and the value of @negationInd is true. (CONF:4813).
            1. This procedure element **SHALL** contain a code element where the value of @code is 41902000 Blood cross-matching (codeSystem: 2.16.840.1.113883.6.96). (CONF:4814).
            2. This procedure element **SHALL** contain a statusCode element where the value of @code is completed. (CONF:14401).
4. **SHALL** contain [1..1] **entry** (CONF:4773) such that it
    a. **SHALL** contain [1..1] **Transfusion Clinical Statement** (templateId:2.16.840.1.113883.10.20.5.6.73) (CONF:4774).
5. **SHALL** contain [1..1] **entry** (CONF:4775) such that it
    a. **SHALL** contain [1..1] **Imputability Observation** (templateId:2.16.840.1.113883.10.20.5.6.82) (CONF:4776).
        i. This Imputability Observation **SHALL** contain [1..1] **code** (CONF:11679).
            1. This code **SHALL** contain [1..1] **@code**="2502-3" Imputability of adverse reaction to transfusion (CodeSystem: 2.16.840.1.113883.6.277 cdcNHSN) (CONF:4801).
6. If the outcome was death (templateId 2.16.840.1.113883.10.20.5.6.79, with code 419620001 Death 2.16.840.1.113883.6.96 SNOMED CT), a second Imputability Observation **SHALL** be present where the value of code/@code is 2503-1 Imputability of death to transfusion 2.16.840.1.113883.6.277 cdcNHSN. (CONF:4802).

4.3.7 Details Section in a Evidence of Infection (Dialysis) Report

[section: templateId 2.16.840.1.113883.10.20.5.5.27 (closed)]

1. Conforms to HAI Section Generic Constraints Template (templateId: 2.16.840.1.113883.10.20.5.4.3).

2. **SHALL** contain [1..1] **code** (CONF:11345).
    a. This code **SHALL** contain [1..1] **@code**="51899-3" Details Section (CodeSystem: LOINC 2.16.840.1.113883.6.1) (CONF:10351).
3. **SHALL** contain [1..1] **entry** (CONF:10352) such that it
    a. **SHALL** contain [1..1] **Infection Indicator Organizer** (2.16.840.1.113883.10.20.5.6.86) (CONF:10353).
4. **SHALL** contain [1..1] **entry** (CONF:10354) such that it
    a. **SHALL** contain [1..1] **Criteria of Diagnosis Organizer** (2.16.840.1.113883.10.20.5.6.11) (CONF:10355).
5. **SHALL** contain [1..1] **entry** (CONF:10356) such that it
    a. **SHALL** contain [1..1] **Hospital Admission Clinical Statement** (2.16.840.1.113883.10.20.5.6.88) (CONF:10357).
6. **SHALL** contain [1..1] **entry** (CONF:10358) such that it
    a. **SHALL** contain [1..1] **Death Observation in an Evidence of Infection (Dialysis) Report** (2.16.840.1.113883.10.20.5.6.89) (CONF:10359).

4.3.8 Procedure Details Section in a CLIP Report

[section: templateId 2.16.840.1.113883.10.20.5.5.18 (closed)]

The clinical statements in this section record details of the procedure, including the reason for it.

1. Conforms to HAI Section Generic Constraints Template (templateId: 2.16.840.1.113883.10.20.5.4.3).
2. **SHALL** contain [1..1] **code** (CONF:11656).
    a. This code **SHALL** contain [1..1] **@code**="51899-3" Details Section (CodeSystem: 2.16.840.1.113883.6.1 LOINC) (CONF:4276).
3. **SHALL** contain [1..1] **entry** (CONF:4277).
    a. This entry **SHALL** contain [1..1] **Procedure Details Clinical Statement in a CLIP Report** (templateId:2.16.840.1.113883.10.20.5.6.100) (CONF:4278).

4.3.9 Procedure Details Section in an Immunization Report

[section: templateId 2.16.840.1.113883.10.20.5.5.12 (closed)]

NHSN records details of the offer to immunize, including the reasons for offering.

1. Conforms to HAI Section Generic Constraints Template (templateId: 2.16.840.1.113883.10.20.5.4.3).
2. **SHALL** contain [1..1] **code** (CONF:11658).
    a. This code **SHALL** contain [1..1] **@code**="51899-3" Details Section (CodeSystem: 2.16.840.1.113883.6.1 LOINC) (CONF:2814).
3. **SHALL** contain [1..1] **entry** (CONF:2815).
    a. This entry **SHALL** contain [1..1] **Immunization Offer Clinical Statement** (templateId:2.16.840.1.113883.10.20.5.6.18) (CONF:2816).

4.3.10 Procedure Details Section in a Procedure Report

[section: templateId 2.16.840.1.113883.10.20.5.5.31 (closed)]

Risk factors that are not aspects of the procedure itself are recorded in the Risk Factors Section.

1. Conforms to HAI Section Generic Constraints Template (templateId: 2.16.840.1.113883.10.20.5.4.3).
2. **SHALL** contain [1..1] **code** (CONF:11657).
    a. This code **SHALL** contain [1..1] **@code**="51899-3" Details Section (CodeSystem: 2.16.840.1.113883.6.1 LOINC) (CONF:2822).
3. **SHALL** contain [1..1] **entry** (CONF:2823).
    a. This entry **SHALL** contain [1..1] **Procedure Details Clinical Statement in a Procedure Report** (templateId:2.16.840.1.113883.10.20.5.6.97) (CONF:2824).

4.4 Encounters Section in an HAR Report

[section: templateId 2.16.840.1.113883.10.20.5.5.24 (closed)]

In an HAR Report, if the adverse reaction recorded was a TA-GVHD and if the patient received non-irradiated blood within the past two months, this section is required.

1. Conforms to HAI Section Generic Constraints Template (templateId: 2.16.840.1.113883.10.20.5.4.3).
2. **SHALL** contain [1..1] **code** (CONF:11471).
    a. This code **SHALL** contain [1..1] **@code**="46240-8" History of Encounters (CodeSystem: 2.16.840.1.113883.6.1 LOINC) (CONF:4777).
3. **SHALL** contain [1..1] **entry** (CONF:4778).
    a. This entry **SHALL** contain [1..1] **Prior Transfusion Encounter** (templateId:2.16.840.1.113883.10.20.5.6.72) (CONF:4779).

4.5 Encounters Section in a LIO Report

[section: templateId 2.16.840.1.113883.10.20.5.5.16 (closed)]

In a LIO Report the Encounters Section is present if the patient was previously discharged from the facility within the past three months, and records the date of that discharge. This section conforms to the CCD Encounters Section template (templateId 2.16.840.1.113883.10.20.1.3).

1. Conforms to HAI Section Generic Constraints Template (templateId: 2.16.840.1.113883.10.20.5.4.3).
2. **SHALL** contain [1..1] **code** (CONF:11470).
    a. This code **SHALL** contain [1..1] **@code**="46240-8" History of Encounters (CodeSystem: 2.16.840.1.113883.6.1 LOINC) (CONF:3071).
3. **SHALL** contain [1..1] **entry** (CONF:3072).
    a. This entry **SHALL** contain [1..1] **Prior Discharge Encounter** (templateId:2.16.840.1.113883.10.20.5.6.51) (CONF:3073).

4.6 Findings Section in an Infection-type Report

[section: templateId 2.16.840.1.113883.10.20.5.5.28 (closed)]

The Findings Section records whether infection organisms were identified and, if so, records details about them. The NHSN infection-type reports – BSI, SSI, PNEU, and UTI – include this section. The LIO Report has a similar section but with significant differences.

1. Conforms to HAI Section Generic Constraints Template (templateId: 2.16.840.1.113883.10.20.5.4.3).
2. **SHALL** contain [1..1] **code** (CONF:11483).
    a. This code **SHALL** contain [1..1] **@code**="18769-0" Findings Section (CodeSystem: 2.16.840.1.113883.6.1 LOINC) (CONF:2120).
3. If no pathogens were identified, the Findings Section **SHALL** contain a single entry element containing a Pathogen Identified Observation (templateId 2.16.840.1.113883.10.20.5.2.5.1) reporting that no pathogens were identified. (CONF:2605).
4. If pathogens were identified, the Findings Section **SHALL** contain at least one and no more than three entry elements containing a Findings Organizer (templateId 2.16.840.1.113883.10.20.5.6.14) reporting pathogens identified. (CONF:2207).
5. If pathogens were identified, an entry element where the value of @typeCode is COMP **SHALL** be present containing an MDRO/CDI Observation (templateId 2.16.840.1.113883.10.20.5.6.90). (CONF:10899).

Figure 21: Findings section example

```
<section>
  <templateId root="2.16.840.1.113883.10.20.5.5.28"/>
  <code codeSystem="2.16.840.1.113883.6.1"
        codeSystemName="LOINC"
        code="18769-0"
        displayName="Findings Section"/>
  <title>Findings</title>
    ...
</section>
```

4.7 Findings Section in a LIO Report

[section: templateId 2.16.840.1.113883.10.20.5.5.29 (closed)]

The Findings Section in a LIO Report records a laboratory-identified microorganism. It differs from the Findings Section in Infection Reports in that it records only one microorganism (if more were identified, each is recorded in a separate report), details about the specimen collection are recorded, and no drug-susceptibility test results are recorded. If no organism is found, no report is submitted; thus, the explicit statement "no organism found", which is used in the Findings Section in Infection Reports, is not used here.

1. Conforms to HAI Section Generic Constraints Template (templateId: 2.16.840.1.113883.10.20.5.4.3).
2. **SHALL** contain [1..1] **code**
    a. This code **SHALL** contain [1..1] **@code**="18769-0" Findings Section (CodeSystem: 2.16.840.1.113883.6.1 LOINC) (CONF:3067).
3. **SHALL** contain [1..1] **entry** (CONF:3068).
    a. This entry **SHALL** contain [1..1] **Pathogen Identified Observation (LIO)** (templateId:2.16.840.1.113883.10.20.5.6.52) (CONF:3069).
4. **SHALL** contain [1..1] **entry** (CONF:10923).
    a. This entry **SHALL** contain [1..1] Significant Pathogens Observation (templateId: 2.16.840.1.113883.10.20.5.6.41) (CONF:10924).

4.8 Summary Data Section

[section: templateId 2.16.840.1.113883.10.20.5.5.23 (closed)]

The Summary Data Section is used in a population-summary report. The specific counts to be reported in the Summary Data Section vary by report topic, but the section itself conveys the same kind of information wherever used; therefore, the section is represented by the same LOINC section code and templateId whatever the data reported.

The Summary Encounter requires a participant representing the facility or in-facility location to which the data pertain. Most summary reports contain data for a single location. To report data for more than one location, use a separate Summary Encounter element for each. For example, a POM report typically reports data for an in-facility location, but under some circumstances the NHSN protocol also requires facility-wide data. Use one Summary Encounter to report the data for the in-facility location, and a separate Summary Encounter to report the facility-wide data.

If the data in a population-summary report are categorized -- as, for example, data on a NICU population are categorized by patient birth weight -- each category is represented by a separate Summary Encounter element. If there is no categorization, the report concerns a group that has only one category and it therefore will contain only one Summary Data Encounter element. This is the usual case.

1. Conforms to HAI Section Generic Constraints Template (templateId: 2.16.840.1.113883.10.20.5.4.3).
2. **SHALL** contain [1..1] **code** (CONF:11659).
    a. This code **SHALL** contain [1..1] **@code**="51900-9" Summary Data Section (CodeSystem: 2.16.840.1.113883.6.1 LOINC) (CONF:4596).
3. **SHALL** contain [1..*] **entry** (CONF:4597).
    a. Such entries **SHALL** contain [1..1] **Summary Encounter** (templateId:2.16.840.1.113883.10.20.5.6.70) (CONF:4598).

Figure 22: Summary data section example

```
<section>
  <templateId root="2.16.840.1.113883.10.20.5.5.23"/>
  <code codeSystem="2.16.840.1.113883.6.1"
        codeSystemName="LOINC"
        code="51900-9"
        displayName="Summary Data Section"/>
  <title>Population Summary - ICU - June 2006</title>
  <entry>
    ...
  </entry>
</section>
```

5 CLINICAL STATEMENT LIBRARY

5.1 Organizers

5.1.1 Central-line Insertion Preparation Organizer

[`organizer`: templateId `2.16.840.1.113883.10.20.5.6.8 (closed)`]

This organizer represents the first step in the Central-line Insertion Practice sequence. It records three types of preparations (which may have occurred in any order): hand hygiene, skin-preparation solutions, and sterile barriers.

1. **SHALL** contain [1..1] **`@classCode`**="`CLUSTER`" Cluster (CodeSystem: `2.16.840.1.113883.5.6 HL7ActClass`) (CONF:2762).
2. **SHALL** contain [1..1] **`@moodCode`**="`EVN`" Event (CodeSystem: `2.16.840.1.113883.5.1001 HL7ActMood`) (CONF:2763).
3. **SHALL** contain [1..1] **`statusCode`**(CONF:11325).
    a. This statusCode **SHALL** contain [1..1] **`@code`**="`completed`" Completed (CodeSystem: `2.16.840.1.113883.5.14 HL7ActStatus`) (CONF:2764).
4. **SHALL** contain [1..1] **`component`** (CONF:2765) such that it
    a. **SHALL** contain [1..1] **`Hand Hygiene Performed Clinical Statement (templateId:2.16.840.1.113883.10.20.5.6.16)`** (CONF:2766).
5. **SHALL** contain [1..1] **`component`** (CONF:2767) such that it
    a. **SHALL** contain [1..1] **`Skin-preparation Solutions Applied Organizer (templateId:2.16.840.1.113883.10.20.5.6.43)`** (CONF:2768).
6. **SHALL** contain [1..1] **`component`** (CONF:2769) such that it
    a. **SHALL** contain [1..1] **`Sterile Barriers Applied Clinical Statement (templateId:2.16.840.1.113883.10.20.5.6.45)`** (CONF:2770).

Figure 23: Central-line insertion practice organizer example

```
<sequenceNumber value="1"/>
<organizer moodCode="EVN" classCode="CLUSTER">
  <templateId root="2.16.840.1.113883.10.20.5.6.8"/>
  <statusCode code="completed"/>
  <component>
     <procedure>
        <templateId root="2.16.840.1.113883.10.20.5.6.16"/>
              ...
     </procedure>
  </component>

  <component>
     <organizer>
        <templateId root="2.16.840.1.113883.10.20.5.6.43"/>
              ...
     </organizer>
  </component>

  <component>
     <procedure>
        <templateId root="2.16.840.1.113883.10.20.5.6.45"/>
              ...
     </procedure>
  </component>
</organizer>
```

5.1.2 Criteria of Diagnosis Organizer

[`organizer`: templateId `2.16.840.1.113883.10.20.5.6.11 (closed)`]

This organizer groups together the criteria used in the diagnosis of an infection or the identification of an adverse reaction. Each criterion is recorded as a Criterion of Diagnosis Observation.

The Criteria of Diagnosis Organizer is used in several report types. The NHSN Protocol specifies which criteria are to be recorded for each report type. Those rules do not form part of this template. The NHSN submission requirement is that, in a given report type, a Criterion of Diagnosis Observation must be present for every datum required by the NHSN Protocol for that report type, with an appropriate value for `@negationInd`.

In an HAR Report, for certain adverse reactions, an additional observation is required to record an antibody (using the Antibodies Value Set), or a code such as "Pain not otherwise specified" with an `originalText` element. The NHSN Protocol specifies the data requirements.

In an Evidence of Infection (Dialysis) Report, to record that none of the criteria of diagnosis was present, set the value of the `observation/@negationInd` to "`true`" for each criterion required in this report.

1. **SHALL** contain [1..1] **`@classCode`**="`CLUSTER`" Cluster (CodeSystem: `HL7ActClass 2.16.840.1.113883.5.6`) (CONF:2091).

2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: ActMood 2.16.840.1.113883.5.1001) (CONF:2092).
3. **SHALL** contain [1..1] **statusCode** (CONF:11329).
    a. **This statusCode SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: HL7ActStatus 2.16.840.1.113883.5.14) (CONF:2093).
4. **SHALL** contain [1..*] **component** (CONF:2195).
    a. Such components **SHALL** contain [1..1] **Criterion of Diagnosis Observation** (2.16.840.1.113883.10.20.5.6.10) (CONF:2094).

Figure 24: Criteria of diagnosis organizer example

```
<organizer classCode="CLUSTER" moodCode="EVN”>
  <templateId root=”2.16.840.1.113883.10.20.5.6.11”/>
  <statusCode code="completed"/>
    <component>
      <observation>
     ...
     </observation>
  </component>
  ...
</organizer>
```

5.1.3 Donor and Donation Pathogens Organizer

[organizer: templateId 2.16.840.1.113883.10.20.5.6.81 (closed)]

This organizer records up to three pathogens found in the blood donor post-donation and up to three pathogens found in the blood product post-transfusion.

In both usages, to record that a pathogen test was not performed, use a single Pathogen Identified Observation with a nullFlavor 'NASK' (Not asked).

In both usages, to record that no pathogen was found, use a single Pathogen Identified Observation with the code 3119-7 'No pathogen found' from Value Set 2.16.840.1.113883.13.16 NHSNPathogenCode **DYNAMIC**.

1. **SHALL** contain [1..1] **@classCode**="CLUSTER" Cluster (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:4666).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:4667).
3. **SHALL** contain [1..1] **statusCode** (CONF:11353).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:4668).
4. **SHALL** contain [1..1] **subject** (CONF:4671).
    a. This subject **SHALL** contain [1..1] **relatedSubject** (CONF:4672).
        i. This relatedSubject **SHALL** contain [1..1] **@classCode**="PRS" Person (CodeSystem: 2.16.840.1.113883.5.41 HL7EntityClass) (CONF:4673)
        ii. This relatedSubject **SHALL** contain [1..1] **code** (CONF:11354).

iii. This code **SHALL** contain [1..1] **@code**="105470007" blood donor (CodeSystem: 2.16.840.1.113883.6.96 SNOMEDCT) (CONF:4674).

5. **SHALL** contain [1..3] **component** (CONF:4669) such that it
    a. **SHALL** contain [1..1] **Pathogen Identified Observation in an HAR Report** (templateId:2.16.840.1.113883.10.20.5.6.83) (CONF:4670).

Figure 25: Donor and donations pathogens organizer example

```
<organizer classCode="CLUSTER" moodCode="EVN”>
  <templateId root="2.16.840.1.113883.10.20.5.6.81"/>
  <statusCode code="completed"/>
    <component>
      <observation>
     ...
     </observation>
  </component>
  ...
</organizer>
```

5.1.4 Infection Indicator Organizer

[organizer: templateId 2.16.840.1.113883.10.20.5.6.86 (closed)]

This organizer groups together four required infection indicators. An Evidence of Infection (Dialysis) Report is submitted when at least one is true. The infection indicators are recorded as facts associated with the patient, but without asserting a causal relationship to an infection.

The organizer's effectiveTime/low element represents the earliest date at which one of these indicators was observed. The NHSN protocol specifies this date represents:

- For pus/redness/swelling – the symptom onset date
- For IV antibiotic or antifungal start – the first day the substance was administered as an outpatient
- For positive blood culture – the day the specimen was drawn

1. **SHALL** contain [1..1] **@classCode**="CLUSTER" Cluster (CodeSystem: HL7ActClass 2.16.840.1.113883.5.6) (CONF:10330).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: HL7ActMood 2.16.840.1.113883.5.1001) (CONF:10331).
3. **SHALL** contain [1..1] **statusCode** (CONF:11194).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: HL7ActStatus 2.16.840.1.113883.5.14) (CONF:10332).
4. **SHALL** contain [1..1] **effectiveTime** (CONF:11195).
    a. This effectiveTime **SHALL** contain [1..1] **low** (CONF:10333).
5. **SHALL** contain [1..1] **component** (CONF:10334) such that it
    a. **SHALL** contain [1..1] **Pus, Redness, or Increased Swelling Observation** (2.16.840.1.113883.10.20.5.6.92) (CONF:10335).

6. **SHALL** contain [1..1] **component** (CONF:10336) such that it
    a. **SHALL** contain [1..1] **IV Antibiotic Start Clinical Statement** (2.16.840.1.113883.10.20.5.6.93) (CONF:10337).
7. **SHALL** contain [1..1] **component** (CONF:10338) such that it
    a. **SHALL** contain [1..1] **IV Antifungal Start Clinical Statement** (2.16.840.1.113883.10.20.5.6.94) (CONF:10339).
8. **SHALL** contain [1..1] **component** (CONF:10340) such that it
    a. **SHALL** contain [1..1] **Positive Blood Culture Observation** (2.16.840.1.113883.10.20.5.6.95) (CONF:10341).

Figure 26: Infection indicator organizer example

```
<organizer classCode="CLUSTER" moodCode="EVN”>
  <templateId root=”2.16.840.1.113883.10.20.5.6.86”/>
  <statusCode code="completed"/>

  <effectiveTime>
    <low value=”20080404”/>
  </effectiveTime>

  <!-- Four components are required -->
  <component>
    <observation>
       ...
    </observation>
  </component>
  ...
</organizer>
```

5.1.5 Patient Pathogens Organizer

[organizer: templateId 2.16.840.1.113883.10.20.5.6.80 (closed)]

This organizer records up to three pathogens identified.

To record that no pathogen was found, use a single Pathogen Identified Observation with code 3119-7 'No pathogen found' from Value Set 2.16.840.1.113883.13.16 NHSNPathogenCode **DYNAMIC**.

1. **SHALL** contain [1..1] **@classCode**="CLUSTER" Cluster (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:4661).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:4662).
3. **SHALL** contain [1..1] **statusCode** (CONF:17029).
    a. This **statusCode SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:4663).
4. **SHALL** contain [1..3] **component** (CONF:4664) such that it
    a. **SHALL** contain [1..1] **Pathogen Identified Observation** (templateId:2.16.840.1.113883.10.20.5.2.5.1) (CONF:4665).

5.1.6 Findings Organizer

[organizer: templateId 2.16.840.1.113883.10.20.5.6.14 (closed)]

Each Findings Organizer represents a set of information concerning a single pathogen identified. The organizer contains two component elements that record the pathogen and its rank in regard to the other pathogens identified, and can contain additional component elements recording drug-susceptibility test findings.

For bacterial pathogens, at least one drug-susceptibility test result is required. For nonbacterial pathogens, drug-susceptibility test results are not required.

1. **SHALL** contain [1..1] **@classCode**="CLUSTER" Cluster (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:2075).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:2076).
3. **SHALL** contain [1..1] **statusCode** (CONF:11480).
    a. This **statusCode SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:2077).
4. **SHALL** contain [1..1] **component** (CONF:2200) such that it
    a. **SHALL** contain [1..1] **Pathogen Identified Observation** (templateId:2.16.840.1.113883.10.20.5.2.5.1) (CONF:2078).
5. **SHALL** contain [1..1] **component** (CONF:2201) such that it
    a. **SHALL** contain [1..1] **Pathogen Ranking Observation** (templateId:2.16.840.1.113883.10.20.5.2.5.1.1) (CONF:2079).
6. If the pathogen is a bacterial pathogen, at least one component element **SHALL** be present containing a Drug-susceptibility Test Observation (templateId 2.16.840.1.113883.10.20.5.2.5.1.2). (CONF:2204).

Figure 27: Findings organizer example

```
<organizer classCode="CLUSTER" moodCode=”EVN”>
  <templateId root="2.16.840.1.113883.10.20.5.6.14"/>

  <component>
    <observation classCode="OBS" moodCode="EVN">
      <templateId root="2.16.840.1.113883.10.20.5.2.5.1"/>
      ...
    </observation>
  </component>

  <component>
    <observation classCode="OBS" moodCode="EVN">
      <templateId root="2.16.840.1.113883.10.20.5.2.5.1.1"/>
      ...
    </observation>
  </component>
```

```
  <component>
    <observation classCode="OBS" moodCode="EVN">
      <templateId root="2.16.840.1.113883.10.20.5.2.5.1.2"/>
      ...
    </observation>
  </component>
</organizer>
```

5.1.7 Skin -preparation Solutions Applied Organizer

[organizer: templateId 2.16.840.1.113883.10.20.5.6.43 (closed)]

This clinical statement reports what skin-preparation solutions were applied. It is one of the actions recorded in the first, preparatory step in the Central-line Insertion Practice sequence.

The Skin Preparation Clinical Statement (templateId 2.16.840.1.113883.10.20.5.6.101) provides the list of skin preparation solutions to record.

1. **SHALL** contain [1..1] **@classCode**="CLUSTER" Cluster (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:2771).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:2772).
3. **SHALL** contain [1..1] **statusCode** (CONF:11192).
    a. This **statusCode SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:2773).
4. A component containing a Skin Preparation Clinical Statement (templateId:2.16.840.1.113883.10.20.5.6.101) **SHALL** be present for each skin-preparation solution required by the NHSN protocol. One additional such component element **MAY** be present recording an uncoded (text) skin-preparation solution. (CONF:4815).

Figure 28: Skin-preparation solutions applied organizer example

```
<organizer moodCode="EVN" classCode="CLUSTER">
  <templateId root="2.16.840.1.113883.10.20.5.6.43"/>
  <statusCode code="completed"/>

  <component>
      <substanceAdministration>
      <templateId root="2.16.840.1.113883.10.20.5.6.101"/>
        ...
      </substanceAdministration>
  </component>
  ...

</organizer>
```

5.2 Clinical Statements

5.2.1 Adverse Reaction Observation

[observation: templateId 2.16.840.1.113883.10.20.5.6.62 (closed)]

This observation records whether an adverse reaction was associated with an incident.

If an adverse reaction was associated with the incident being reported, set the value of @negationInd to false. If no adverse reaction was associated with the incident being reported, set the value of @negationInd to true.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:4418).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:4419).
3. **SHALL** contain **@negationInd** (CONF:4420).
4. **SHALL** contain [1..1] **code** (CONF:11278).
    a. This code **SHALL** contain [1..1] **@code**="ASSERTION" Assertion (CodeSystem: 2.16.840.1.113883.5.4 HL7ActCode) (CONF:4421).
5. **SHALL** contain [1..1] **statusCode** (CONF:11279).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:4422).
6. **SHALL** contain [1..1] **value** (CONF:11280).
    a. This value **SHALL** contain [1..1] **@code**="281647001" Adverse reaction (CodeSystem: 2.16.840.1.113883.6.96 SNOMEDCT) (CONF:4423).
7. If patients experienced an adverse reaction, a participant element **SHALL** be present for each patient, recording the patient's ID in participantRole/id. (CONF:4443).

Figure 29: Adverse reaction observation example

```
<observation classCode="OBS" moodCode="EVN" negationInd="false">
  <templateId root="2.16.840.1.113883.10.20.5.6.62"/>
  <code codeSystem="2.16.840.1.113883.5.4"
        code="ASSERTION"/>
  <statusCode code="completed"/>

  <value xsi:type="CD"
        codeSystem="2.16.840.1.113883.6.96"
        codeSystemName="SNOMED CT"
        code="281647001"
        displayName="Adverse reaction"/>

  <!-- If negationInd="false", i.e., there was an adverse reaction:
  Participants are patients who experienced an adverse reaction,
  identified by ID -->
  <participant typeCode="SBJ" contextControlCode="OP">
    <participantRole classCode="PRS">
      <id root="2.16.840.1.113883.3.117.1.1.5.1.1.1" extension="123456"/>
    </participantRole>
  </participant>

</observation>
```

5.2.2 Adverse Reaction Type Observation

[observation: templateId 2.16.840.1.113883.10.20.5.6.2 (closed)]

An adverse reaction is recorded using the CCD Reaction template (templateId 2.16.840.1.113883.10.20.1.54).

To record that the reaction occurred, set the value of observation/@negationInd to false. To record that the reaction did not occur, set the value of observation/@negationInd to true. If it is not known whether the reaction occurred, set the value of observation/@nullFlavor to NI.

1. An Adverse Reaction Type Observation **SHALL** be recorded using the CCD Reaction template (templateId 2.16.840.1.113883.10.20.1.54). (CONF:2624).
2. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:2616).
3. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:2617).
4. If the reaction occurred, the value of observation/@negationInd **SHALL** be false. If the reaction did not occur, the value of observation/@negationInd **SHALL** be true. If it is not known whether the reaction occurred, the value of observation/@nullFlavor **SHALL** be NI. (CONF:2622).
5. A templateId **SHALL** be present where the value of @root is 2.16.840.1.113883.10.20.1.54 representing conformance to the CCD Reaction template. (CONF:2621).
6. **SHALL** contain [1..1] **code** (CONF:11281).
    1. This code **SHALL** contain [1..1] **@code**="ASSERTION" Assertion (CodeSystem: 2.16.840.1.113883.5.4 HL7ActCode) (CONF:2618).

7. **SHALL** contain [1..1] **statusCode** (CONF:11282).
    1. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:2619).
8. **SHALL** contain [1..1] **value** (CONF:2620).
    a. The value of value/@xsi:type **SHALL** be CD. When recording a reaction as a code, the value of value/@code **SHALL** be selected from 2.16.840.1.114222.4.11.3193 NHSNAdverseReactionCode **DYNAMIC**. When recording a reaction as text, the value of value/@nullFlavor **SHALL** be OTH. (CONF:2623).

Table 11: Adverse Reaction Value Set

Value Set: NHSNAdverseReactionCode 2.16.840.1.114222.4.11.3193 Code System: SNOMED CT 2.16.840.1.113883.6.96		
Code	**Code System**	**Print Name**
57676002	SNOMED CT	Arthralgia
43724002	SNOMED CT	Chills
49727002	SNOMED CT	Cough
386661006	SNOMED CT	Fever
25064002	SNOMED CT	Headache
247472004	SNOMED CT	Hives
271795006	SNOMED CT	Malaise/fatigue
68962001	SNOMED CT	Myalgia
68235000	SNOMED CT	Nasal congestion
95388000	SNOMED CT	Pain/soreness at injection site
271807003	SNOMED CT	Rash
64531003	SNOMED CT	Rhinorrhea
267036007	SNOMED CT	Shortness of breath/difficulty breathing
162397003	SNOMED CT	Sore throat
65124004	SNOMED CT	Swelling

Figure 30: Adverse reaction type observation example

```
<!-- Adverse Reaction Type Observation -->
<observation classCode="OBS" moodCode="EVN" negationInd="false">
       <templateId root="2.16.840.1.113883.10.20.1.54"/>
       <templateId root="2.16.840.1.113883.10.20.5.6.2"/>
       <code code="ASSERTION" codeSystem="2.16.840.1.113883.5.4"/>
       <statusCode code="completed"/>
       <value xsi:type="CD"
              code="386661006"
              codeSystem="2.16.840.1.113883.6.96"
              codeSystemName="SNOMED CT"
              displayName="Fever"/>
</observation>
```

5.2.3 Anesthesia Administration Clinical Statement

[substanceAdministration: templateId 2.16.840.1.113883.10.20.5.2.2.7.3 (closed)]

This clinical statement reports whether anesthesia was administered.

If anesthesia was not administered, set the value of @negationInd to true. If anesthesia was administered, set the value of @negationInd to false.

1. **SHALL** contain [1..1] **@classCode**="SBADM" Substance administration (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:2234).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:2235).
3. **SHALL** contain **@negationInd** (CONF:2238).
4. **SHALL** contain [1..1] **consumable** (CONF:11287).
    a. This consumable **SHALL** contain [1..1] **manufacturedProduct** (CONF:11288).
        i. This manufacturedProduct **SHALL** contain [1..1] **manufacturedLabeledDrug** (CONF:2236).
            1. This manufacturedLabeledDrug **SHALL** contain [1..1] **code** (CONF:11289).
                a. This code **SHALL** contain [1..1] **@code**="84451006" General Anesthesia (CodeSystem: SNOMED-CT 2.16.840.1.113883.6.96) (CONF:2237).

Figure 31: Anesthesia administration example

```
<procedure classCode="PROC" moodCode="EVN">
  ...
  <entryRelationship typeCode="COMP">
    <substanceAdministration classCode="SBADM" moodCode="EVN"
                             negationInd="false">
      <templateId root=”2.16.840.1.113883.10.20.5.2.2.7.3"/>
      <consumable>
        <manufacturedProduct>
          <manufacturedLabeledDrug>
            <code code="84451006"
                  codeSystem="2.16.840.1.113883.6.96"
                  codeSystemName="SNOMED"
                  displayName="general anesthesia"/>
          </manufacturedLabeledDrug>
        </manufacturedProduct>
      </consumable>
    </substanceAdministration>
  </entryRelationship>
</procedure>
```

5.2.4 ASA Class Observation

[observation: templateId 2.16.840.1.113883.10.20.5.2.2.7.4 (closed)]

This observation records the patient's physical status using the American Society of Anesthesiologists (ASA) Class Codes. The SNOMED CT representation of ASA Class Codes includes a sixth value (413500003 ASA physical status class 6 for brain-dead patients taken to the operating room to remove organs for transplant). This sixth value is not part of the value set allowed in a CDA document submitted to NHSN.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:2292).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:2293).
3. **SHALL** contain [1..1] **@negationInd**="false" (CONF:4219).
4. **SHALL** contain [1..1] **code** (CONF:11290).
    a. This code **SHALL** contain [1..1] **@code**="ASSERTION" Assertion (CodeSystem: 2.16.840.1.113883.5.4 HL7ActCode) (CONF:2289).
5. **SHALL** contain [1..1] **statusCode** (CONF:11291).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:2290).
6. **SHALL** contain [1..1] **value** (CONF:11292).
    a. This value **SHALL** contain [1..1] **@code**, which **SHALL** be selected from ValueSet 2.16.840.1.113883.13.10 NHSNASAClassCode **STATIC** 20080130 (CONF:2291).

Table 12: ASA Class Value Set

Value Set: NHSNASAClassCode 2.16.840.1.113883.13.10 Code System: SNOMED CT 2.16.840.1.113883.6.96		
Code	**Code System**	**Meaning**
413495001	SNOMED CT	ASA physical status class 1 (Normally healthy patient)
413496000	SNOMED CT	ASA physical status class 2 (Patient with mild systemic disease)
413497009	SNOMED CT	ASA physical status class 3 (Patient with severe systemic disease, not incapacitating)
413498004	SNOMED CT	ASA physical status class 4 (Patient with incapacitating systemic disease, constant threat to life)
413499007	SNOMED CT	ASA physical status class 5 (Moribund patient, < 24-hour life expectancy)

Figure 32: ASA class observation example

```
<observation classCode="OBS" moodCode="EVN" negationInd="false">
  <templateId root="2.16.840.1.113883.10.20.5.2.2.7.4"/>
  <code codeSystem="2.16.840.1.113883.5.4" code="ASSERTION"/>
  <statusCode code="completed"/>
  <value xsi:type=”CD” codeSystem="2.16.840.1.113883.6.96"
         codeSystemName="SNOMED"
         value="413496000"
         displayName="Patient with mild systemic disease"/>
</observation>
```

5.2.5 Blood Group Observation

[observation: templateId 2.16.840.1.113883.10.20.5.6.71 (closed)]

This observation records blood group. It is used in the HAR Report to record the blood group of the blood product transfused, and to record the blood group of the patient.

When reporting the blood group of a blood product transfused, blood group may be reported as "not applicable": set the value of @negationInd to false, and see the constraint below for how to represent "not applicable".

When reporting the blood group of the patient, if the blood group is known, set the value of @negationInd to false. To record instead that blood typing and cross-match were not done, do not use this observation; see the HAR Details Section (templateId 2.16.840.1.113883.10.20.5.5.25) for the two procedure elements used to record that.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:4621).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:4623).

3. **SHALL** contain **@negationInd** (CONF:4633).
4. **SHALL** contain [1..1] **code** (CONF:11293).
    a. This code **SHALL** contain [1..1] **@code**="882-1" ABO & RH group [Type] in Blood (CodeSystem: LOINC 2.16.840.1.113883.6.1) (CONF:4624).
5. **SHALL** contain [1..1] **statusCode** (CONF:11294).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: ActStatus 2.16.840.1.113883.5.14) (CONF:4625).
6. **SHALL** contain [1..2] **value** (CONF:4789).
    a. If the blood group is known, a value element **SHALL** be present where the value of @xsi:type **SHALL** be CD and the value of @code is selected from ValueSet 2.16.840.1.114222.4.11.3389 NHSNBloodGroupCode **STATIC** 20101130. (CONF:4626).
    b. In an HAR Report, the blood group of a blood product transfused may be reported as "not applicable". To record this, a value element **SHALL** be present where the value of @nullFlavor is 'NA' (Not applicable). (CONF:4791).

Table 13: Blood Group Value Set

Value Set: NHSNBloodGroupCode 2.16.840.1.114222.4.11.3389 Code System: SNOMED CT 2.16.840.1.113883.6.96		
Code	**Code System**	**Meaning**
278147001	SNOMED CT	blood group O Rh(D) positive
278148006	SNOMED CT	blood group O Rh(D) negative
278149003	SNOMED CT	blood group A Rh(D) positive
278150003	SNOMED CT	blood group B Rh(D) positive
278151004	SNOMED CT	blood group AB Rh(D) positive
278152006	SNOMED CT	blood group A Rh(D) negative
278153001	SNOMED CT	blood group B Rh(D) negative
278154007	SNOMED CT	blood group AB Rh(D) negative

Figure 33: Blood group observation example

```
<entry typeCode="DRIV">
  <observation classCode="OBS" moodCode="EVN" negationInd="false">
    <templateId root="2.16.840.1.113883.10.20.5.6.71"/>
    <code codeSystem="2.16.840.1.113883.6.1 "
          codeSystemName="LOINC"
          code="882-1"
          displayName="ABO and RH group [Type] in Blood "/>
    <statusCode code="completed"/>
    <!-- value set NSHNBloodGroupCode -->
    <value xsi:type="CD"
           codeSystem="2.16.840.1.113883.6.96"
           codeSystemName="SNOMED CT"
           code="278149003"
           displayName="blood group A Rh(D) positive"/>
  </observation>
</entry>
```

5.2.6 Blood Product Disposition Observation

[observation: templateId 2.16.840.1.113883.10.20.5.6.66 (closed)]

This observation is used in a Hemovigilance Incident Report, and records what ultimately happened to the blood product involved in an incident.

If reporting blood products destroyed, NHSN protocol requires the blood product code(s) or unit ID(s) of the destroyed product. The code or identifier is recorded in a participant element; the number of units reported is recorded in the value element. To report more than one blood-product code or more than one unit identifier, use separate Blood Product Disposition Observations.

For some types of reaction, NHSN protocol specifically requires a unit identifier.

The value sets for the ISBT-128 and Codabar blood-product codes are available through NHSN.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: HL7ActClass 2.16.840.1.113883.5.6) (CONF:4376).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: ActMood 2.16.840.1.113883.5.1001) (CONF:4377).
3. **SHALL** contain [1..1] **code** (CONF:11295).
    a. This code **SHALL** contain [1..1] **@code**, which **SHALL** be selected from ValueSet NHSNHemovigilanceProductDispositionCode 2.16.840.1.114222.4.11.3332 **DYNAMIC** (CONF:4378).
4. **SHALL** contain [1..1] **statusCode** (CONF:11296).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: ActStatus 2.16.840.1.113883.5.14) (CONF:4379).
5. If the observation is reporting blood product destroyed (observation/code 3464-5), a participant element **SHALL** be present. (This will record either a blood-product code or a blood-product unit identifier.) (CONF:4541).
    a. **SHALL** contain [1..1] **@typeCode**="SBJ" Subject (CodeSystem: HL7ParticipationType 2.16.840.1.113883.5.90) (CONF:4402).

b. **SHALL** contain [1..1] **@contextControlCode**="OP" (CodeSystem: HL7 Context Control Code 2.16.840.1.113883.5.1057) (CONF:4403).

c. **SHALL** contain [1..1] **participantRole** (CONF:4533).

i. This participantRole **SHALL** contain [1..1] **@classCode**="MANU" Manufactured material (CodeSystem: RoleClass 2.16.840.1.113883.5.110) (CONF:4534).

ii. To report a blood product destroyed using a blood product code, the participantRole element **SHALL** contain a playingEntity/code element where the value of @code **SHALL** be selected from either Value Set 2.16.840.1.114222.4.11.3334 NHSNBloodProductISBTCode **DYNAMIC** or Value Set 2.16.840.1.114222.4.11.3335 NHSNCBloodProductCodabarCode **STATIC** 20100624, and @code is present (CONF:4525).

iii. Or, to report a blood product unit destroyed using a unit identifier, the participantRole element **SHALL** contain an id element where the value of @root represents the reporting facility, and @extension is present (CONF:4524).

6. If the observation is reporting blood product destroyed (observation/code 3464-5), a value element **SHALL** be present, where the value of @xsi:type is INT, recording the number of units of this blood product destroyed (CONF:4542).

Table 14: Hemovigilance Product Disposition Value Set

Value Set: NHSNHemovigilanceProductDispositionCode 2.16.840.1.114222.4.11.3332 Code System: cdcNHSN 2.16.840.1.113883.6.277			
Code	**Display Name**	**Code System**	**Code System Name**
3463-7	Product retrieved	2.16.840.1.113883.6.277	cdcNHSN
3464-5	Product destroyed	2.16.840.1.113883.6.277	cdcNHSN
3465-2	Product transfused	2.16.840.1.113883.6.277	cdcNHSN
3466-0	Product issued but not transfused	2.16.840.1.113883.6.277	cdcNHSN

Table 15: ISBT-128 Blood-product Value Set (excerpt)

Value Set: NHSNBloodProductISBTCode 2.16.840.1.114222.4.11.3334 Code System: ISBT-128 2.16.840.1.113883.6.18 The full value set is available through NSHN.		
Code	**Code System**	**Print Name**
E0184	ISBT-128	RED BLOOD CELLS|CPD/250mL/refg
E0150	ISBT-128	RED BLOOD CELLS|CPD/450mL/refg
…		

Table 16: Codabar Blood-product Value Set (excerpt)

Value Set: NHSNBloodProductCodabarCode 2.16.840.1.114222.4.11.3335 Code System: ABC Codabar 2.16.840.1.113883.6.290 The full value set is available through NHSN.		
Code	**Code System**	**Print Name**
00150	ABC Codabar	CPD WHOLE BLOOD
00250	ABC Codabar	CPD WHOLE BLOOD IRRADIATED
...		

Figure 34: Blood product disposition observation example with code

```
<observation classCode="OBS" moodCode="EVN">
  <templateId root="2.16.840.1.113883.10.20.5.6.66"/>
  <code codeSystem="2.16.840.1.113883.6.277"
        codeSystemName="cdcNHSN"
        code="3464-5"
        displayName="Product destroyed"/>
  <statusCode code="completed"/>

  <!-- If more than one type of blood product was destroyed,
       record each in a separate Blood Product Disposition Observation. -->

  <participant typeCode="SBJ" contextControlCode="OP">
    <participantRole classCode="MANU">
      <playingEntity classCode="MAT">
        <code codeSystem="2.16.840.1.113883.6.18"
              codeSystemName="ISBT-128"
              code="...."/>
      </playingEntity>
    </participantRole>
  </participant>

  <!-- Number of units destroyed -->
  <value xsi:type="INT"
         value="3"/>

</observation>
```

Figure 35: Blood product disposition observation example with unit identifier

```
<observation classCode="OBS" moodCode="EVN">
  <templateId root="2.16.840.1.113883.10.20.5.6.66"/>
  <code codeSystem="2.16.840.1.113883.6.277"
        codeSystemName="cdcNHSN"
        code="3464-5"
        displayName="Product destroyed"/>
  <statusCode code="completed"/>

  <!-- A unit identifier is assigned by the blood bank of the
       reporting facility -->

  <participant typeCode="SBJ" contextControlCode="OP">
    <participantRole classCode="MANU">
      <id root="2.16.840.1.113883.3.117.1.1.5.2.1.1.6"
          extension="1234512123456121"/>
    </participantRole>
  </participant>

  <!-- Number of units destroyed -->
  <value xsi:type="INT"
         value="1"/>

</observation>
```

5.2.7 Blood Product Transfused Observation

[observation: templateId 2.16.840.1.113883.10.20.5.6.74 (closed)]

This observation records the detail of a blood-product component transfused. It is used in a Hemovigilance Adverse Reaction Report (HAR). It is similar to the Blood Product Disposition Observation used in a Hemovigilance Incident Report (HI), but differs in some details.

The effectiveTime element records the date this component was transfused; the effectiveTime/high element records its expiration date. The participant element records the component code and, if required, the unit number (as id). The value element records the number of units of this component transfused.

Subordinate clinical statements record the blood group of this component, and, if the number of units is 1, whether this unit was implicated in the adverse reaction.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:4732).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:4733).
3. **SHALL** contain [1..1] **code** (CONF:11297).
    a. This code **SHALL** contain [1..1] **@code**="3465-2" Product transfused (CodeSystem: 2.16.840.1.113883.6.277 cdcNHSN) (CONF:4734).

4. **SHALL** contain [1..1] **statusCode** (CONF:11298).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:4735).
5. **SHALL** contain [1..1] **effectiveTime** (CONF:4747).
    a. This effectiveTime **SHALL** contain **@value** (CONF:4748).
    b. This effectiveTime **SHALL** contain [1..1] **high** (CONF:11299).
        i. This **high SHALL** contain [1..1] **@value** (CONF:4749).
6. **SHALL** contain [1..1] **value** (CONF:4745).
    a. This value **SHALL** contain [1..1] **@xsi:type**="INT" (CONF:4746).
7. **SHALL** contain [1..1] **participant** (CONF:4736).
    a. This participant **SHALL** contain [1..1] **@typeCode**="SBJ" Subject (CodeSystem: 2.16.840.1.113883.5.90 HL7ParticipationType) (CONF:4737).
    b. This participant **SHALL** contain [1..1] **@contextControlCode**="OP" (CodeSystem: 2.16.840.1.113883.5.1057 HL7 Context Control Code) (CONF:4738).
    c. This participant **SHALL** contain [1..1] **participantRole** (CONF:4739).
        i. This participantRole **SHALL** contain [1..1] **@classCode**="MANU" Manufactured material (CodeSystem: 2.16.840.1.113883.5.110 HL7RoleClass) (CONF:4740).
        ii. This participantRole **SHALL** contain [1..1] **playingEntity** (CONF:4741).
            1. This playingEntity **SHALL** contain [1..1] **code** (CONF:4742).
                a. The value of @code **SHALL** be selected from either Value Set 2.16.840.1.114222.4.11.3334 NHSNBloodProductISBTCode **DYNAMIC** or 2.16.840.1.114222.4.11.3335 NHSNCBloodProductCodabarCode **STATIC** 20100624 (CONF:4743).
        iii. If the reaction was Infection, TRALI, or GVHD, the participantRole element **SHALL** contain an id element recording the unit identifier, where the value of @root represents the reporting facility, and @extension is present. (CONF:4744).
8. **SHALL** contain [1..1] **entryRelationship** (CONF:4750).
    a. This entryRelationship **SHALL** contain [1..1] **@typeCode**="SUBJ" subject (CONF:4751).
    b. This entryRelationship **SHALL** contain [1..1] **Blood Group Observation** (templateId:2.16.840.1.113883.10.20.5.6.71) (CONF:4752).
9. If the number of units reported for this component is 1, an entryRelationship element **SHALL** be present where the value of @typeCode is SUBJ, containing an Implicated Observation (templateId 2.16.840.1.113883.10.20.5.6.75). (CONF:4753).

Figure 36: Blood product transfused observation example

```
<!-- Blood Product Transfused Observation (HAR): one for each component
     reported -->
<observation classCode="OBS" moodCode="EVN">
  <templateId root="2.16.840.1.113883.10.20.5.6.74"/>
  <code codeSystem="2.16.840.1.113883.6.277"
        codeSystemName="cdcNHSN"
        code="3465-2"
        displayName="Product transfused"/>
  <statusCode code="completed"/>

  <!-- date this component was transfused and its expiration date -->
  <effectiveTime value="20100101">
     <high value="20100606"/>
  </effectiveTime>

  <!-- Number of units of this component type transfused -->
  <value xsi:type="INT" value="3"/>

  <!-- Codabar component code or ISBT-128 unit identifier, as in HI Report -->
  <participant typeCode="SBJ" contextControlCode="OP">
    <participantRole classCode="MANU">
      <playingEntity classCode="MAT">
        <code codeSystem="2.16.840.1.113883.6.18"
              codeSystemName="ISBT-128"
              code="E0150"
              displayName="RED BLOOD CELLS|CPD/450mL/refg"/>
      </playingEntity>
    </participantRole>
  </participant>

  <!-- Blood Group Observation for this transfused component -->
  <entryRelationship typeCode="SUBJ">
    <observation classCode="OBS" moodCode="EVN" negationInd="false">
      <templateId root="2.16.840.1.113883.10.20.5.6.71"/>
      ...
    </observation>
  </entryRelationship>

  <!-- Implicated Observation - was this component implicated
       in the adverse reaction? Required if the number of units
       is 1 -->
  <!--
  <entryRelationship typeCode="COMP">
    <observation classCode="OBS" moodCode="EVN" negationInd="false">
      <templateId root="2.16.840.1.113883.10.20.5.6.75"/>
      ...
    </observation>
  </entryRelationship>
  -->

</observation>
```

5.2.8 Bloodstream Infection Evidence Type Observation

[observation: templateId 2.16.840.1.113883.10.20.5.6.4 (closed)]

This observation records whether the bloodstream infection being reported was confirmed by a positive blood culture or inferred from clinical symptoms.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:2051).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:2052).
3. **SHALL** contain [1..1] **@negationInd**="false" (CONF:4216).
4. **SHALL** contain [1..1] **code** (CONF:11301).
    a. This code **SHALL** contain [1..1] **@code**="ASSERTION" Assertion (CodeSystem: 2.16.840.1.113883.5.4 HL7ActCode) (CONF:2053).
5. **SHALL** contain [1..1] **statusCode** (CONF:11302).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:2056).
6. **SHALL** contain [1..1] **value** (CONF:11303).
    a. This value **SHALL** contain [1..1] **@code**, which **SHALL** be selected from ValueSet 2.16.840.1.113883.13.7 NHSNBloodStreamInfectionEvidenceTypeCode **DYNAMIC** (CONF:2057).

Table 17: Bloodstream Infection Evidence Type Value Set

Value Set: NHSNBloodStreamInfectionEvidenceTypeCode 2.16.840.1.113883.13.7 Code System: cdcNHSN 2.16.840.1.113883.6.277		
Code	**Code System**	**Meaning**
1613-9	cdcNHSN	Laboratory-confirmed bloodstream infection

Figure 37: Bloodstream infection evidence type example

```
<observation classCode="OBS" moodCode="EVN" negationInd="false">
  <templateId root="2.16.840.1.113883.10.20.5.6.4"/>
  <code codeSystem="2.16.840.1.113883.5.4"
        code=”ASSERTION”/>
  <statusCode code=”completed”/>
  <value xsi:type=”CD”
         codeSystem=”2.16.840.1.113883.6.277”
         codeSystemName=”cdcNHSN”
         value=”1613-9”
         displayName=” Laboratory-confirmed bloodstream infection”/>
</observation>
```

5.2.9 Buttonhole Cannulation Observation

[observation: templateId 2.16.840.1.113883.10.20.5.6.96 (closed)]

This observation records whether the patient's fistula is accessed by buttonhole cannulation. This observation does not record a specific dialysis event but rather the technique in current use with the patient.

When buttonhole cannulation is used, set the value of `@negationInd` to `false`. When the buttonhole cannulation is not used, set the value of `@negationInd` to `true`.

1. **SHALL** contain [1..1] **`@classCode`**="OBS" Observation (CodeSystem: `HL7ActClass 2.16.840.1.113883.5.6`) (CONF:10260).
2. **SHALL** contain [1..1] **`@moodCode`**="EVN" Event (CodeSystem:HL7ActMood `2.16.840.1.113883.5.1001`) (CONF:10261).
3. **SHALL** contain **`@negationInd`** (CONF:10262).
4. **SHALL** contain [1..1] **`code`** (CONF:11311).
    a. This code **SHALL** contain [1..1] **`@code`**="ASSERTION" Assertion (CodeSystem: `ActCode 2.16.840.1.113883.5.4`) (CONF:10263).
5. **SHALL** contain [1..1] **`statusCode`** (CONF:11312).
    a. This statusCode **SHALL** contain [1..1] **`@code`**="completed" Completed (CodeSystem:HL7ActStatus `2.16.840.1.113883.5.14`) (CONF:10264).
6. **SHALL** contain [1..1] **`value`** (CONF:11313).
    a. This value **SHALL** contain [1..1] **`@code`**="2308-5" Buttonhole cannulation (CodeSystem: `cdcNHSN 2.16.840.1.113883.6.277`) (CONF:10265).

Figure 38: Buttonhole cannulation observation example

```
<!-- Buttonhole cannulation is used -->
<observation classCode="OBS" moodCode="EVN" negationInd=”true">
  <templateId root="2.16.840.1.113883.10.20.5.6.96"/>
  <code codeSystem="2.16.840.1.113883.5.4"
        code="ASSERTION"/>
  <statusCode code="completed"/>
  <value xsi:type="CD"
         codeSystem="2.16.840.1.113883.6.277"
         codeSystemName="cdcNHSN"
         code="2308-5"
         displayName="Buttonhole cannulation"/>
</observation>
```

5.2.10 Case Definition Relationship Observation

[`observation`: templateId `2.16.840.1.113883.10.20.5.6.78 (closed)`]

This observation records the certainty of the relationship between a clinical statement and the case-definition criteria.

1. **SHALL** contain @**`classCode`**="OBS" Observation (CodeSystem: `2.16.840.1.113883.5.6 HL7ActClass`) (CONF:4644).
2. **SHALL** contain [1..1] **`@moodCode`**="EVN" Event (CodeSystem: `2.16.840.1.113883.5.1001 HL7ActMood`) (CONF:4645).
3. **SHALL** contain [1..1] **`@negationInd`**="`false`" (CONF:4648).
4. **SHALL** contain [1..1] **`code`** (CONF:11315).
    a. This code **SHALL** contain [1..1] **`@code`**="2501-5" Case definition match (CodeSystem: `2.16.840.1.113883.6.277 cdcNHSN`) (CONF:4646).

5. **SHALL** contain [1..1] **statusCode** (CONF:11316).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:4647).
6. **SHALL** contain [1..1] **value** (CONF:4649).
    a. If the certainty of the match is known, the value of @xsi:type **SHALL** be CD and the value of @code **SHALL** be selected from Value Set 2.16.840.1.114222.4.11.3387 NHSNCertaintyCode **STATIC** 20101130. If a certainty-of-match value is not applicable (for example when the adverse reaction itself is not known or not coded), the value of @nullFlavor **SHALL** be NA 'Not applicable'. (CONF:4650).

Table 18: Certainty Value Set

Value Set: NHSNCertaintyCode 2.16.840.1.114222.4.11.3387 Code System: SNOMED CT 2.16.840.1.113883.6.96		
Code	**Code System**	**Meaning**
2931005	SNOMED CT	probable
60022001	SNOMED CT	possible
255545003	SNOMED CT	definite

Figure 39: Case definition relationship observation example

```
<observation classCode="OBS" moodCode="EVN">
  <templateId root="2.16.840.1.113883.10.20.5.6.78"/>
  <code codeSystem="2.16.840.1.113883.6.277"
        codeSystemName="cdcNHSN"
        code="2501-5"
        displayName="Case definition match"/>
  <statusCode code="completed"/>
  <value xsi:type="CD"
        codeSystem="2.16.840.1.113883.6.96"
        codeSystemName="SNOMED CT"
        code="255545003"
        displayName="definite"/>
</observation>
```

5.2.11 Central-line Insertion Practice Clinical Statement

[act: templateId 2.16.840.1.113883.10.20.5.6.57 (closed)]

This clinical statement records whether specified infection-prevention actions were performed in a specified sequence.

Recording sequence is expressed with the CDA entryRelationship/sequenceNumber feature. This follows the RIM modeling for definitions (e.g., of a protocol).

A @negationInd on each step expresses whether the step did [or did not] occur in sequence.

Below are the items, in sequence, to record within the Central-line Insertion Practice Report:

- preparation
  - hand hygiene
  - sterile barriers
  - skin solution[s] applied
- skin solution[s] had dried

1. **SHALL** contain [1..1] **@classCode**="ACT" Act (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:4264).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:4265).
3. **SHALL** contain [1..1] **@negationInd**="false" (CONF:4266).
4. **SHALL** contain [1..1] **code** (CONF:11320).
   a. This code **SHALL** contain [1..1] **@code**="3108-8" Central line insertion practice (CodeSystem: 2.16.840.1.113883.6.277 cdcNHSN) (CONF:4267).
5. **SHALL** contain [1..1] **entryRelationship** (CONF:4268) such that it
   a. **SHALL** contain [1..1] **@typeCode**="COMP" Has component (CodeSystem: 2.16.840.1.113883.5.1002 HL7ActRelationshipType) (CONF:4269).
   b. **SHALL** contain [1..1] **sequenceNumber** (CONF:11321).
      i. This sequenceNumber **SHALL** contain [1..1] **@value**="1" (CONF:4270).
   c. **SHALL** contain [1..1] **Central-line Insertion Preparation Organizer** (templateId:2.16.840.1.113883.10.20.5.6.8) (CONF:4271).
6. **SHALL** contain [1..1] **entryRelationship** (CONF:4272) such that it
   a. **SHALL** contain [1..1] **@typeCode**="COMP" Has component (CodeSystem: 2.16.840.1.113883.5.1002 HL7ActRelationshipType) (CONF:4273).
   b. **SHALL** contain [1..1] **sequenceNumber** (CONF:11322).
      i. This sequenceNumber **SHALL** contain [1..1] **@value**="2" (CONF:4274).
   c. **SHALL** contain [1..1] **Solutions Dried Observation** (templateId:2.16.840.1.113883.10.20.5.6.44) (CONF:4275).

Figure 40: Central-line insertion practice clinical statement example

```
<act moodCode="EVN" classCode="ACT" negationInd="false">
  <templateId root="2.16.840.1.113883.10.20.5.6.57"/>
  <code code="3108-8"
          codeSystem="2.16.840.1.113883.6.277"
          codeSystemName="cdcNHSN"
          displayName="Central line insertion practice"/>

  <entryRelationship typeCode="COMP">
    <sequenceNumber value="1"/>
    <organizer>
      <templateId root="2.16.840.1.113883.10.20.5.6.8"/>
      ...
    </organizer>
  </entryRelationship>

  <entryRelationship typeCode="COMP">
    <sequenceNumber value="2"/>
    <observation>
      <templateId root="2.16.840.1.113883.10.20.5.6.44"/>
      ...
     </observation>
  </entryRelationship>

</act>
```

5.2.12 Clinical Specialty Observation

[observation: templateId 2.16.840.1.113883.10.20.5.6.9 (closed)]

This observation records the occupation of a person under consideration for immunization. It is used in the Immunization Report as submitted for healthcare workers, if the occupation is physician or intern or resident.

The code system for clinical specialties is very large and is not reproduced with this guide. The NUCC Healthcare Provider Taxonomy codeset (codeSystem 2.16.840.1.113883.6.101) is available from http://www.wpc-edi.com/taxonomy.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:2294).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:2295).
3. **SHALL** contain [1..1] **@negationInd**="false" (CONF:2615).
4. **SHALL** contain [1..1] **code** (CONF:11326).
    a. This code **SHALL** contain [1..1] **@code**="3195-5" Clinical specialty (CodeSystem: 2.16.840.1.113883.6.277 cdcNHSN) (CONF:2296).
5. **SHALL** contain [1..1] **statusCode** (CONF:11327).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:2297).
6. **SHALL** contain [1..1] **value** (CONF:11328).

a. This value **SHALL** contain [1..1] **@code,** which **SHALL** be selected from ValueSet 2.16.840.1.114222.4.11.3191 NHSNClinicalSpecialtyCode **DYNAMIC** (CONF:2298).

Figure 41: Clinical specialty observation example

```
<observation classCode="OBS" moodCode="EVN" negationInd="false">
  <!-- Clinical Specialty Observation -->
  <templateId root="2.16.840.1.113883.10.20.5.6.9"/>
    <code code="3195-5"
          codeSystem="2.16.840.1.113883.6.277"
          codeSystemName="cdcNHSN"
          displayName="Clinical Specialty"/>
    <statusCode code="completed"/>
    <value xsi:type="CD"
          code="207RG0100X"
          codeSystem="2.16.840.1.113883.6.101"
          codeSystemName="NUCCProviderTaxonomy"
          displayName="Gastroenterology"/>
</observation>
```

5.2.13 Contraindicated Observation

[observation: templateId 2.16.840.1.113883.10.20.5.6.99 (closed)]

This observation records whether the target statement was contraindicated.

If the target statement was contraindicated, set the value of @negationInd to false. If the target statement was not contraindicated, set the value of @negationInd to true. If it is not known whether the target statement was contraindicated, set the value of @nullFlavor to UNK.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: HL7ActClass 2.16.840.1.113883.5.6) (CONF:16990).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: ActMood 2.16.840.1.113883.5.1001) (CONF:16991).
3. **SHALL** contain [1..1] **@negationInd OR** [1..1] **@nullFlavor** (CONF:16989)
4. **SHALL** contain [1..1] **code** (CONF:16993).
    a. This code **SHALL** contain [1..1] @**code**="ASSERTION" Assertion (CodeSystem: ActCode 2.16.840.1.113883.5.4) (CONF:16994).
5. **SHALL** contain [1..1] **statusCode** (CONF:16995).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem:HL7ActStatus 2.16.840.1.113883.5.14) (CONF:16996).
6. **SHALL** contain [1..1] **value** with @xsi:type=”CD” (CONF:16997).
    a. This value **SHALL** contain [1..1] @code ="410536001" Contraindicated (CodeSystem: SNOMED CT 2.16.840.1.113883.6.96) (CONF:16998).

Figure 42: Contraindicated Observation example

```
<!-- It is true (not negated) that the target statement was contraindicated -->
<observation classCode="OBS" moodCode="EVN" negationInd="false">
  <templateId root=" 2.16.840.1.113883.10.20.5.6.99"/>
  <code codeSystem="2.16.840.1.113883.5.4"
        code="ASSERTION"/>
  <statusCode code="completed"/>
  <value xsi:type="CD"
         code="410536001"
         codeSystem="2.16.840.1.113883.6.96"
         codeSystemName="SNOMED"
         displayName="Contraindicated"/>
</observation>
```

5.2.14 Criterion of Diagnosis Observation

[observation: templateId 2.16.840.1.113883.10.20.5.6.10 (closed)]

This observation records a criterion used in the diagnosis of the infection type or the identification of an adverse reaction. It appears within the Criterion of Diagnosis Organizer. In infection-type reports and HAR reports, it is used with the Criterion of Diagnosis vocabulary. In HAR reports, for certain types of adverse reaction, it is also used with the Antibodies vocabulary or with a string value, as described in the constraints for this template.

If the criterion was present, set the value of @negationInd to false. If the criterion was not present, set the value of @negationInd to true. (If none of the criteria to be reported is present, set the value of @negationInd to true for every criterion reported.)

The NHSN Protocol specifies which Criterion of Diagnosis Observations must appear in each report type for which they are required. Those rules do not form part of this template.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: HL7ActClass 2.16.840.1.113883.5.6) (CONF:2058).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: ActMood 2.16.840.1.113883.5.1001) (CONF:2059).
3. **SHALL** contain [1..1] **@negationInd** (CONF:2060).
4. **SHALL** contain [1..1] **code** (CONF:11337).
    a. This code **SHALL** contain [1..1] @**code**="ASSERTION" Assertion (CodeSystem: ActCode 2.16.840.1.113883.5.4) (CONF:2061).
5. **SHALL** contain [1..1] **statusCode** (CONF:11338).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem:HL7ActStatus 2.16.840.1.113883.5.14) (CONF:2062).
6. **SHALL** contain [1..1] **value** (CONF:2063).
    a. In an infection-type report, a criterion is reported as a code. The value of @xsi:type **SHALL** be CD and the value of @code **SHALL** be selected from Value Set 2.16.840.1.114222.4.11.3195 NHSNCriterionOfDiagnosisCode **DYNAMIC** (CONF:4786).
    b. In an Evidence of Infection (Dialysis) Report, (CONF:10908).
        i. To record a criterion of diagnosis as a code, the value of @xsi:type **SHALL** be CD and the value of @code **SHALL** be selected from Value Set

2.16.840.1.114222.4.11.3195 NHSNCriterionOfDiagnosisCode DYNAMIC (CONF:10909).

ii. To record a criterion not included in the NHSNCriterionOfDiagnosisCode value set, the value of @xsi:type **SHALL** be ST and a text value **SHALL** be present (CONF:10910).

c. In an HAR Report, this observation is used to record both criteria of diagnosis for the adverse reaction and antibodies detected. Antibodies are required by NHSN only for certain adverse reactions (CONF:4788).

i. To record a criterion of diagnosis or antibody as a code, the value of `@xsi:type` **SHALL** be `CD` and the value of `@code` **SHALL** be selected from `Value Set 2.16.840.1.114222.4.11.3195 NHSNCriterionOfDiagnosisCode` **DYNAMIC** or from Value Set `2.16.840.1.114222.4.11.3390 NHSNAntibodiesCode` **DYNAMIC**. Or, (CONF:4804).

ii. To record a pain for which the Criterion of Diagnosis value set contains no code, the value of `@xsi:type` **SHALL** be `CD` and the value of `@code` **SHALL** be `2517-1 Pain not otherwise specified` (CodeSystem: `2.16.840.1.113883.6.277`) and an `originalText` element **SHALL** be present detailing the pain. Or, (CONF:4805).

iii. To record a criterion not otherwise specified in the `NHSNCriterionOfDiagnosisCode` value set, or an antibody not specified in the `NHSNAntibodiesCode` value set, the value of `@xsi:type` **SHALL** be `ST` and a text value **SHALL** be present (CONF:4806).

Table 19: Criterion of Diagnosis Value Set (excerpt)

Value Set: NHSNCriterionOfDiagnosisCode 2.16.840.1.114222.4.11.3195
Code System: SNOMED CT 2.16.840.1.113883.6.96
or cdcNHSN 2.16.840.1.113883.6.277

The full table is shown in the hai_voc.xls file provided with this package.

Code	Code System	Meaning
2403-4	cdcNHSN	1 positive culture with ≥103 CFU/ml and < 105 CFU/ml with no more than 2 species of microorganisms
1942-2	cdcNHSN	>15 colonies cultured from IV cannula tip using semiquantitative culture method
1932-3	cdcNHSN	>=5% BAL cells w/bacteria
1938-0	cdcNHSN	4-fold rise in L. pneumophila antibody titer
1935-6	cdcNHSN	4-fold rise in paired sera for pathogen
128477000	SNOMED CT	Abscess
…		

Table 20: Antibodies Value Set

Value Set: NHSNAntibodiesCode 2.16.840.1.114222.4.11.3390 Code System: SNOMED CT 2.16.840.1.113883.6.96		
Code	**Code System**	**Meaning**
8362009	SNOMED CT	blood group antibody c
16878007	SNOMED CT	blood group antibody E
18150002	SNOMED CT	blood group antibody A,B
27626001	SNOMED CT	blood group antibody S
35068008	SNOMED CT	blood group antibody C
45321005	SNOMED CT	blood group antibody M
51941005	SNOMED CT	blood group antibody B
54546007	SNOMED CT	blood group antibody Jk^b^
62523009	SNOMED CT	blood group antibody e
63169007	SNOMED CT	blood group antibody Fy^a^
65589003	SNOMED CT	blood group antibody Fy^b^
73694008	SNOMED CT	blood group antibody A
83404001	SNOMED CT	blood group antibody K
85988008	SNOMED CT	blood group antibody Jk^a^
88341002	SNOMED CT	blood group antibody k
112162009	SNOMED CT	blood group antibody D

Figure 43: Criterion of diagnosis observation examples

```
<observation classCode="OBS" moodCode="EVN" negationInd="false">
    <templateId root="2.16.840.1.113883.10.20.5.6.10"/>
    <code codeSystem="2.16.840.1.113883.5.4" code=″ASSERTION"/>
    <statusCode code="completed"/>
    <value xsi:type="CD"
           codeSystem="2.16.840.1.113883.6.96"
           codeSystemName="SNOMED"
           code="255320000"
           displayName="Purulent drainage"/>
</observation>

<observation classCode="OBS" moodCode="EVN" negationInd="true">
    <templateId root="2.16.840.1.113883.10.20.5.6.10"/>
    <code codeSystem="2.16.840.1.113883.5.4" code="ASSERTION"/>
    <statusCode code="completed"/>
    <value xsi:type="CD"
           codeSystem="2.16.840.1.113883.6.96"
           codeSystemName="SNOMED"
           code="386661006"
           displayName="Fever"/>
    <!-- In the EOID and HAR Reports, if there is no applicable
         coded value, a text string can be used:
    <value xsi:type="ST">An itchy sensation</value>
    -->
</observation>
```

5.2.15 Death Observation in an Infection-type Report

[`observation`: templateId `2.16.840.1.113883.10.20.5.6.12 (closed)`]

This observation records whether the patient died and, if so, whether the infection being recorded contributed to that death.

If the patient died, set the value of `@negationInd` to `false`. If the patient did not die, set the value of `@negationInd` to `true`.

If the patient died, the Death Observation must also indicate whether the infection contributed to the death using an `entryRelationship` element containing an Infection Contributed to Death Observation. An `inversionInd` attribute on this `entryRelationship` element indicates that it should be interpreted as if the roles of the source and target entries were reversed. Thus, the observation reports whether the infection "supported" (contributed to) the death. The `CAUS` value does not have the force of "cause of death" on a death certificate; it indicates that the infection is causal or contributory to the death.

7. **SHALL** contain [1..1] **`@classCode`**`="OBS"` Observation (CodeSystem: `HL7ActClass 2.16.840.1.113883.5.6`) (CONF:2081).
8. **SHALL** contain [1..1] **`@moodCode`**`="EVN"` Event (CodeSystem: `ActMood 2.16.840.1.113883.5.1001`) (CONF:2082).
9. **SHALL** contain [1..1] **`@negationInd`** (CONF:2083).

10. **SHALL** contain [1..1] **code** (CONF:11339).
    a. This code **SHALL** contain [1..1] @**code**="ASSERTION" Assertion (CodeSystem: ActCode 2.16.840.1.113883.5.4) (CONF:2084).
11. **SHALL** contain [1..1] **statusCode** (CONF:11340).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem:HL7ActStatus 2.16.840.1.113883.5.14) (CONF:2085).
12. **SHALL** contain [1..1] **value** with @xsi:type="CD" (CONF:11341).
    a. This value **SHALL** contain [1..1] @code ="419099009" Dead (CodeSystem: SNOMEDCT 2.16.840.1.113883.6.96) (CONF:2086).
13. If the patient died, an entryRelationship element **SHALL** be present where the value of @typeCode is CAUS (causal or contributory) and the value of @inversionInd is true. This entryRelationship **SHALL** contain an Infection Contributed to Death Observation (templateId 2.16.840.1.113883.10.20.5.6.22). If the infection contributed to death, set the value of entryRelationship/@negationInd to false. If the infection did not contribute to the death, set the value of @negationInd to true (CONF:2599).

Figure 44: Death observation example

```
<!-- "Dead" is not negated = patient died -->
<observation classCode="OBS" moodCode="EVN" negationInd="false">
  <templateId root="2.16.840.1.113883.10.20.5.6.12"/>
  <code codeSystem="2.16.840.1.113883.5.4"
        code="ASSERTION"/>
  <statusCode code="completed"/>
  <value xsi:type="CD"
         code="419099009"
         codeSystem="2.16.840.1.113883.6.96"
         codeSystemName="SNOMED"
         displayName="Dead"/>
  <!-- The infection did contribute to the death (causality is not negated) -->
  <entryRelationship typeCode="CAUS" inversionInd="true" negationInd="false">
    <observation classCode="OBS" moodCode="EVN">
      <templateId root="2.16.840.1.113883.10.20.5.6.22"/>
      ...
    </observation>
  </entryRelationship>
</observation>
```

5.2.16 Death Observation in an Evidence of Infection (Dialysis) Report

[observation: templateId 2.16.840.1.113883.10.20.5.6.89(closed)]

This observation records whether the outpatient died subsequent to the observation of an infection indicator.

When the patient died, set the value of @negationInd to false. When the patient did not die, set the value of @negationInd to true. When it is unknown whether the patient died, set the value of @nullFlavor to NI.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: HL7ActClass 2.16.840.1.113883.5.6) (CONF:10280).

2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: ActMood 2.16.840.1.113883.5.1001) (CONF:10281).
3. **SHALL** contain either @negationInd or @nullFlavor (CONF:10282).
4. **SHALL** contain [1..1] **code** (CONF:11342).
    a. This code **SHALL** contain [1..1] **@code**="ASSERTION" Assertion (CodeSystem: ActCode 2.16.840.1.113883.5.4) (CONF:10283).
5. **SHALL** contain [1..1] **statusCode** (CONF:11343).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem:HL7ActStatus 2.16.840.1.113883.5.14) (CONF:10284).
6. **SHALL** contain [1..1] **value with @xsi:type="CD"** (CONF:11344).
    a. This value **SHALL** contain [1..1] **code**="419099009" Dead (CodeSystem: SNOMEDCT 2.16.840.1.113883.6.96) (CONF:10285).

Figure 45: Death observation in an evidence of infection (dialysis) report

```
<!-- There is no information about whether the patient has died -->
<observation classCode="OBS" moodCode="EVN" nullFlavor="NI">
  <templateId root=" 2.16.840.1.113883.10.20.5.6.89"/>
  <code codeSystem="2.16.840.1.113883.5.4"
        code="ASSERTION"/>
  <statusCode code="completed"/>
  <value xsi:type="CD"
         code="419099009"
         codeSystem="2.16.840.1.113883.6.96"
         codeSystemName="SNOMED"
         displayName="Dead"/>
</observation>
```

5.2.17 Diabetes Mellitus Observation

[observation: templateId 2.16.840.1.113883.10.20.5.2.2.7.7 (closed)]

This observation records whether the person had diabetes mellitus.

If the person did have diabetes, set the value of @negationInd to false. If the person did not have diabetes mellitus, set the value of @negationInd to true.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:2299).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:2300).
3. **SHALL** contain **@negationInd** (CONF:2301).
4. **SHALL** contain [1..1] **code** (CONF:11347).
    a. This code **SHALL** contain [1..1] **@code**="ASSERTION" Assertion (CodeSystem: 2.16.840.1.113883.5.4 HL7ActCode) (CONF:2302).
5. **SHALL** contain [1..1] **statusCode** (CONF:11348).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:2303).

6. **SHALL** contain [1..1] **value** with @xsi:type="CD" (CONF:11349).
    a. This value **SHALL** contain [1..1] **@code**="73211009" Diabetes mellitus (CodeSystem: 2.16.840.1.113883.6.96 SNOMEDCT) (CONF:2304).

Figure 46: Diabetes mellitus observation example

```
<observation classCode="OBS" moodCode="EVN" negationInd="false">
  <templateId root="2.16.840.1.113883.10.20.5.2.2.7.7"/>
  <code code="ASSERTION"
        codeSystem="2.16.840.1.113883.5.4"/>
  <statusCode code="completed"/>
  <value xsi:type="CD"
         code="73211009"
         codeSystem="2.16.840.1.113883.6.96"
         codeSystemName="SNOMED"
         displayName="Diabetes mellitus"/>
</observation>
```

5.2.18 Dialysis Patient Observation

[procedure: templateId 2.16.840.1.113883.10.20.5.6.85 (closed)]

This observation records that the patient is a maintenance hemodialysis patient. It is used in the Evidence of Infection (Dialysis) Report.

These reports are submitted for outpatients for whom an infection indicator is observed. The encounter is recorded in the CDA header as being an outpatient encounter.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: HL7ActClass 2.16.840.1.113883.5.6) (CONF:10342).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: ActMood 2.16.840.1.113883.5.1001) (CONF:10343).
3. **SHALL** contain **@negationInd**="false" (CONF:10344).
4. **SHALL** contain [1..1] **code** (CONF:11350).
    a. This code **SHALL** contain [1..1] **@code**="ASSERTION" Assertion (CodeSystem: ActCode 2.16.840.1.113883.5.4) (CONF:10345).
5. **SHALL** contain [1..1] **statusCode** (CONF:11351).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem:HL7ActStatus 2.16.840.1.113883.5.14) (CONF:10346).
6. **SHALL** contain [1..1] **value** with @xsi:type="CD" (CONF:11352).
    a. This value **SHALL** contain [1..1] **@code**="236435004" End-stage renal failure, on dialysis (CodeSystem: SNOMEDCT 2.16.840.1.113883.6.96) (CONF:10347).

In an Evidence of Infection (Dialysis) Report, NHSN protocol requires the following additional information.

7. **SHALL** contain [1..1] **entryRelationship** (CONF:10348) such that it
    a. **SHALL** contain [1..1] **@typeCode**="COMP" Has component (CodeSystem: HL7ActRelationshipType 2.16.840.1.113883.5.1002) (CONF:10349).
    b. **SHALL** contain [1..1] **Transient Patient Observation** (2.16.840.1.113883.10.20.5.6.91) (CONF:10350).

Figure 47: Dialysis patient observation example

```
<observation classCode="OBS" moodCode="EVN" negationInd="false">
  <templateId root="2.16.840.1.113883.10.20.5.6.85"/>
  <code code="ASSERTION"
        codeSystem="2.16.840.1.113883.5.4"/>
  <statusCode code="completed"/>

  <value xsi:type="CD"
         codeSystem="2.16.840.1.113883.6.96"
         codeSystemName="SNOMED CT"
         code="236435004"
         displayName="End-stage renal failure, on dialysis"/>

  <!-- Transient Patient Observation -->
  <entryRelationship typeCode="COMP">
    <observation classCode="OBS" moodCode="EVN" negationInd="false">
      <templateId root="2.16.840.1.113883.10.20.5.6.91"/>
      ...
    </observation>
  </entryRelationship>
</observation>
```

5.2.19 Drug -susceptibility Test Observation

[observation: templateId 2.16.840.1.113883.10.20.5.2.5.1.2 (closed)]

This observation uses two codes, one to identify the drug, and the other to record the pathogen's susceptibility to it. A LOINC code represents a methodless isolate drug-susceptibility test, an HL7 ObservationInterpretation code represents the susceptibility finding.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:2028).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:2029).
3. **SHALL** contain [1..1] **code** (CONF:11425).
    a. This code **SHALL** contain [1..1] **@code**, which **SHALL** be selected from ValueSet 2.16.840.1.113883.13.15 NHSNDrugSusceptibilityTestCode **DYNAMIC** (CONF:2030).
4. **SHALL** contain [1..1] **statusCode** (CONF:114256).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:2036).
5. **SHALL** contain [1..1] **interpretationCode** (CONF:2031).
    a. If the interpretation result is known, the value of interpretationCode/@code **SHALL** be selected from Value Set 2.16.840.1.113883.13.13 NHSNDrugSusceptibilityFindingCode **STATIC** 20080130. If the drug was not tested, the value of @nullFlavor **SHALL** be NASK. (CONF:2135).

Table 21: Drug-susceptibility Tests Value Set (excerpt)

Value Set: NHSNDrugSusceptibilityTestsCode 2.16.840.1.113883.13.15 Code System: LOINC 2.16.840.1.113883.6.1 The full table is shown in the hai_voc.xls file provided with this package.		
Code	**Code System**	**Meaning**
18860-7	LOINC	Amikacin Susc Islt
18862-3	LOINC	Amoxicillin+Clav Susc Islt
…	LOINC	…

Table 22: Drug-susceptibility Finding Value Set

Value Set: NHSNDrugSusceptibilityFindingCode 2.16.840.1.113883.13.13 Code System: HL7 ObservationInterpretation 2.16.840.1.113883.5.83		
Code	**Code System**	**Meaning**
S	HL7 ObservationInterpretation	Susceptible
I	HL7 ObservationInterpretation	Intermediate
R	HL7 ObservationInterpretation	Resistant

Figure 48: Drug-susceptibility test observation example

```
<observation classCode="OBS" moodCode="EVN">
  <templateId root=" 2.16.840.1.113883.10.20.5.2.5.1.2"/>
  <code codeSystem="2.16.840.1.113883.6.1"
        codeSystemName="LOINC"
        code="19000-9"
        displayName="Vancomycin Susc Islt"/>
  <statusCode code="completed"/>
  <interpretationCode codeSystem="2.16.840.1.113883.5.83"
                      codeSystemName="HL7 Observation Interpretation"
                      code="S"
                      displayName="susceptible"/>
</observation>
```

5.2.20 Duration of Labor Observation

[`observation`: templateId `2.16.840.1.113883.10.20.5.2.2.7.11 (closed)`]

This observation records the duration of labor in value/width. NHSN protocol requires that the duration be expressed as an integer.

1. **SHALL** contain [1..1] **`@classCode`**="`OBS`" Observation (CodeSystem: `2.16.840.1.113883.5.6 HL7ActClass`) (CONF:2305).
2. **SHALL** contain [1..1] **`@moodCode`**="`EVN`" Event (CodeSystem: `2.16.840.1.113883.5.1001 HL7ActMood`) (CONF:2306).
3. **SHALL** contain [1..1] **`code`** (CONF:11427).

a. This code **SHALL** contain [1..1] **@code**="289248003" Duration of labor (CodeSystem: 2.16.840.1.113883.6.96 SNOMEDCT) (CONF:2308).

4. **SHALL** contain [1..1] **statusCode** (CONF:11428).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:2309).
5. **SHALL** contain [1..1] **value** (CONF:2310).
    a. This value **SHALL** contain [1..1] **@xsi:type**="IVL_TS" (CONF:4536).
    b. This value **SHALL** contain [1..1] **width** (CONF:2311).
        i. This width **SHALL** contain **@value** (CONF:2312).
        ii. This width **SHALL** contain **@unit** (CONF:2313).
        iii. The value of width/@value **SHALL** be a non-negative real number representation the duration of labor in terms of the units specified in @unit. (CONF:2314).

Figure 49: Duration of labor observation example

```
<observation classCode="OBS" moodCode="EVN">
  <templateId root="2.16.840.1.113883.10.20.5.2.2.7.11"/>
  <code code="289248003"
        codeSystem="2.16.840.1.113883.6.96"
        codeSystemName="SNOMED"
        displayName="Duration of labor"/>
  <statusCode code="completed"/>
  <value xsi:type="IVL_TS">
    <width value="8" unit="h"/>
  </value>
</observation>
```

5.2.21 Eligibility Criterion Observation

[observation: templateId 2.16.840.1.113883.10.20.5.6.13 (closed)]

In the NHSN Influenza Immunization Report, the offer to immunize may have been made:

- to an inpatient who meets one or more of six criteria that put the person at high risk of contracting influenza. These risk factors are recorded as the criteria for making the offer to immunize.
- to a healthcare worker. The occupation of healthcare worker is recorded as the criterion for making the offer to immunize, and additional information about the person is required (see the Healthcare Service Location Value Set).

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:2645).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:2646).
3. **SHALL** contain [1..1] **code** (CONF:11431).

a. This code **SHALL** contain [1..1] **@code**="ASSERTION" Assertion (CodeSystem: 2.16.840.1.113883.5.4 HL7ActCode) (CONF:2648).

4. **SHALL** contain [1..1] **statusCode** (CONF:11432).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:2649).
5. **SHALL** contain [1..1] **value** (CONF:2650).
    a. To record the person meets a high-risk criterion for influenza,
        i. The value of value/@code **SHALL** be selected from Value Set 2.16.840.1.114222.4.11.3186 NHSNInfluenzaHighRiskCriteriaCode **DYNAMIC.** (CONF:10905)
        ii. @negationInd **SHALL** be present. (CONF:10906)
    b. To record that the person is a healthcare worker,
        i. The value of value/@code **SHALL** be 224363007 Employed 2.16.840.1.113883.6.96 SNOMED. (CONF:2652)
        ii. The value of observation/@negationInd **SHALL** be false. (CONF:10901)
        iii. A participant element **SHALL** be present where the value of @typeCode is SBJ and the value of participantRole/code/@code is 223366009 Healthcare worker 2.16.840.1.113883.6.96 SNOMED. (CONF:10902)
6. If the person is a healthcare worker,
    a. A participant element **SHALL** be present, representing the person's work location, where the value of @type is LOC and the value of participantRole/@code is selected from Value Set 2.16.840.1.113883.13.19 NHSNHealthcareServiceLocationCode **DYNAMIC**. (CONF:2652).
    b. An entryRelationship **SHALL** be present where the value of @typeCode is COMP **SHALL** be present containing a Patient Care Observation (templateId 2.16.840.1.113883.10.20.5.6.30). (CONF:2653).
    c. An entryRelationship **SHALL** be present where the value of @typeCode is COMP **SHALL** be present containing an Occupation Observation (templateId 2.16.840.1.113883.10.20.5.6.28). (CONF:2654).

Table 23: Influenza High-risk Criteria Value Set

Value Set: NHSNInfluenzaHighRiskCriteriaCode 2.16.840.1.114222.4.11.3186 Code System: cdcNHSN 2.16.840.1.113883.6.277		
Code	**Code System**	**Print Name**
2180-8	cdcNHSN	Child/adolescent aged 6 months - 18 years
2182-4	cdcNHSN	Adult aged ≥ 50 years
2181-6	cdcNHSN	Child/adolescent aged 6 months - 18 years AND receiving long-term aspirin therapy
2185-7	cdcNHSN	Condition/disease/history listed in the NHSN protocol as an indication for high risk of influenza.
2184-0	cdcNHSN	Pregnancy
2183-2	cdcNHSN	Resident of nursing home or other chronic-care facility
2186-5	cdcNHSN	Person who lives with or cares for children younger than 6 months of age
2187-3	cdcNHSN	Person over 6 months of age who has chronic health disorder(s) or compromised immune system

Figure 50: Eligibility criterion example

```
<entryRelationship typeCode="RSON">
<!-- Eligibility Criterion Observation -->
  <observation classCode="OBS" moodCode="EVN" negationInd="true">
    <templateId root="2.16.840.1.113883.10.20.5.6.13"/>
    <code codeSystem="2.16.840.1.113883.5.4"
          code="ASSERTION"/>
    <statusCode code="completed"/>
    <value xsi:type="CD"
          codeSystem="2.16.840.1.113883.6.277"
          codeSystemName="cdcNHSN"
          code="2180-8"
          displayName="Age: 6 months to 18 years"/>
  </observation>
</entryRelationship>
```

```
<entryRelationship typeCode="RSON">
<!-- Eligibility Criterion Observation -->
  <observation classCode="OBS" moodCode="EVN" negationInd="true">
    <templateId root="2.16.840.1.113883.10.20.5.6.13"/>
    <code codeSystem="2.16.840.1.113883.5.4"
          code="ASSERTION"/>
    <statusCode code="completed"/>
    <value xsi:type="CD"
          codeSystem="2.16.840.1.113883.6.277"
          codeSystemName="cdcNHSN"
          code="2181-6"
          displayName="Age: 6 months to18 years
                       AND receiving long-term aspirin therapy"/>
  </observation>
</entryRelationship>

...
<!-- Include observations for all values in
     Influenza High-Risk Criteria value set -->
...
```

5.2.22 Endoscope Used Clinical Statement

[procedure: templateId 2.16.840.1.113883.10.20.5.2.1.3 (closed)]

This clinical statement records whether an endoscope was used.

If an endoscope was used, set the value of @negationInd to false. If an endoscope was not used, set the value of @negationInd to true.

1. **SHALL** contain [1..1] **@classCode**="PROC" Procedure (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:2315).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:2316).
3. **SHALL** contain **@negationInd** (CONF:2317).
4. **SHALL** contain [1..1] **code** (CONF:11472).
    a. This code **SHALL** contain [1..1] **@code**="423827005" Endoscopy (CodeSystem: 2.16.840.1.113883.6.96 SNOMEDCT) (CONF:2318).

Figure 51: Endoscope used procedure example

```
<procedure classCode="PROC" moodCode="EVN">
  ...
  <entryRelationship typeCode="COMP">
    <procedure classCode="PROC" moodCode="EVN" negationInd="false">
      <templateId root="2.16.840.1.113883.10.20.5.2.1.3"/>
      <code codeSystem="2.16.840.1.113883.6.96"
            codeSystemName="SNOMED"
            code="423827005"
            displayName="Endoscopy"/>
    </procedure>
  </entryRelationship>
  ...
</procedure>
```

5.2.23 First Discovery Observation

[observation: templateId 2.16.840.1.113883.10.20.5.6.67 (closed)]

This observation records the process step in which an incident was first discovered, and when, where (participant), and how (methodCode) it was first discovered. If the incident is classed as a "near miss", i.e., the product was not actually transfused, a Recovery Type Observation is required recording whether it was a planned recovery or an unplanned recovery as defined by the NHSN protocol. Blood Product Disposition Observations are required to report what ultimately happened to the product involved in this incident.

In the Hemovigilance Incident Report, the time of the incident and the time of the discovery of the incident can be reported as precise times or as approximate times. To record that a time is approximate and the degree of approximation is unknown, use effectiveTime/center with width unknown.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:4381).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:4382).
3. **SHALL** contain [1..1] **code** (CONF:11489).
    a. This code **SHALL** contain [1..1] **@code**="3498-3" First discovery (CodeSystem: 2.16.840.1.113883.6.277 cdcNHSN) (CONF:4383).
4. **SHALL** contain [1..1] **statusCode** (CONF:11490).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:4384).
5. **SHALL** contain [1..1] **effectiveTime** (CONF:4386).
    a. The effectiveTime element **MAY** have a center element where @value records the approximate time, and in this case **SHALL** also have a width element where the value of @nullFlavor is UNK. (CONF:4523).
6. **SHALL** contain [1..1] **value** (CONF:11491).
    a. This value **SHALL** contain [1..1] **@code**, which **SHALL** be selected from ValueSet 2.16.840.1.114222.4.11.3325 NHSNHemovigilanceProcessCode **DYNAMIC** (CONF:4385).
7. **SHALL** contain [1..1] **participant** (CONF:4389).
    a. This participant **SHALL** contain [1..1] **@typeCode**="LOC" Location (CodeSystem: 2.16.840.1.113883.5.90 HL7ParticipationType) (CONF:4390).
    b. This participant **SHALL** contain [1..1] **participantRole** (CONF:4391).
        i. This participantRole **SHALL** contain [1..1] **@classCode**="SDLOC" Service delivery location (CodeSystem: 2.16.840.1.113883.5.110 HL7RoleClass) (CONF:4392).
        ii. This participantRole **SHALL** contain [1..1] **id** (CONF:4393).
            1. This id **SHALL** contain **@root** (CONF:4394).
            2. This id **SHALL** contain **@extension** (CONF:4395).

iii. This participantRole **SHALL** contain [1..1] **playingEntity** (CONF:4396).
    1. This playingEntity **SHALL** contain [1..1] **@classCode**="PLC" Place (CodeSystem: 2.16.840.1.113883.5.41 HL7EntityClass) (CONF:4397).
    2. This playingEntity **SHALL** contain [1..1] **code** (CONF:11492).
        a. This **code** This playingEntity **SHALL** contain [1..1] **@code**, which **SHALL** be selected from ValueSet 2.16.840.1.113883.13.19 NHSNHealthcareServiceLocationCode **DYNAMIC** (CONF:4398).

8. **SHALL** contain [1..1] **methodCode** (CONF:11488).
    a. This methodCode **SHALL** contain [1..1] **@code**, which **SHALL** be selected from ValueSet 2.16.840.1.114222.4.11.3329 NHSNHemovigilanceMethodOfDiscoveryCode **DYNAMIC** (CONF:4399).
9. **SHALL** contain [1..1] **entryRelationship** (CONF:4447) such that it
    a. **SHALL** contain [1..1] **@typeCode**="COMP" Has component (CodeSystem: 2.16.840.1.113883.5.1002 HL7ActRelationshipType) (CONF:4448).
    b. **SHALL** contain [1..1] **Recovery Type Observation** (templateId:2.16.840.1.113883.10.20.5.6.65) (CONF:4449).
10. **SHALL** contain [1..*] **entryRelationship** (CONF:4450) such that it
    a. **SHALL** contain [1..1] **@typeCode**="REFR" Refers to (CodeSystem: 2.16.840.1.113883.5.1002 HL7ActRelationshipType) (CONF:4451).
    b. **SHALL** contain [1..1] **Blood Product Disposition Observation** (templateId:2.16.840.1.113883.10.20.5.6.66) (CONF:4452).

Table 24: Hemovigilance Process Value Set

Value Set: NHSNHemovigilanceProcessCode 2.16.840.1.114222.4.11.3325 Code System: cdcNHSN 2.16.840.1.113883.6.277		
Code	**Code System**	**Print Name**
3137-7	cdcNHSN	Available for issue
3144-3	cdcNHSN	Miscellaneous incident
3143-5	cdcNHSN	Post-transfusion review/audit
3142-7	cdcNHSN	Product administration
3130-2	cdcNHSN	Product check-in
3141-9	cdcNHSN	Product issue
3139-3	cdcNHSN	Product manipulation
3138-5	cdcNHSN	Product selection
3136-9	cdcNHSN	Product storage
3131-0	cdcNHSN	Product/test request
3140-1	cdcNHSN	Request for pick-up
3132-8	cdcNHSN	Sample collection
3133-6	cdcNHSN	Sample handling
3134-4	cdcNHSN	Sample receipt

Value Set: NHSNHemovigilanceProcessCode 2.16.840.1.114222.4.11.3325 Code System: cdcNHSN 2.16.840.1.113883.6.277		
Code	**Code System**	**Print Name**
3135-1	cdcNHSN	Sample testing

Table 25: Hemovigilance Method of Discovery Value Set

Value Set: NHSNHemovigilanceMethodOfDiscoveryCode 2.16.840.1.114222.4.11.3329 Code System: cdcNHSN 2.16.840.1.113883.6.277		
Code	**Code System**	**Print Name**
3442-1	cdcNHSN	Communication from lab to floor
3443-9	cdcNHSN	Comparison of product label to patient information
3444-7	cdcNHSN	Comparison of product label to physician order
3445-4	cdcNHSN	Comparison of sample to paperwork
3446-2	cdcNHSN	Computer system alarm or warning
3447-0	cdcNHSN	Historical record / previous type check
3448-8	cdcNHSN	Human "lucky catch"
3449-6	cdcNHSN	Notification or complaint from floor (nurse, MD, etc.)
3450-4	cdcNHSN	Observation by staff of unit/plate/reagent/sample/equipment
3451-2	cdcNHSN	Patient transfusion reaction
3452-0	cdcNHSN	Repeat testing or sample re-testing
3453-8	cdcNHSN	Routine audit or supervisory review
3454-6	cdcNHSN	Visual inventory review
3455-3	cdcNHSN	Check of patient ID band
3456-1	cdcNHSN	Return of product/units to lab

Figure 52: First discovery observation example

```
<observation classCode="OBS" moodCode="EVN">
  <templateId root="2.16.840.1.113883.10.20.5.6.67"/>
  <code codeSystem="2.16.840.1.113883.6.277"
        codeSystemName="cdcNHSN"
        code="3498-3"
        displayName="First Discovery"/>
  <statusCode code="completed"/>
  <effectiveTime>
    <center value="20090909"/>
    <width nullFlavor="UNK"/>
  </effectiveTime>
  <value xsi:type="CD"
         codeSystem="2.16.840.1.113883.6.277"
         codeSystemName="cdcNHSN"
         code="3131-0"
         displayName="Product Test/Request"/>
         <!-- value set: NHSN Process Codes -->
  <methodCode codeSystem="2.16.840.1.113883.6.277"
              codeSystemName="cdcNHSN"
              code="3442-1"
              displayName="Communication from lab to floor"/>
              <!-- value set: NHSN Method of Discovery Codes -->

  <!-- the in-facility location and type -->
  <participant typeCode="LOC">
    <participantRole classCode="SDLOC">
      <!-- facility OID scopes the in-facility location -->
      <id root="2.16.840.1.113883.3.117.1.1.5.1.1" extension="9W"/>
      <playingEntity classCode="PLC">
        <code codeSystem="2.16.840.1.113883.6.259"
              codeSystemName="HL7 Healthcare Service Location Code"
              code="1029-8"
              displayName="Medical/Surgical Critical Care"/>
      </playingEntity>
    </participantRole>
  </participant>

  <!-- If a "Near Miss", Recovery Type -->
  <entryRelationship typeCode="COMP">
    <observation classCode="OBS" moodCode="EVN">
      <templateId root="2.16.840.1.113883.10.20.5.6.65"/>
      ...
    </observation>
  </entryRelationship>

  <!-- Blood Product Disposition  -->
  <entryRelationship typeCode="COMP">
    <observation classCode="OBS" moodCode="EVN">
      <templateId root="2.16.840.1.113883.10.20.5.6.66"/>
      ...
    </observation>
  </entryRelationship>
</observation>
```

5.2.24 Guidewire Used Clinical Statement

[procedure: templateId 2.16.840.1.113883.10.20.5.6.15 (closed)]

This clinical statement records whether the performance of a central-line exchange used a guidewire.

If the central line was exchanged over a guidewire, set the value of @negationInd to false. If the central line was not exchanged over a guidewire, set the value of @negationInd to true.

1. **SHALL** contain [1..1] **@classCode**="PROC" Procedure (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:2331).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:2332).
3. **SHALL** contain **@negationInd** (CONF:2333).
4. **SHALL** contain [1..1] **code** (CONF:11494).
    a. This code **SHALL** contain [1..1] **@code**="3121-1" Central line exchanged over guidewire (CodeSystem: 2.16.840.1.113883.6.277 cdcNHSN) (CONF:2334).

Figure 53: Guidewire used clinical statement example

```
<procedure moodCode="EVN" classCode="PROC" negationInd="false">
  <templateId root="2.16.840.1.113883.10.20.5.6.15"/>
  <code code="3121-1"
        codeSystem="2.16.840.1.113883.6.277"
        codeSystemName="cdcNHSN"
        displayName="Central line exchanged over guidewire"/>
</procedure>
```

5.2.25 HAI Severity Observation

[observation: templateId 2.16.840.1.113883.10.20.5.6.77 (closed)]

This observation records the severity of an adverse reaction. It is derived from the CCD Severity Observation template.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: HL7ActClass 2.16.840.1.113883.5.6) (CONF:4634).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: ActMood 2.16.840.1.113883.5.1001) (CONF:4635).
3. **SHALL** contain [1..1] **@negationInd**="false" (CONF:4636).
4. **SHALL** contain [1..1] **code** (CONF:11538).
    a. This code **SHALL** contain [1..1] @**code**="SEV" Severity (CodeSystem: ActCode 2.16.840.1.113883.5.4) (CONF:4637).
5. **SHALL** contain [1..1] **statusCode** (CONF:11539).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem:HL7ActStatus 2.16.840.1.113883.5.14) (CONF:4638).

6. **SHALL** contain [1..1] **value** (CONF:4639).
    a. If the severity is determined, the value of @xsi:type **SHALL** be CD and the value of @code **SHALL** be selected from Value Set 2.16.840.1.114222.4.11.3385 NHSNSeverityCode **STATIC** 20101130. If the severity is not determined, the value of @nullFlavor **SHALL** be NI 'No information' (CONF:4640).

Table 26: Severity Value Set

Value Set: NHSNSeverityCode 2.16.840.1.114222.4.11.3385 Code System: SNOMED CT 2.16.840.1.113883.6.96		
Code	**Code System**	**Meaning**
24484000	SNOMED CT	severe
371923003	SNOMED CT	mild to moderate
419620001	SNOMED CT	death
442452003	SNOMED CT	life threatening severity

Figure 54: Severity observation example

```
<observation classCode="OBS" moodCode="EVN">
  <templateId root="2.16.840.1.113883.10.20.1.55"/>
  <code codeSystem="2.16.840.1.113883.5.4"
        codeSystemName="HL7 ActCode"
        code="SEV"
        displayName="Severity observation"/>
  <statusCode code="completed"/>
  <value xsi:type="CD"
         codeSystem="2.16.840.1.113883.6.96"
         codeSystemName="SNOMED CT"
         code="419620001"
         displayName="Death"/>
</observation>
```

5.2.26 Hand Hygiene Performed Clinical Statement

[procedure: templateId 2.16.840.1.113883.10.20.5.6.16 (closed)]

This clinical statement reports whether hand hygiene was performed. It is one of the actions recorded in the first, preparatory step of in the Central-line Insertion Practice sequence.

If the preparation step included hand hygiene, set the value of @negationInd to false. If the preparation step did not include hand hygiene, set the value of @negationInd to true.

1. **SHALL** contain [1..1] **@classCode**="PROC" Procedure (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:2335).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:2336).
3. **SHALL** contain **@negationInd** (CONF:2337).

4. **SHALL** contain [1..1] **statusCode** (CONF:11536).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:2600).
5. **SHALL** contain [1..1] **code** (CONF:11537).
    a. This code **SHALL** contain [1..1] **@code**="3109-6" Hand hygiene (CodeSystem: 2.16.840.1.113883.6.277 cdcNHSN) (CONF:2338).

Figure 55: Hand hygiene performed clinical statement example

```
<component>
  <procedure moodCode="EVN" classCode="PROC" negationInd="false">
      <templateId root="2.16.840.1.113883.10.20.5.6.16"/>
      <code code="3109-6"
            codeSystem="2.16.840.1.113883.6.277"
            codeSystemName="cdcNHSN"
            displayName="Hand hygiene"/>
  </procedure>
</component>
```

5.2.27 Height Observation

[observation: templateId 2.16.840.1.113883.10.20.5.2.2.7.9 (closed)]

This observation records a body height.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:2339).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:2340).
3. **SHALL** contain [1..1] **@negationInd**="false" (CONF:4222).
4. **SHALL** contain [1..1] **code** (CONF:11540).
    a. This **code** **SHALL** contain [1..1] **@code**="50373000" Body height (CodeSystem: 2.16.840.1.113883.6.96 SNOMEDCT) (CONF:2341).
5. **SHALL** contain [1..1] **statusCode** (CONF:11541).
    a. This **statusCode** **SHALL** contain [1..1] **@code**="completed" (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:2342).
6. **SHALL** contain [1..1] **value** (CONF:2343).
    a. This value **SHALL** contain **@value** (CONF:2344).
    b. This value **SHALL** contain **@unit** (CONF:2345).
    c. The value of value/@xsi:type **SHALL** be PQ. (CONF:2603).
    d. The value of value/@value **SHALL** be a non-negative real number representing the body height in terms of the units specified in @unit. (CONF:2346).

Figure 56: Height observation example

```
<observation classCode="OBS" moodCode="EVN" negationInd="false">
  <templateId root="2.16.840.1.113883.10.20.5.2.2.7.9"/>
  <code code="50373000"
        codeSystem="2.16.840.1.113883.6.96"
        codeSystemName="SNOMED"
        displayName="Body Height"/>
  <statusCode code="completed"/>
  <value xsi:type="PQ" value="1.9" unit="m"/>
  </observation>
```

5.2.28 Hemovigilance Adverse Reaction Observation

[observation: templateId 2.16.840.1.113883.10.20.5.6.76 (closed)]

This observation records the details of a hemovigilance adverse reaction. It is derived from the CCD Reaction Observation template (templateId 2.16.840.1.113883.10.20.1.54).

The id element records an NHSN-generated id for the reaction. The code element records the type of reaction. The effectiveTime element records the date of the reaction. The participant element records the in-facility location where the reaction occurred. If the reaction is associated with a hemovigilance incident, the reference element records the id of that incident.

Subordinate observations record its severity, outcome, signs and symptoms, certainty of match with the case definition for the reaction type, and, if an infection reaction, pathogens found in the patient post-reaction, in the donor post-donation, and in the blood product post-transfusion.

If the reaction was associated with a hemovigilance incident, a reference element records the ID of the incident.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:4696).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:4697).
3. **SHALL** contain [1..1] **@negationInd**="false" (CONF:4700).
4. **MAY** contain [0..1] **id** (CONF:4699).
5. **SHALL** contain [1..1] **code** (CONF:11542).
    a. This code **SHALL** contain [1..1] **@code**, which **SHALL** be selected from ValueSet 2.16.840.1.114222.4.11.3391 NHSNAdverseReactionTypeCode **DYNAMIC** (CONF:4698).
6. **SHALL** contain [1..1] **statusCode** (CONF:11543).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:4797).
7. **SHALL** contain [1..1] **effectiveTime** (CONF:4701).
    a. If the time of the adverse reaction is not known, the value of @nullFlavor **SHALL** be NI (no information). (CONF:4702).
8. **SHALL** contain [1..1] **participant** (CONF:4704).

a. This participant **SHALL** contain [1..1] **@typeCode**="LOC" Location (CodeSystem: 2.16.840.1.113883.5.90 HL7ParticipationType) (CONF:4705).
b. This participant **SHALL** contain [1..1] **participantRole** (CONF:4706).
    i. This participantRole **SHALL** contain [1..1] **@classCode**="SDLOC" Service delivery location (CodeSystem: 2.16.840.1.113883.5.110 HL7RoleClass) (CONF:4707).
    ii. This participantRole **SHALL** contain [1..1] **id** (CONF:4708).
        1. This id **SHALL** contain **@root** (CONF:4709).
        2. This id **SHALL** contain **@extension** (CONF:4710).

9. **SHALL** contain [1..1] **entryRelationship** (CONF:4717) such that it
    a. **SHALL** contain [1..1] **@typeCode**="SUBJ" subject (CONF:4718).
    b. **SHALL** contain [1..1] **Severity Observation** (templateId:2.16.840.1.113883.10.20.5.6.77) (CONF:4719).
10. **SHALL** contain [1..1] **entryRelationship** (CONF:4720) such that it
    a. **SHALL** contain [1..1] **@typeCode**="CAUS" Causal or contributory (CodeSystem: 2.16.840.1.113883.5.1002 HL7ActRelationshipType) (CONF:4721).
    b. **SHALL** contain [1..1] **Outcome Observation** (templateId:2.16.840.1.113883.10.20.5.6.79) (CONF:4722).
11. **SHALL** contain [1..1] **entryRelationship** (CONF:4723) such that it
    a. **SHALL** contain [1..1] **@typeCode**="SUBJ" subject (CONF:4724).
    b. **SHALL** contain [1..1] **Case Definition Relationship Observation** (templateId:2.16.840.1.113883.10.20.5.6.78) (CONF:4725).
12. **SHALL** contain [1..1] **entryRelationship** (CONF:4726) such that it
    a. **SHALL** contain [1..1] **@typeCode**="SPRT" Supports (CodeSystem: 2.16.840.1.113883.5.1002 HL7ActRelationshipType) (CONF:4727).
    b. **SHALL** contain [1..1] **Criteria of Diagnosis Organizer** (templateId:2.16.840.1.113883.10.20.5.6.11) (CONF:4728).
13. If the adverse reaction was an infection (code 213315003, infection after transfusion), an entryRelationship **SHALL** be present where the value of @typeCode is COMP, containing a Patient Pathogens Organizer (templateId 2.16.840.1.113883.10.20.5.6.80). (CONF:4729).
14. If the adverse reaction was an infection (code 213315003, infection after transfusion), an entryRelationship **SHALL** be present where the value of @typeCode is REFR, containing a Donor and Donation Pathogens Organizer (templateId 2.16.840.1.113883.10.20.5.6.81). (CONF:4730).
15. **MAY** contain [0..1] **reference** (CONF:4711).
    a. This reference, if present, **SHALL** contain [1..1] **@typeCode**="REFR" Refers to (CodeSystem: 2.16.840.1.113883.5.1002 HL7ActRelationshipType) (CONF:4712).
    b. This reference, if present, **SHALL** contain [1..1] **externalAct** (CONF:4713).
        i. This externalAct **SHALL** contain [1..1] **id** (CONF:4714).
            1. This id **SHALL** contain **@root** (CONF:4715).

2. This id **SHALL** contain **@extension** (CONF:4716).

Table 27: Hemovigilance Adverse Reaction Type Value Set

Value Set: NHSNAdverseReactionTypeCode 2.16.840.1.114222.4.11.3391 Code System: SNOMED CT 2.16.840.1.113883.6.96 or cdcNHSN 2.16.840.1.113883.6.277		
Code	**Code System**	**Meaning**
35633007	SNOMED CT	transfusion reaction due to excess volume
73162004	SNOMED CT	posttransfusion purpura (disorder)
83250000	SNOMED CT	delayed hemolytic transfusion reaction
213315003	SNOMED CT	infection after transfusion
389078002	SNOMED CT	transfusion related acute lung injury
2505-6	cdcNHSN	Acute hemolytic transfusion reaction (AHTR)
2506-4	cdcNHSN	Allergic reaction, including anaphylaxis
2507-2	cdcNHSN	Delayed serologic transfusion reaction (DSTR)
2508-0	cdcNHSN	Febrile non-hemolytic transfusion reaction (FNHTR)
2509-8	cdcNHSN	Iatrogenic hypotension
2510-6	cdcNHSN	Transfusion associated dyspnea (TAD)
2511-4	cdcNHSN	Transfusion associated graft vs. host disease (TA-GVHD)
2512-2	cdcNHSN	Unknown pathophysiology

Figure 57: Hemovigilance adverse reaction observation example

```
<entryRelationship typeCode="MFST" inversionInd="true">
  <observation classCode="OBS" moodCode="EVN">
    <templateId root="2.16.840.1.113883.10.20.5.6.76"/>
    <code codeSystem="2.16.840.1.113883.5.4"
          code="ASSERTION"/>
    <statusCode code="completed"/>

    <!-- date/time of adverse reaction -->
    <effectiveTime value="20100202"/>

    <!-- type of adverse reaction -->
    <value xsi:type="CD"
          codeSystem="2.16.840.1.113883.6.96"
          codeSystemName="SNOMED CT"
          code="79337003"
          displayName="Allergic reaction, including anaphylaxis"/>

    <!-- in-facility location where the reaction occurred -->
    <participant typeCode="LOC" contextControlCode="OP">
      <participantRole classCode="SDLOC">
        <!-- scoped by facility -->
        <id root="2.16.840.1.113883.3.117.1.1.5.1.1" extension="9W"/>
      </participantRole>
    </participant>
```

```
    <!-- Hemovigilance Severity Observation -->
    <entryRelationship typeCode="SUBJ">
      <observation classCode="OBS" moodCode="EVN">
        <templateId root="2.16.840.1.113883.10.20.1.55"/>
        ...
      </observation>
    </entryRelationship>

    <!-- eventual outcome of the adverse reaction -->
    <entryRelationship typeCode="CAUS">
      <observation classCode="OBS" moodCode="EVN">
        <templateId root="2.16.840.1.113883.10.20.5.6.79"/>
        ...
      </observation>
    </entryRelationship>

    <!-- Case definition match: relation between reaction
         and case-definition criteria -->
    <entryRelationship typeCode="SUBJ">
      <observation classCode="OBS" moodCode="EVN">
        <templateId root="2.16.840.1.113883.10.20.5.6.78"/>
        ...
      </observation>
    </entryRelationship>

    <!-- Criteria of Diagnosis Organizer -->
    <entryRelationship typeCode="SPRT">
      <organizer classCode="CLUSTER" moodCode="EVN">
        <templateId root="2.16.840.1.113883.10.20.5.6.11"/>
         ...
      </organizer>
    </entryRelationship>

    <!-- Organism Type -->
    <entryRelationship typeCode="COMP">
      <observation classCode="OBS" moodCode="EVN" negationInd="true">
        <templateId root="2.16.840.1.113883.10.20.5.6.80"/>
        ...
      </observation>
    </entryRelationship>

    <!-- if reaction associated with a hemovigilance report, what is its ID -->
    <reference typeCode="REFR">
      <externalAct>
        <id root="2.16.840.1.113883.3.117.1.1.5.2.1.1.5" extension="93"/>
      </externalAct>
    </reference>

  </observation>
</entryRelationship>
```

5.2.29 History of Object Presence Observation

[observation: templateId 2.16.840.1.113883.10.20.5.6.56 (closed)]

This observation records a fact about the history of an object's presence. The observation is intended for use within a context that specifies the object.

When used within the Urinary Catheter Observation (templateId 2.16.840.1.113883.10.20.5.6.48), if the patient had a urinary catheter removed within 48 hours, set the value of @negationInd to false. If the patient did not have a urinary catheter removed within 48 hours, set the value of @negationInd to true.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:4209).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:4210).
3. **SHALL** contain **@negationInd** (CONF:4211).
4. **SHALL** contain [1..1] **code** (CONF:11547).
    a. This code **SHALL** contain [1..1] **@code**="ASSERTION" Assertion (CodeSystem: 2.16.840.1.113883.5.4 HL7ActCode) (CONF:4212).
5. **SHALL** contain [1..1] **statusCode** (CONF:11548).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:4213).
6. **SHALL** contain [1..1] **value with @xsi:type="CD"** (CONF:11549).
    a. This value **SHALL** contain [1..1] **@code**="2404-2" Removed within 48 hours prior (CodeSystem: 2.16.840.1.113883.6.277 cdcNHSN) (CONF:4214).

Figure 58: History of object presence observation example

```
<observation classCode="OBS" moodCode="EVN" negationInd="false">
      <templateId root="2.16.840.1.113883.10.20.5.6.56"/>
      <code codeSystem="2.16.840.1.113883.5.4"
            code="ASSERTION"/>
      <statusCode code="completed"/>
      <value xsi:type="CD"
             codeSystem="2.16.840.1.113883.6.277"
             codeSystemName="cdcNHSN"
             code="2404-2"
             displayName="Removed within 48 hours prior"/>
    </observation>
```

5.2.30 Hospital Admission Clinical Statement

[act: templateId 2.16.840.1.113883.10.20.5.6.88 (closed)]

This clinical statement records whether the outpatient was hospitalized. A causal relationship to the infection indicator(s) is not recorded.

When the outpatient was hospitalized, set the value of act/@negationInd to false. When the outpatient was not hospitalized, set the value of act/@negationInd to true. When it is not known whether the outpatient was hospitalized, set the value of act/@nullFlavor to UNK.

1. **SHALL** contain [1..1] **@classCode**="ACT" (CodeSystem: HL7ActClass 2.16.840.1.113883.5.6) (CONF:10286).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: ActMood 2.16.840.1.113883.5.1001) (CONF:10287).
3. **SHALL** contain [1..1] **@negationInd or** [1..1] **@nullFlavor** (CONF:10288).
4. **SHALL** contain [1..1] **code** (CONF:11550).
    a. This **code SHALL** contain [1..1] **@code**="32485007" Hospital Admission (CodeSystem: SNOMEDCT 2.16.840.1.113883.6.96) (CONF:10290).

Figure 59: Hospital admission act example

```
<act classCode="ACT" moodCode="EVN" negationInd="false">
  <templateId root=" 2.16.840.1.113883.10.20.5.6.88"/>
  <code codeSystem="2.16.840.1.113883.6.96"
        codeSystemName="SNOMED"
        code="32485007"
        displayName="Hospital Admission"/>
</act>
```

5.2.31 Immunization Clinical Statement

[substanceAdministration: templateId 2.16.840.1.113883.10.20.5.6.17 (closed)]

The record of immunization—after an offer to immunize has been accepted—is required in the Immunization Report whether or not the immunization is actually administered, and conforms to the HITSP template for an immunization entry. The HITSP template is, in turn, a set of constraints on the CCD model for an immunization. The HITSP and CCD conformance statements are shown in the appendix on HITSP and CCD Constraints. The constraints below record only this guide's additional constraints on that model.

> The immunization is recorded as a substanceAdministration element where the value of @moodCode is EVN. If the immunization was not administered, the value of @negationInd is true. [HITSP]
>
> In addition to the templateId representing conformance to this guide, two templateIds are required: 2.16.840.1.113883.3.88.11.83.13 representing conformance to HITSP Immunization Entry, and, through it, 2.16.840.1.113883.10.20.1.24 representing conformance to CCD Medication Template. [HITSP]
>
> HITSP requires that immunization be recorded using an HL7 Vaccines Administered (CVX) code. [HITSP]
>
> CCD requires that an originalText element be present. [CCD]
>
> HITSP requires an id element (its value can be null) and a statusCode element with the value completed. [HITSP]

The consumable element is required by CDA.

The details required by NHSN differ somewhat depending on whether the person was an inpatient and on whether the immunization was administered. The table Inpatient and Healthcare Worker Immunization Details compares the inpatient and healthcare worker immunization offer reports.

In the HITSP model, `effectiveTime` and `routeCode` are optional. In this template, if the immunization was administered and the administration was onsite, they are required. (Administration is implicitly onsite for inpatients; for healthcare workers, whether administration was onsite or offsite is explicitly recorded.)

NHSN infers the vaccine manufacturer and type (live attenuated vaccine or inactivated vaccine) from the product code.

If the immunization was administered and was administered onsite, NHSN records the name, facility ID, and job title of the person who performed the immunization and a Vaccine Information Statement Type Observation.

The `performer` element records the facility ID and name of the person who performed the immunization.

If the person immunized is a healthcare worker, additional information is required.

1. An Immunization **SHALL** be represented conformant to the HITSP Immunization Entry (`templateId 2.16.840.1.113883.3.88.11.83.13`). (CONF:2658).
2. **SHALL** contain [1..1] **`code`** (CONF:11551).
    a. This code **SHALL** contain [1..1] **`@code`**="88" Influenza virus vaccine NOS (CodeSystem: `2.16.840.1.113883.6.59 CDC Vaccine Code`) (CONF:2659).
    b. This code **SHALL** contain [1..1] **`originalText`**="Influenza virus vaccine" (CONF:2660).
3. If the immunization was administered and was administered onsite, an `effectiveTime` element **SHALL** be present representing the date administered. (CONF:2661).
4. If the immunization was administered and was administered onsite, a `routeCode` element **SHALL** be present, where the value of code is selected from Value Set `2.16.840.1.114222.4.11.3190 NHSNRouteOfAdministrationCode` **STATIC** 20090130. (CONF:2662).
5. A `consumable/manufacturedProduct` element **SHALL** be present where the value of `templateId/@root` is `2.16.840.1.113883.10.20.1.53` (CCD Product Template). (CONF:2663).
6. If the immunization was not administered or was administered offsite, the `consumable/manufacturedProduct/manufacturedMaterial` element **SHALL NOT** contain a `code` element. (CONF:2664).

If the immunization was administered and was administered onsite

7. If the immunization was administered and was administered onsite, the `consumable/manufacturedProduct/manufacturedMaterial` **SHALL** contain a `code` element where the value of `@code` **SHOULD** be selected from Value Set `2.16.840.1.114222.4.11.3189 NHSNVaccineTypeCode` **DYNAMIC**. (CONF:2665).
8. If the immunization was administered and was administered onsite, the `consumable/manufacturedProduct/manufacturedMaterial` element **SHALL** contain a `lotNumberText` element representing the lot number of the vaccine. (CONF:2666).

9. If the immunization was administered and was administered onsite, a `performer` element **SHALL** be present where the value of `assignedEntity/id` represents the facility ID of the person who performed the immunization and the value of `assignedPerson/name` represents that person's name. (CONF:2668).
10. If the immunization was administered and was administered onsite, an `entryRelationship` element **SHALL** be present containing a Vaccine Information Statement Type Observation (`templateId 2.16.840.1.113883.10.20.5.6.49`). (CONF:2671).

If the immunization was administered and the person is a healthcare worker

11. If the immunization was administered and the person immunized is a healthcare worker, a `participant` element **SHALL** be present, recording whether the immunization was administered onsite or offsite, where the value of `@typeCode` is `LOC` and the value of `participantRole/@classCode` is `SDLOC` and the value of `code/@code` is selected from `2.16.840.1.114222.4.11.3188 NHSNAdministrationLocationType` **STATIC** 20090625. (CONF:2672).
12. If the immunization was administered and the person immunized is a healthcare worker, an `entryRelationship` element **SHALL** be present containing a Seasons Immunized Observation (`templateId 2.16.840.1.113883.10.20.5.6.40`). (CONF:2673).
13. If the immunization was administered and the person immunized is a healthcare worker, an `entryRelationship` element **SHALL** be present where the value of `@typeCode` is `MFST`, for each adverse reaction listed in Value Set `NHSNAdverseReactionCode 2.16.840.1.114222.4.11.3193` **DYNAMIC**, containing an Adverse Reaction Type Observation (`templateId 2.16.840.1.113883.10.20.5.6.2`). One additional such `component` element **MAY** be present recording an uncoded (text) reaction. (CONF:2674).

Table 28: Route of Administration Value Set

Value Set: NHSNRouteOfAdministrationCode 2.16.840.1.114222.4.11.3190 Code System: HL7 RouteOfAdministration 2.16.840.1.113883.12.162		
Code	**Code System**	**Print Name**
IM	HL7 RouteOfAdministration	Intramuscular
SC	HL7 RouteOfAdministration	Subcutaneous
IN	HL7 RouteOfAdministration	Intranasal

Table 29: Vaccine Type Value Set

Value Set: NHSNVaccineTypeCode 2.16.840.1.114222.4.11.3189 Code System: RxNorm 2.16.840.1.113883.6.88		
Code	**Code System**	**Print Name**
805510	RxNorm	Afluria®
805516	RxNorm	Fluarix® 2008-2009 formula
805528	RxNorm	Flulaval®
805548	RxNorm	Flumist®
805560	RxNorm	Fluvirin®
545246	RxNorm	Fluzone®

Table 30: Administration Location Type Value Set

Value Set: NHSNAdministrationLocationTypeCode 2.16.840.1.114222.4.11.3188 Code System: cdcNHSN 2.16.840.1.113883.6.277		
Code	**Code System**	**Print Name**
9170-2	cdcNHSN	offsite
9169-4	cdcNHSN	onsite

Figure 60: Immunization clinical statement example

```
<entryRelationship typeCode="COMP">
  <substanceAdministration classCode="SBADM" moodCode="EVN"
            negationInd="false">
    <templateId root="2.16.840.1.113883.10.20.5.6.17"/> <!-- constraints of
                  this guide-->
    <!-- HITSP Immunization Entry -->
    <templateId root="2.16.840.1.113883.3.88.11.83.13"/>
    <!-- CCD Medication Template -->
    <templateId root="2.16.840.1.113883.10.20.1.24"/>

    <id nullFlavor="NI"/>
    <code codeSystem="2.16.840.1.113883.6.59"
      codeSystemName="CDC Vaccine Codes"
      code="88"
      displayName="Influenza virus vaccine NOS">
      <originalText>Influenza virus vaccine</originalText>
    </code>

    <statusCode code="completed"/>
    <effectiveTime value="20080518"/>

    <routeCode codeSystem="2.16.840.1.113883.12.162"
      codeSystemName="HL7 RouteOfAdministration"
      code="IM"
      displayName="Intramuscular injection"/>
```

```
    <consumable>
      <manufacturedProduct>
        <!-- CCD Product template -->
        <templateId root="2.16.840.1.113883.10.20.1.53"/>
        <manufacturedMaterial>
          <code xsi:type="CE"
               codeSystem="2.16.840.1.113883.6.88"
               codeSystemName="RxNorm"
               code="805510"
               displayName="Aflura"/>
          <lotNumberText>23-b</lotNumberText>
        </manufacturedMaterial>
      </manufacturedProduct>
    </consumable>

    <performer>
      <assignedEntity>
      <id root="2.16.840.1.113883.3.117.1.1.5.1.1.2" extension="24242424"/>
        <assignedPerson>
          <name>
            <prefix>RN</prefix>
            <family>Nightingale</family>
            <given>Nancy</given>
          </name>
        </assignedPerson>
      </assignedEntity>
    </performer>

    <entryRelationship typeCode="COMP">
      <observation classCode="OBS" moodCode="EVN" negationInd="false">
        <templateId root="2.16.840.1.113883.10.20.5.6.49"/>
        ...
    </entryRelationship>
  <!-- end of the immunization detail (the result of the offer) -->
  </substanceAdministration>
</entryRelationship>
```

Figure 61: Vaccine participant example – recording location of administration

```
  <participant typeCode="LOC">
    <participantRole classCode="SDLOC">
        <code codeSystem="2.16.840.1.113883.6.277"
              codeSystemName="cdcNHSN"
              code="9169-4"
              displayName="onsite"/>
    </participantRole>
  </participant>
```

5.2.32 Immunization Offer Clinical Statement

[substanceAdministration: templateId 2.16.840.1.113883.10.20.5.6.18 (closed)]

The Immunization Offer records whether an offer of influenza vaccination was made, with the eligibility criteria (why the offer was considered). Contained within it, if the offer was made, is the immunization itself, whether declined (with reasons) or accepted (with details).

If the offer was made, set the value of @negationInd to false. If the offer was not made, set the value of @negationInd to true. The value of @negationInd will normally be false: the NHSN Healthcare Worker Influenza Vaccination Report is submitted after an offer to immunize has been made. However, the NHSN Inpatient Influenza Vaccination Report records whether or not an offer was made, and thus could record that (despite eligibility for immunization) the offer was not made; this would be an unusual circumstance.

Respecting some differences in the use case, the IHE Immunization entry is not used for the NHSN Immunization Offer. It is used for the actual Immunization (templateId 2.16.840.1.113883.10.20.5.6.17).

> The Immunization Offer is the offer of an otherwise unspecified influenza vaccination. The code is selected from the HL7 Vaccines Administered (CVX) codes. [HITSP C83]

1. **SHALL** contain [1..1] **@moodCode**="RQO" Request or Offer (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:2675).
2. **SHALL** contain [1..1] **statusCode** (CONF:11552).
    a. This statuscode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:2676).
3. **SHALL** contain **@negationInd** (CONF:3024).
4. **SHALL** contain [1..1] **code** (CONF:11553).
    a. This code **SHALL** contain [1..1] **@code**="88" Influenza virus vaccine NOS (CodeSystem: 2.16.840.1.113883.6.59 CDC Vaccine Code) (CONF:2677).
5. **SHALL** contain [1..1] consumable (CONF:16160)
    a. This consumable **SHALL** contain [1..1] manufacturedProduct (CONF:16161)
        i. This manufacturedProduct **SHALL** contain [1..1] manufacturedMaterial (CONF:16162)
            1. This manufacturedMaterial **SHALL NOT** contain [0..0] code (CONF:2678).
6. If the reason for making the offer to immunize is that the person is a healthcare worker, one entryRelationship element **SHALL** be present where the value of @typeCode is RSON containing an Eligibility Criterion Observation (templateId 2.16.840.1.113883.10.20.5.6.13). (CONF:2679).
7. If the reason for making the offer to immunize is that the person is an inpatient who meets one or more high-risk criteria for influenza, an entryRelationship element **SHALL** be present, where the value of @typecode is RSON, for each term in Value Set 2.16.840.1.114222.4.11.3186 NHSNInfluenzaHighRiskCriteriaCode **DYNAMIC**, containing an Eligibility Criterion Observation (templateId

2.16.840.1.113883.10.20.5.6.13). (See Influenza High-Risk Criteria Value Set table.) (CONF:2680).

8. **SHALL** contain [1..1] **entryRelationship** (CONF:2681).
    a. This entryRelationship **SHALL** contain [1..1] **@typeCode**="COMP" Has component (CodeSystem: 2.16.840.1.113883.5.1002 HL7ActRelationshipType) (CONF:2682).
    b. This entryRelationship **SHALL** contain [1..1] **Offer Declined Observation** (templateId:2.16.840.1.113883.10.20.5.6.29) (CONF:2683).

Figure 62: Immunization offer clinical statement example

```
<!-- The Immunization offer. The offer was made -->
<entry typeCode="DRIV">
  <substanceAdministration classCode="SBADM" moodCode="RQO"
          negationInd="false">
    <templateId root="2.16.840.1.113883.10.20.5.6.18"/>
    <code codeSystem="2.16.840.1.113883.6.59"
          codeSystemName="CDC Vaccine Codes"
          code="88"
          displayName="Influenza virus vaccine NOS"/>
    <statusCode code="completed"/>

  <consumable>
    <manufacturedProduct>
      <manufacturedMaterial/>
    </manufacturedProduct>
  </consumable>

<!-- here are the reasons for offering the immunization -->
    <entryRelationship typeCode="RSON">
    <!-- Eligibility Criterion Observation -->
      <observation classCode="OBS" moodCode="EVN" negationInd="true">
      <templateId root="2.16.840.1.113883.10.20.5.6.13"/>
      ...
    <entryRelationship>
    ...

    <entryRelationship typeCode="COMP">
    <!-- Offer Declined Observation -->
      <observation classCode="OBS" moodCode="EVN" negationInd="true">
      <templateId root="2.16.840.1.113883.10.20.5.6.29"/>
      ...
    <entryRelationship>
    ...
</entry>
```

5.2.33 Immunocompromised Observation

[observation: templateId 2.16.840.1.113883.10.20.5.6.19 (closed)]

This observation records whether a patient was immunocompromised.

If the patient was immunocompromised, set the value of `@negationInd` to `false`. If the patient was not immunocompromised, set the value of `@negationInd` to `true`.

1. **SHALL** contain [1..1] **`@classCode`**="`OBS`" Observation (CodeSystem: `2.16.840.1.113883.5.6 HL7ActClass`) (CONF:2348).
2. **SHALL** contain [1..1] **`@moodCode`**="`EVN`" Event (CodeSystem: `2.16.840.1.113883.5.1001 HL7ActMood`) (CONF:2349).
3. **SHALL** contain **`@negationInd`** (CONF:4215).
4. **SHALL** contain [1..1] **`code`** (CONF:11554).
    a. This code **SHALL** contain [1..1] **`@code`**="`ASSERTION`" Assertion (CodeSystem: `2.16.840.1.113883.5.4 HL7ActCode`) (CONF:2350).
5. **SHALL** contain [1..1] **`statusCode`** (CONF:11555).
    a. This statusCode **SHALL** contain [1..1] **`@code`**="`completed`" (CodeSystem: `2.16.840.1.113883.5.14 HL7ActStatus`) (CONF:2351).
6. **SHALL** contain [1..1] **`value`** with @xsi:type="CD" (CONF:11556).
    a. This value **SHALL** contain [1..1] **`@code`**="`370388006`" Patient immunocompromised (CodeSystem: `2.16.840.1.113883.6.96 SNOMEDCT`) (CONF:2352).

Figure 63: Immunocompromised observation example

```
<entry>
 <observation classCode="OBS" moodCode="EVN" negationInd="true">
    <templateId root="2.16.840.1.113883.10.20.5.6.19"/>
    <code codeSystem="2.16.840.1.113883.5.4"
          code="ASSERTION"/>
    <statusCode code="completed"/>
    <value xsi:type=”CD”
           codeSystem="2.16.840.1.113883.6.96"
           codeSystemName="SNOMED CT"
           code="370388006"
           displayName="Patient Immunocompromised"/>
  </observation>
</entry>
```

5.2.34 Implant Observation

[`observation`: templateId `2.16.840.1.113883.10.20.5.6.20 (closed)`]

The Implant Observation records whether the procedure being reported included an implant.

If an implant was used in the procedure, set the value of `@negationInd` to `false`. If an implant was not used in the procedure, set the value of `@negationInd` to `true`.

1. **SHALL** contain [1..1] **`@classCode`**="`OBS`" Observation (CodeSystem: `2.16.840.1.113883.5.6 HL7ActClass`) (CONF:2353).
2. **SHALL** contain [1..1] **`@moodCode`**="`EVN`" Event (CodeSystem: `2.16.840.1.113883.5.1001 HL7ActMood`) (CONF:2354).
3. **SHALL** contain **`@negationInd`** (CONF:2355).
4. **SHALL** contain [1..1] **`code`** (CONF:11557).

a. This code **SHALL** contain [1..1] **@code**="ASSERTION" (CodeSystem: 2.16.840.1.113883.5.4 HL7ActCode) (CONF:2356).

5. **SHALL** contain [1..1] **statusCode** (CONF:11558).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:2357).
6. **SHALL** contain [1..1] **value** with @xsi:type="CD" (CONF:11559).
    a. This value **SHALL** contain [1..1] **@code**="71861002" Implantation (CodeSystem: 2.16.840.1.113883.6.96 SNOMEDCT) (CONF:2358).

Figure 64: Implant observation example

```
<!-- patient did have implant -->
<observation classCode="OBS" moodCode="EVN" negationInd="false">
  <templateId root="2.16.840.1.113883.10.20.5.6.20"/>
  <code codeSystem="2.16.840.1.113883.5.4"
        code="ASSERTION"/>
  <statusCode code="completed"/>
  <value xsi:type="CD"
         code="71861002"
         codeSystem="2.16.840.1.113883.6.96"
         codeSystemName="SNOMED"
         displayName="Implantation"/>
</observation>
```

5.2.35 Implicated Observation

[observation: templateId 2.16.840.1.113883.10.20.5.6.75 (closed)]

This observation records whether the blood product was implicated in the adverse reaction.

If the blood product was implicated in the adverse reaction, set the value of @negationInd to false. If the blood product was not implicated In the adverse reaction, set the value of @negationInd to true.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:4627).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:4628).
3. **SHALL** contain **@negationInd** (CONF:4629).
4. **SHALL** contain [1..1] **code** (CONF:11565).
    a. This code **SHALL** contain [1..1] **@code**="ASSERTION" Assertion (CodeSystem: 2.16.840.1.113883.5.4 HL7ActCode) (CONF:4630).
5. **SHALL** contain [1..1] **statusCode** (CONF:11566).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:4631).
6. **SHALL** contain [1..1] **value with @xsi:type="CD"** (CONF:4632).

a. This value **SHALL** contain [1..1] **@code**="2500-7" Blood product was implicated in the adverse reaction (CodeSystem: 2.16.840.1.113883.6.277 cdcNHSN) (CONF:4632).

Figure 65: Implicated observation example

```
<observation classCode="OBS" moodCode="EVN" negationInd="false">
  <templateId root="2.16.840.1.113883.10.20.5.6.75"/>
  <code codeSystem="2.16.840.1.113883.5.4"
        code="ASSERTION"/>
  <statusCode code="completed"/>
  <value xsi:type="CD"
         codeSystem="2.16.840.1.113883.6.277"
         codeSystemName="cdcNHSN"
         code="2500-7"
         displayName="Blood product was implicated in the adverse reaction"/>
</observation>
```

5.2.36 Imputability Observation

[observation: templateId 2.16.840.1.113883.10.20.5.6.82 (closed)]

This observation records the strength of certainty of a relationship between events. The relationship is recorded in the code element.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:4615).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:4616).
3. **SHALL** contain **@negationInd** (CONF:4617).
4. **SHALL** contain [1..1] **code** (CONF:4618).
    a. To record imputability of an adverse reaction to a transfusion, the value of @code **SHALL** be 2502-3 Imputability of adverse reaction to transfusion 2.16.840.1.113883.6.277 cdcNHSN. (CONF:4795).
    b. To record imputability of a death to a transfusion, the value of @code **SHALL** be 2503-1 Imputability of death to transfusion 2.16.840.1.113883.6.277 cdcNHSN. (CONF:4796).
    c. To record imputability of a positive blood culture to the suspected source of contamination, the value of @code **SHALL** be 2307-7 Imputability of positive blood culture to suspected source 2.16.840.1.113883.6.277 cdcNHSN. (CONF:10279)
5. **SHALL** contain [1..1] **statusCode** (CONF:17030).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:4619).
6. **SHALL** contain [1..1] **value** (CONF:4620).
    a. In a Hemovigilance Report, (CONF:4794)
        i. To record that an adverse reaction is imputable to a transfusion, the value of @xsi:type **SHALL** be CD, the value of @code **SHALL** be selected from 2.16.840.1.114222.4.11.3388 NHSNImputabilityCode

STATIC 20101130, and the value of the observation's @negationInd **SHALL** be 'false'. (CONF:10309)

ii. To record that imputability was ruled out, the value of @xsi:type **SHALL** be CD, the value of @code **SHALL** be 60022001 Possible 2.16.840.1.113883.6.96 SNOMED CT, and the value of the observation's @negationInd **SHALL** be true. (CONF:10310)

iii. To record that imputability was not determined, the value of @nullFlavor **SHALL** be NASK 'Not asked'. (CONF:10311)

b. In an Evidence of Infection (Dialysis) Report, (CONF:10312)

i. The value of the observation's @negationInd **SHALL** be 'false'. (CONF:10313)

ii. The value of @code **SHALL** be 60022001 Possible 2.16.840.1.113883.6.96 SNOMED CT. (CONF:10314)

Table 31: Imputability Value Set

Value Set: NHSNImputabilityCode 2.16.840.1.114222.4.11.3388 Code System: SNOMED CT 2.16.840.1.113883.6.96		
Code	**Code System**	**Meaning**
2931005	SNOMED CT	probable
60022001	SNOMED CT	possible
255545003	SNOMED CT	definite
385434005	SNOMED CT	improbable diagnosis (doubtful)

Figure 66: Imputability of adverse reaction to transfusion example

```
<entry typeCode="DRIV">
  <observation classCode="OBS" moodCode="EVN">
    <templateId root="2.16.840.1.113883.10.20.5.6.82"/>
    <code codeSystem="2.16.840.1.113883.6.277"
          codeSystemName="cdcNHSN"
          code="2502-3"
          displayName="Imputability of adverse reaction to transfusion"/>
    <statusCode code="completed"/>
    <value xsi:type="CD"
          codeSystem="2.16.840.1.113883.6.96"
          codeSystemName="SNOMED CT"
          code="255545003"
          displayName="Definite"/>
   </observation>
</entry>
```

Figure 67: Imputablility of death to transfusion example

```
<entry typeCode="DRIV">
  <observation classCode="OBS" moodCode="EVN">
    <templateId root="2.16.840.1.113883.10.20.5.6.82"/>
    <code codeSystem="2.16.840.1.113883.6.277"
          codeSystemName="cdcNHSN"
          code="2503-1"
          displayName="Imputability of death to transfusion"/>
    <statusCode code="completed"/>
    <value xsi:type="CD"
          codeSystem="2.16.840.1.113883.6.96"
          codeSystemName="SNOMED CT"
          code="255545003"
          displayName="Definite"/>
  </observation>
</entry>
```

5.2.37 Incident Detail Clinical Statement

[act: templateId 2.16.840.1.113883.10.20.5.6.61 (closed)]

The Incident Detail Clinical Statement records information about an incident including adverse reactions, causes, actions taken, and disposition of the product involved. The (Generic Incident Notification) GIN RMIM was consulted in developing this modeling. This clinical statement is currently specific to hemovigilance incidents, but would need few changes to encompass additional incident types.

The CDA document records incident detail in an act element. It first records information about the incident, followed by information about the discovery of the incident.

The id element records the facility id for the incident. The code records the type of incident being reported, such as "Product administration - Administered product to wrong patient". A participant element records the in-facility location in which the incident occurred.

NSHN protocol requires that, if the product was actually transfused, adverse reactions that might be associated with the incident be recorded. (If there were adverse reactions, the template also records the ids of any patients involved.)

Non-product Action Observations record whether specific follow-up actions, such as notification of the physician, were identified.

The First Discovery Observation records data related to the first discovery of the incident: in which process step, when, in which in-facility location, and how the incident was first discovered. Within the First Discovery Observation, (1) if the product was not transfused, a Recovery Type Observation records whether the recovery was planned or unplanned, and (2) a Blood Product Disposition Observation records what ultimately happened to the product involved in the incident. (If the product was destroyed, information about the unit or component type is required.)

For non-product actions, root-case type, and product disposition, the CDA instance must contain an observation for each datum required by the NHSN protocol. The

reporting requirements as of publication are shown in the tables that accompany each template.

1. **SHALL** contain [1..1] **@classCode**="INC" Incident (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:4425).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:4426).
3. **SHALL** contain [1..1] **id** (CONF:4437).
4. **SHALL** contain [1..1] **code** (CONF:11567).
    a. This code **SHALL** contain [1..1] **@code**, which **SHALL** be selected from ValueSet 2.16.840.1.114222.4.11.3324 NHSNHemovigilanceIncidentCode **DYNAMIC** (CONF:4461).
5. **SHALL** contain [1..1] **statusCode** (CONF:11568).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:4462).
6. **SHALL** contain [1..1] **participant** (CONF:4493).
    a. This participant **SHALL** contain [1..1] **@typeCode**="LOC" Location (CodeSystem: 2.16.840.1.113883.5.90 HL7ParticipationType) (CONF:4494).
    b. This participant **SHALL** contain [1..1] **participantRole** (CONF:4495).
        i. This participantRole **SHALL** contain [1..1] **@classCode**="SDLOC" Service delivery location (CodeSystem: 2.16.840.1.113883.5.110 HL7RoleClass) (CONF:4496).
        ii. This participantRole **SHALL** contain [1..1] **id** (CONF:4497).
            1. This id **SHALL** contain **@root** (CONF:4498).
            2. This id **SHALL** contain **@extension** (CONF:4499).
        iii. This participantRole **SHALL** contain [1..1] **playingEntity** (CONF:4500).
            1. This playingEntity **SHALL** contain [1..1] **@classCode**="PLC" Place (CodeSystem: 2.16.840.1.113883.5.41 HL7EntityClass) (CONF:4501).
            2. This playingEntity **SHALL** contain [1..1] **code** (CONF:11569).
                a. This **code** **SHALL** contain [1..1] **@code**, which **SHALL** be selected from ValueSet 2.16.840.1.113883.13.19 NHSNHealthcareServiceLocationCode **DYNAMIC** (CONF:4502).
7. **MAY** contain one or more entryRelationships where the value of @typeCode is CAUS, containing an Adverse Reaction Observation (templateId 2.16.840.1.113883.10.20.5.6.62). (CONF:4463).
8. **SHALL** contain [1..*] **entryRelationship** (CONF:4433) such that it
    a. **SHALL** contain [1..1] **@typeCode**="CAUS" Causal or contributory (CodeSystem: 2.16.840.1.113883.5.1002 HL7ActRelationshipType) (CONF:4434).
    b. **SHALL** contain [1..1] **Non-product Action Observation** (templateId:2.16.840.1.113883.10.20.5.6.63) (CONF:4436).

9. **SHALL** contain [1..*] **entryRelationship** (CONF:4441) such that it
    a. **SHALL** contain [1..1] **@typeCode**="RSON" Has reason (CodeSystem: 2.16.840.1.113883.5.1002 HL7ActRelationshipType) (CONF:4439).
    b. **SHALL** contain [1..1] **@inversionInd**="true" (CONF:4442).
    c. **SHALL** contain [1..1] **Root Cause Type Observation** (templateId:2.16.840.1.113883.10.20.5.6.64) (CONF:4440).
10. **SHALL** contain [1..1] **entryRelationship** (CONF:4444) such that it
    a. **SHALL** contain [1..1] **@typeCode**="COMP" Has component (CodeSystem: 2.16.840.1.113883.5.1002 HL7ActRelationshipType) (CONF:4445).
    b. **SHALL** contain [1..1] **First Discovery Observation** (templateId:2.16.840.1.113883.10.20.5.6.67) (CONF:4446).

Table 32: Hemovigilance Incident Value Set (excerpt)

Value Set: NHSNHemovigilanceIncidentCode 2.16.840.1.114222.4.11.3324
Code System: cdcNHSN 2.16.840.1.113883.6.277

The full table is shown in the hai_voc.xls file provided with this package.

Code	Code System	Print Name
5065-8	cdcNHSN	Available for issue - Detail not specified
5066-6	cdcNHSN	Available for issue - Inventory audit
5069-0	cdcNHSN	Available for issue - Product ordered incorrectly/not submitted
5067-4	cdcNHSN	Available for issue - Product status not/incorrectly updated in computer
5068-2	cdcNHSN	Available for issue - Supplier recall
...		

Figure 68: Incident detail clinical statement example

```
!-- Incident Detail clinical statement -->
<act classCode="ACT" moodCode="EVN">
  <templateId root="2.16.840.1.113883.10.20.5.6.61"/>
  <id root="2.16.840.1.113883.3.117.1.1.5.2.1.1.5" extension="11987654321"/>
  <code codeSystem="2.16.840.1.113883.6.277"
        codeSystemName="cdcNHSN"
        code="5003-9"
        displayName="Product check-in: shipment incomplete/incorrect"/>
        <!-- value set: NHSN Incident Codes -->

  <entryRelationship>
    ...
  </entryRelationship>
  ...
</act>
```

5.2.38 Infection Condition Observation

[observation: templateId 2.16.840.1.113883.10.20.5.6.21 (closed)]

This observation records the infection condition being reported.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:2145).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:2146).
3. **SHALL** contain [1..1] **@negationInd**="false" (CONF:4217).
4. **SHALL** contain [1..1] **code** (CONF:11573).
    a. This code **SHALL** contain [1..1] **@code**="ASSERTION" Assertion (CodeSystem: 2.16.840.1.113883.5.4 HL7ActCode) (CONF:2147).
5. **SHALL** contain [1..1] **statusCode** (CONF:11574).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:2148).
6. **SHALL** contain [1..1] **value** with @xsi:type="CD" (CONF:2149).
    a. This value **SHALL** contain [1..1] **@code**, which **SHALL** be selected from ValueSet 2.16.840.1.114222.4.11.3196 NHSNInfectionConditionCode **DYNAMIC** (CONF:2149).

Table 33: Infection Condition Value Set (excerpt)

Value Set: NHSNInfectionConditionCode 2.16.840.1.114222.4.11.3196
Code System: SNOMED CT 2.16.840.1.113883.6.96
or cdcNHSN 2.16.840.1.113883.6.277

The full table is shown in the hai_voc.xls file provided with this package.

Code	Code System	Meaning
1623-8	cdcNHSN	Arterial or venous infection
2402-6	cdcNHSN	Asymptomatic Bacteremic UTI (ABUTI)
1601-4	cdcNHSN	Breast abscess or mastitis
...		...

Figure 69: Infection condition observation example

```
<observation classCode="OBS" moodCode="EVN" negationInd="false">
  <templateId root="2.16.840.1.113883.10.20.5.6.21"/>
  <code codeSystem="2.16.840.1.113883.5.4" code="ASSERTION"/>
  <statusCode code="completed"/>
  <value xsi:type="CD"
         codeSystem="2.16.840.1.113883.6.277"
         codeSystemName="cdcNHSN"
         code="1601-4"
         displayName="Breast abscess or mastitis"/>
</observation>
```

5.2.39 Infection Contributed to Death Observation

[observation: templateId 2.16.840.1.113883.10.20.5.6.22 (closed)]

In some HAI Reports this observation is required in a Death Observation if the patient died.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:2045).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:2046).
3. **SHALL** contain [1..1] **code** (CONF:11576).
    a. This code **SHALL** contain [1..1] **@code**="ASSERTION" Assertion (CodeSystem: 2.16.840.1.113883.5.4 HL7ActCode) (CONF:2049).
4. **SHALL** contain [1..1] **id** (CONF:2047).
    a. The value of the id **SHALL** be the same as the value of the id element in the Infection-type Observation (templateId 2.16.840.1.113883.10.20.5.6.23). (CONF:2048).
5. **SHALL** contain [1..1] **statusCode** (CONF:11577).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:2050).

Figure 70: Infection contributed to death observation example

```
<!-- patient did die -->
<observation classCode="OBS" moodCode="EVN" negationInd="false">
  <templateId root="2.16.840.1.113883.10.20.5.6.12"/>
  <code codeSystem="2.16.840.1.113883.5.4"
        code="ASSERTION"/>
  <statusCode code="completed"/>
  <value xsi:type="CD"
         code="419099009"
         codeSystem="2.16.840.1.113883.6.96"
         codeSystemName="SNOMED"
         displayName="Dead"/>

  <!--infection did not contribute to death -->
  <entryRelationship typeCode="CAUS" inversionInd="true" negationInd="true">
    <observation classCode="OBS" moodCode="EVN">
    <templateId root="2.16.840.1.113883.10.20.5.6.22"/>
    <id root="2.16.840.1.113883.3.117.1.1.5.2.1.1.5" extension="21987654321"/>
    <code codeSystem="2.16.840.1.113883.5.4"
          code="ASSERTION" />
    <statusCode code="completed"/>
    </observation>
  </entryRelationship>

</observation>
```

5.2.40 Infection Risk Factors Measurement Observation

[observation: templateId 2.16.840.1.113883.10.20.5.2.1.1.2 (closed)]

This observation records a risk factor that reports a value, such as birth weight.

Both BSI and the Pneumonia Infection reports use the Infection Risk Factors Measurement Observation. The NHSN Protocol specifies which measurements are required for each report type. Those rules do not form part of the guide. The table below shows requirements at the time of publication.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:2064).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:2065).
3. **SHALL** contain [1..1] **@negationInd**="false" (CONF:4223).
4. **SHALL** contain [1..1] **code** (CONF:11196).
    a. This code **SHALL** contain [1..1] **@code** (CONF:2066).
5. **SHALL** contain [1..1] **statusCode** (CONF:11197).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:2067).
6. **SHALL** contain [1..1] **value** (CONF:2068).
    a. This value **SHALL** contain [1..1] **@xsi:type**="PQ" (CONF:4537).

Table 34: Codes for Infection Risk Factors Measurement Observation

Code	Display Name	Code System	Code System Name
364589006	Birth weight	2.16.840.1.113883.6.96	SNOMED CT

Figure 71: Infection risk factors measurement observation example

```
<entry>
   <observation classCode="OBS" moodCode="EVN" negationInd="false">
      <templateId root="2.16.840.1.113883.10.20.5.2.1.1.2"/>
      <code code="364589006" codeSystem="2.16.840.1.113883.6.96"
            displayName="Birth weight"/>
      <statusCode code="completed"/>
      <value xsi:type="PQ" value="700" unit="g"/>
   </observation>
</entry>
```

5.2.41 Infection Risk Factors Observation

[observation: templateId 2.16.840.1.113883.10.20.5.2.1.1.1 (closed)]

This observation records the presence of infection risk factors. See also the Infection Risk Factors Measurement Observation.

The NHSNInfectionRiskFactorsCode Value Set includes infection risk factors for all reports in this guide. The NSHN Protocol specifies which risk factors are to be recorded in each report type. Those rules do not form part of the guide.

If the risk factor is present, set the value of `@negationInd` to `false`. If the risk factor is not present, set the value of `@negationInd` to `true`.

1. **SHALL** contain [1..1] **`@classCode`**="OBS" Observation (CodeSystem: `2.16.840.1.113883.5.6 HL7ActClass`) (CONF:2069).
2. **SHALL** contain [1..1] **`@moodCode`**="EVN" Event (CodeSystem: `2.16.840.1.113883.5.1001 HL7ActMood`) (CONF:2070).
3. **SHALL** contain **`@negationInd`** (CONF:2071).
4. **SHALL** contain [1..1] **`code`** (CONF:11198).
    a. This code **SHALL** contain [1..1] **`@code`**="ASSERTION" Assertion (CodeSystem: `2.16.840.1.113883.5.4 HL7ActCode`) (CONF:2072).
5. **SHALL** contain [1..1] **`statusCode`** (CONF:11199).
    a. This statusCode **SHALL** contain [1..1] **`@code`**="`completed`" Completed (CodeSystem: `2.16.840.1.113883.5.14 HL7ActStatus`) (CONF:2073).
6. **SHALL** contain [1..1] **`value with @xsi:type="CD"`** (CONF:11200).
    a. This value **SHALL** contain [1..1] **`@code`**, which **SHALL** be selected from ValueSet `2.16.840.1.113883.13.6 NHSNInfectionRiskFactorsCode` **STATIC** 20090130 (CONF:2074).

Table 35: Infection Risk Factors Value Set

Value Set: NHSNInfectionRiskFactorsCode 2.16.840.1.113883.13.6 Code systems: cdcNHSN 2.16.840.1.113883.6.277 or SNOMED CT 2.16.840.1.113883.6.96		
Code	**Code System**	**Meaning**
1002-5	cdcNHSN	(unspecified) central line
1003-3	cdcNHSN	permanent central line
1005-8	cdcNHSN	temporary central line
1006-6	cdcNHSN	central line including umbilical catheter

Figure 72: Infection risk factors observation example

```
<observation classCode="OBS" moodCode="EVN" negationInd="false">
  <templateId root="2.16.840.1.113883.10.20.5.2.1.1.1"/>
  <code codeSystem="2.16.840.1.113883.5.4" code="ASSERTION"/>
  <statusCode code="completed"/>
  <value xsi:type="CD"
         codeSystem="2.16.840.1.113883.6.277"
         codeSystemName="cdcNHSN"
         code="1003-3"
         displayName="permanent central line"/>
</observation>
```

5.2.42 Infection-type Observation

[observation: templateId 2.16.840.1.113883.10.20.5.6.23 (closed)]

The Infection-type Observation is used in all infection reports. It is an assertion of the infection type, and contains entryRelationships to record the "criteria"—the information used to arrive at a diagnosis of the infection type.

The value of the id element must be globally unique and need not be an ID used outside the document. Its function within the document is to identify this infection as being the same as that recorded in the Infection Contributed to Death Observation, if present.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:2095).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:2096).
3. **SHALL** contain [1..1] **@negationInd**="false" (CONF:4224).
4. **SHALL** contain [1..1] **id** (CONF:2097).
5. **SHALL** contain [1..1] **code** (CONF:11206).
    a. This code **SHALL** contain [1..1] **@code**="ASSERTION" Assertion (CodeSystem: 2.16.840.1.113883.5.4 HL7ActCode) (CONF:3025).
6. **SHALL** contain [1..1] **statusCode** (CONF:11207).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:2099).
7. **SHALL** contain [1..1] **effectiveTime** (CONF:2100).
8. **SHALL** contain [1..1] **value with @xsi:type="CD"** (CONF:11208).
    a. This value **SHALL** contain [1..1] **@code**, which **SHALL** be selected from ValueSet 2.16.840.1.113883.13.20 NHSNInfectionTypeCode **DYNAMIC** (CONF:2101).
9. **SHALL** contain [1..1] **entryRelationship** (CONF:2215) such that it
    a. **SHALL** contain [1..1] **@typeCode**="SPRT" Supports (CodeSystem: 2.16.840.1.113883.5.1002 HL7ActRelationshipType) (CONF:2103).
    b. **SHALL** contain [1..1] **Criteria of Diagnosis Organizer** (templateId:2.16.840.1.113883.10.20.5.6.11) (CONF:2102).
10. If the report is an Infection-type Report and the infection type is not BSI, an entryRelationship element **SHALL** be present where the value of @typeCode is REFR, containing an Infection Condition Observation (templateId 2.16.840.1.113883.10.20.5.6.21). (CONF:2606).
11. If the report is an Infection-type Report and the infection type is not BSI, an entryRelationship element **SHALL** be present where the value of @typeCode is REFR, containing a Secondary Bloodstream Infection Observation (templateId 2.16.840.1.113883.10.20.5.2.2.7.15).. (CONF:2607).
12. If the report is a BSI Report, an entryRelationship element **SHALL** be present where the value of @typeCode is COMP, containing a Bloodstream Infection Evidence Type Observation (templateId 2.16.840.1.113883.10.20.5.6.4). (CONF:2608).

13. If the report is an SSI Report, an `entryRelationship` element **SHALL** be present where the value of `@typeCode` is COMP, containing an Occasion of HAI Detection Observation (`templateId 2.16.840.1.113883.10.20.5.6.27`). (CONF:2609).
14. If the report is a Pneumonia Infection Report an `entryRelationship` element **SHALL** be present where the value of `@typeCode` is `SUBJ` and the value of `@inversionInd` is `true`. The `entryRelationship` element **SHALL** contain a Post-Procedure Observation (`templateId 2.16.840.1.113883.10.20.5.6.31`). (CONF:2612).

Table 36: Infection Type Value Set

Value Set: NHSNInfectionTypeCode 2.16.840.1.113883.13.20 Code System: cdcNHSN 2.16.840.1.113883.6.277 or SNOMED CT 2.16.840.1.113883.6.96		
Code	**Code System**	**Meaning**
431193003	SNOMED CT	Bloodstream Infection
233604007	SNOMED CT	Pneumonia
433202001	SNOMED CT	Surgical Site Infection
68566005	SNOMED CT	Urinary Tract Infection

Figure 73: Infection-type observation example

```
<observation classCode="OBS" moodCode="EVN" negationInd="false">
   <templateId root="2.16.840.1.113883.10.20.5.6.23"/>
   <id root="2.16.840.1.113883.3.117.1.1.5.2.1.1.5" extension="21987654321"/>
   <code codeSystem="2.16.840.1.113883.5.4" code="ASSERTION"/>
   <statusCode code="completed"/>
   <effectiveTime value="20081205"/>
   <value xsi:type="CD"
          codeSystem="2.16.840.1.113883.6.96"
          codeSystemName="SNOMED CT"
          code="233604007"
          displayName="Pneumonia">
  </value>

  <entryRelationship typeCode="SPRT">
    <organizer>
      <templateId root="2.16.840.1.113883.10.20.5.6.11"/>
    </organizer>
  </entryRelationship>

   ...
</observation>
```

5.2.43 IV Antibiotic Start Clinical Statement

`[substanceAdministration: templateId 2.16.840.1.113883.10.20.5.6.93 (closed)]`

This clinical statement records whether an IV antibiotic was started. It is used in an Evidence of Infection (Dialysis) Report.

When the infection indicator was present, set the value of `@negationInd` to `false`. When the infection indicator was not present, set the value of `@negationInd` to `true`.

1. **SHALL** contain [1..1] **`@classCode`**`="SBADM"` Substance Administration (CodeSystem: `HL7ActClass 2.16.840.1.113883.5.6`) (CONF:10300).
2. **SHALL** contain [1..1] **`@moodCode`**`="EVN"` Event (CodeSystem: `ActMood 2.16.840.1.113883.5.1001`) (CONF:10301).
3. **SHALL** contain **`@negationInd`** (CONF:10302).
4. **SHALL** contain [1..1] **`code`** (CONF:11209).
    a. This code **SHALL** contain [1..1] **`@code`**`="281790008"` Intravenous antibiotic therapy (CodeSystem: `SNOMEDCT 2.16.840.1.113883.6.96`) (CONF:10303).

In an Evidence of Infection (Dialysis) Report, when the antimicrobial started was Vancomycin, NHSN protocol requires that it be specified in the consumable element. Otherwise, in consumable//code, set the value of nullFlavor to NI (no information).

5. **SHALL** contain `consumable` (CONF:11652).
    a. This consumable **SHALL** contain [1..1] `manufacturedProduct` (CONF:11653).
        i. This `manufacturedProduct` **SHALL** contain [1..1] `manufacturedMaterial` (CONF:11654).
            1. This `manufacturedMaterial` **SHALL** contain [1..1] `code` (CONF:10304).
                a. In an Evidence of Infection (Dialysis) Report, if the antimicrobial started was Vancomycin, the value of `@xsi:type` **SHALL** be `'CE'` and the value of `@code` **SHALL** be `'11124'` Vancomycin [CodeSystem: `2.16.840.1.113883.6.88 RxNorm`]. Otherwise, the value of `@nullFlavor` SHALL be `'NI'`. (CONF: 10907)

Figure 74: IV antibiotic start clinical statement example

```
<substanceAdministration classCode="SBADM" moodCode="EVN" negationInd="false">
  <templateId root=" 2.16.840.1.113883.10.20.5.6.93"/>

  <code codeSystem="2.16.840.1.113883.6.96"
        codeSystemName="SNOMED CT"
        code="281790008"
        displayName="Intravenous antibiotic therapy"/>

  <!-- required if the antimicrobial was Vancomycin -->
  <consumable>
     <manufacturedProduct>
        <templateId root="2.16.840.1.113883.10.20.1.53"/>
        <manufacturedMaterial>
           <code xsi:type="CE"
                 codeSystem="2.16.840.1.113883.6.88"
                 codeSystemName="RxNorm"
                 code="11124"
                 displayName="Vancomycin"/>
        </manufacturedMaterial>
     </manufacturedProduct>
  </consumable>

</substanceAdministration>
```

5.2.44 IV Antifungal Start Clinical Statement

`[substanceAdministration:` templateId `2.16.840.1.113883.10.20.5.6.94 (closed)]`

This clinical statement records whether an IV antifungal was started. It is used in an Evidence of Infection (Dialysis) Report.

When the infection indicator was present, set the value of `@negationInd` to `false`. When the infection indicator was not present, set the value of `@negationInd` to `true`.

1. **SHALL** contain [1..1] **`@classCode`**`="SBADM"` Substance Administration (CodeSystem: `HL7ActClass 2.16.840.1.113883.5.6`) (CONF:10305).
2. **SHALL** contain [1..1] **`@moodCode`**`="EVN"` Event (CodeSystem: `ActMood 2.16.840.1.113883.5.1001`) (CONF:10306).
3. **SHALL** contain **`@negationInd`** (CONF:10307).
4. **SHALL** contain [1..1] **`code`** (CONF:11210).
    a. This code **SHALL** contain [1..1] **`@code`**`="2306-9"` Intravenous injection of antifungal substance (CodeSystem: `cdcNHSN 2.16.840.1.113883.6.277`) (CONF:10308).

Figure 75: IV antifungal start clinical statement example

```
<substanceAdministration classCode="SBADM" moodCode="EVN" negationInd="false">
  <templateId root="2.16.840.1.113883.10.20.5.6.94"/>

  <code xsi:type="CD"
        codeSystem="2.16.840.1.113883.6.277"
        codeSystemName="cdcNHSN"
        code="2306-9"
        displayName="Intravenous injection of antifungal substance"/>

   <!-- CDA requires the consumable element, however NHSN does not
        collect further information the antifungal -->
   <consumable>
      <manufacturedProduct>
         <templateId root="2.16.840.1.113883.10.20.1.53"/>
         <manufacturedMaterial>
            <code nullFlavor="NI"/>
         </manufacturedMaterial>
      </manufacturedProduct>
   </consumable>

</substanceAdministration>
```

5.2.45 MDRO/CDI Observation

[observation: templateId 2.16.840.1.113883.10.20.5.6.90 (closed)]

This observation records whether the primary infection being reported was either caused by a multi-drug-resistant organism (MDRO) or was a C. difficile infection (CDI). It is a general or summary observation not associated with any individual pathogen in the Findings Section.

If the infection organism was MDRO or the infection was a CDI, set the value of @negationInd to false. If neither was the case, set the value of @negationInd to true (to negate the assertion that the primary infection was MDRO/CDI).

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:2023).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:2024).
3. **SHALL** contain **@negationInd** (CONF:2025).
4. **SHALL** contain [1..1] **code** (CONF:11211).
    a. This code **SHALL** contain [1..1] **@code**="ASSERTION" Assertion (CodeSystem: 2.16.840.1.113883.5.4 HL7ActCode) (CONF:2026).
5. **SHALL** contain [1..1] **statusCode** (CONF:11212).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:2037).
6. **SHALL** contain [1..1] **value** with @xsi:type="CD" (CONF:11213).

a. This value **SHALL** contain [1..1] **@code**="2318-4" MDRO Infection or C.difficile Infection (CodeSystem: 2.16.840.1.113883.6.277 cdcNHSN) (CONF:2027).

Figure 76: MDRO observation example

```
< !-- The observation is negated, i.e. the infection was not MDRO or CDI -->
<observation classCode="OBS" moodCode="EVN" negationInd="true">
    <templateId root="22.16.840.1.113883.10.20.5.6.90"/>
    <code codeSystem="2.16.840.1.113883.5.4" code="ASSERTION"/>
    <statusCode code="completed"/>
    <value xsi:type="CD"
           codeSystem="2.16.840.1.113883.6.277"
           codeSystemName="cdcNHSN"
           code="2318-4"
           displayName="MDRO Infection or C.difficile Infection"/>
</observation>
```

5.2.46 Non-product Action Observation

[observation: templateId 2.16.840.1.113883.10.20.5.6.63 (closed)]

This observation records a non-product action that was taken as a result of an incident. The CDA instance must contain an observation for each datum required by the NHSN protocol. The reporting requirements as of publication are shown in the table below.

If the action was taken, set the value of @negationInd to false. If the action was not taken, set the value of @negationInd to true.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:4412).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:4413).
3. **SHALL** contain **@negationInd** (CONF:4414).
4. **SHALL** contain [1..1] **code** (CONF:11214).
    a. This code **SHALL** contain [1..1] **@code**="ASSERTION" Assertion (CodeSystem: 2.16.840.1.113883.5.4 HL7ActCode) (CONF:4415).
5. **SHALL** contain [1..1] **statusCode** (CONF:11215).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:4416).
6. **SHALL** contain [1..1] **value** with @xsi:type="CD" (CONF:11216).
    a. This value **SHALL** contain [1..1] **@code**, which **SHALL** be selected from ValueSet 2.16.840.1.114222.4.11.3328 NHSNNonProductActionCode **DYNAMIC** (CONF:4417).

Table 37: Non-product Action Value Set

Value Set: NHSNNonProductActionCode 2.16.840.1.114222.4.11.3328 Code System: cdcNHSN 2.16.840.1.113883.6.277		
Code	**Code System**	**Meaning**
3437-1	cdcNHSN	Floor/clinic notified
3438-9	cdcNHSN	Attending physician notified
3439-7	cdcNHSN	Record corrected
3440-5	cdcNHSN	Additional testing
3441-3	cdcNHSN	Patient sample re-collected

Figure 77: Non-product action observation example

```
<observation classCode="OBS" moodCode="EVN" negationInd="false">
  <templateId root="2.16.840.1.113883.10.20.5.6.63"/>
  <code codeSystem="2.16.840.1.113883.5.4"
        code="ASSERTION"/>
  <statusCode code="completed"/>
  <value xsi:type="CD"
         codeSystem="2.16.840.1.113883.6.277"
         codeSystemName="cdcNHSN"
         code="3439-7"
         displayName="Record corrected"/>
</observation>
```

5.2.47 Occasion of HAI Detection Observation

[observation: templateId 2.16.840.1.113883.10.20.5.6.27 (closed)]

This observation records when, in relation to an admission (a surgery stay), an HAI was detected.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:2140).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:2141).
3. **SHALL** contain [1..1] **@negationInd**="false" (CONF:4218).
4. **SHALL** contain [1..1] **code** (CONF:11217).
    a. This code **SHALL** contain [1..1] **@code**="ASSERTION" Assertion (CodeSystem: 2.16.840.1.113883.5.4 HL7ActCode) (CONF:2142).
5. **SHALL** contain [1..1] **statusCode** (CONF:11218).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:2143).
6. **SHALL** contain [1..1] **value** with @xsi:type="CD" (CONF:11219).

a. This value **SHALL** contain [1..1] **@code**, which **SHALL** be selected from ValueSet `2.16.840.1.113883.13.12 NHSNOccasionOfDetectionCode` **DYNAMIC** (CONF:2144).

Table 38: Occasion of HAI Detection Value Set

Value Set: NHSNOccasionOfDetectionCode 2.16.840.1.113883.13.12 Code System: cdcNHSN 2.16.840.1.113883.6.277		
Code	**Code System**	**Meaning**
1510-7	cdcNHSN	Admission (during the stay in which the surgery was performed)
1505-7	cdcNHSN	Post-discharge surveillance
1516-4	cdcNHSN	Readmission to facility where the associated procedure was performed
1517-2	cdcNHSN	Readmission to facility other than where the associated procedure was performed
1515-6	cdcNHSN	(deprecated) Re-admission (during a stay that is subsequent to the stay in which the surgery was performed)

Figure 78: Occasion of HAI detection observation example

```
<observation classCode="OBS" moodCode="EVN" negationInd="false">
  <templateId root="2.16.840.1.113883.10.20.5.6.27"/>
    <code code="ASSERTION"
          codeSystem="2.16.840.1.113883.5.4"/>
    <statusCode code="completed"/>

  <value xsi:type="CD"
         codeSystem="2.16.840.1.113883.6.277"
         codeSystemName="cdcNHSN"
         code="1510-7"
         displayName="During Admission (Stay)"/>
</observation>
```

5.2.48 Occupation and Clinical Specialty Observation

[`observation`: templateId `2.16.840.1.113883.10.20.5.6.28 (closed)`]

This observation records the occupation of a person under consideration for immunization. It is used in the Immunization Report as submitted for healthcare workers.

When the person under consideration for immunization is a physician or intern or resident, NHSN also records the person's clinical specialty.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: `2.16.840.1.113883.5.6 HL7ActClass`) (CONF:2489).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: `2.16.840.1.113883.5.1001 HL7ActMood`) (CONF:2490).
3. **SHALL** contain [1..1] **@negationInd**="`false`" (CONF:2491).

4. **SHALL** contain [1..1] **code** (CONF:11220).
    a. This code **SHALL** contain [1..1] **@code**="224361009" Type of job (CodeSystem: 2.16.840.1.113883.6.96 SNOMEDCT) (CONF:2492).
5. **SHALL** contain [1..1] **statusCode** (CONF:11221).
    a. This **statusCode** **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:2493).
6. **SHALL** contain [1..1] **value** (CONF:2494).
    a. To record the occupation as a code, the value of @xsi:type **SHALL** be 'CD' and the value of @code **SHALL** be selected from ValueSet 2.16.840.1.114222.4.11.887 Occupation **DYNAMIC**. Or, to record the occupation as text, the value of @xsi:type **SHALL** be "ST" (string) and a text value **SHALL** be present. (CONF:4532).
7. If the person under consideration for immunization is a physician or intern or resident, an entryRelationship **SHALL** be present. (CONF:2495).
    a. **SHALL** contain [1..1] **@typeCode**="COMP" Has component (CodeSystem: 2.16.840.1.113883.5.1002 HL7ActRelationshipType) (CONF:2496).
    b. **SHALL** contain [1..1] **Clinical Specialty Observation** (templateId:2.16.840.1.113883.10.20.5.6.9) (CONF:2497).

Table 39: Occupation Value Set (excerpt)

Value Set: NHSNOccupationCode 2.16.840.1.114222.4.11.887
Code System: Standard Occupational Classification (SOC) 2.16.840.1.113883.6.243
or cdcNHSN 2.16.840.1.113883.6.277
or NUCCProviderCodes 2.16.840.1.113883.6.101
or UMLS 2.16.840.1.113883.6.86

The full table is shown in the hai_voc.xls file provided with this package.

Code	Code System	Print Name
3747A0650X	NUCC Provider Codes	Attendant/orderly
2205-3	cdcNHSN	Clerical/administrative
367500000X	NUCC Provider Codes	Nurse Anesthetist
367A00000X	NUCC Provider Codes	Nurse Midwife
…		

Figure 79: Occupation observation example

```
<!-- occupation observation -->
<observation classCode="OBS" moodCode="EVN" negationInd="false">
  <templateId root="2.16.840.1.113883.10.20.5.6.28"/>
  <code code="224361009"
        codeSystem="2.16.840.1.113883.6.96"
        codeSystemName="SNOMED CT"
        displayName="Type of job"/>
  <statusCode code="completed"/>
  <value xsi:type="CD"
        code="36300000X"
        codeSystem="2.16.840.1.113883.6.101"
        codeSystemName="NUCCProviderCodes"
        displayName="Nurse Practitioner"/>
</observation>
```

5.2.49 Offer Declined Observation

[observation: templateId 2.16.840.1.113883.10.20.5.6.29 (closed)]

This observation records whether an offer to immunize was declined (and if so, the reasons for declining) or accepted (and if so, the details of the immunization, whether administered or not). It could be generalized to record any type of offer declined.

If the offer was declined, set the value of @negationInd to false. If the offer was accepted, set the value of @negationInd to true.

If the offer was declined, the reasons for declining are recorded. The reasons to be recorded differ according to whether the offer was made because the person is a healthcare worker or because the person is an inpatient who meets NHSN's criteria for being at high risk of contracting influenza.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:2684).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:2685).
3. **SHALL** contain **@negationInd** (CONF:2686).
4. **SHALL** contain [1..1] **code** (CONF:11222).
    a. This code **SHALL** contain [1..1] **@code**="ASSERTION" Assertion (CodeSystem: 2.16.840.1.113883.5.4 HL7ActCode) (CONF:2687).
5. **SHALL** contain [1..1] **statusCode** (CONF:11223).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:2688).
6. **SHALL** contain [1..1] **value** with @xsi:type="CD" (CONF:11224).
    a. This value **SHALL** contain [1..1] **@code**="315640000" Influenza vaccination declined (CodeSystem: 2.16.840.1.113883.6.96 SNOMEDCT) (CONF:2689).
7. If the offer was accepted, an entryRelationship element **SHALL** be present where the value of @typeCode is COMP, containing an Immunization clinical statement (templateId 2.16.840.1.113883.10.20.5.6.17). (CONF:2690).
8. If the offer was made to an inpatient because of high-risk factors for influenza, and was declined, an entryRelationship **SHALL** be present where the value of

@moodCode is RSON containing a Reason Declined Observation (templateId 2.16.840.1.113883.10.20.5.6.37) either for each personal reason or each medical contraindication in the Value Set 2.16.840.1.114222.4.11.3187 NHSNReasonForDeclineVaccineCode **DYNAMIC**. (CONF:2691).

9. If the offer was made to an inpatient because of high-risk factors for influenza, and was declined, and medical contraindications are recorded, one additional such entryRelationship **MAY** be present recording an uncoded (text) medical contraindication for declining. (CONF:2692).
10. If the offer was made to an inpatient because of high-risk factors for influenza, and was declined, and personal reasons are recorded, one additional such entryRelationship **MAY** be present recording an uncoded (text) personal reason for declining. (CONF:2693).
11. If the offer was made because the person was a healthcare worker, and was declined, an entryRelationship **SHALL** be present where the value of @moodCode is RSON containing a Reason Declined Observation (templateId 2.16.840.1.113883.10.20.5.6.37) for each personal reason in the Value Set 2.16.840.1.114222.4.11.3187 NHSNReasonForDeclineVaccineCode **DYNAMIC**. (CONF:2694).
12. If the offer was made because the person was a healthcare worker, and was declined, an additional such entryRelationship **SHALL** be present where the value of observation/code/@code is 397745006 Medical contraindications 2.16.840.1.113883.6.96 SNOMED CT. (CONF:2695).
13. If the offer was made because the person was a healthcare worker, and was declined, one additional such entryRelationship **MAY** be present recording an uncoded (text) reason for declining. (CONF:2696).

Figure 80: Offer declined observation example

```
<entryRelationship typeCode="COMP">

<!-- Offer Declined Observation -->
  <observation classCode="OBS" moodCode="EVN" negationInd="true">
  <templateId root="2.16.840.1.113883.10.20.5.6.29"/>
  <code codeSystem="2.16.840.1.113883.5.4"
    code="ASSERTION"/>
  <statusCode code="completed"/>
  <value xsi:type="CD"
    codeSystem="2.16.840.1.113883.6.96"
    codeSystemName="SNOMED CT"
    code="315640000"
    displayName="Influenza vaccination declined"/>

   <!-- The offer was accepted, so we have details of the
      immunization (whether actually administered or not).
      If the offer was declined, the reasons for declining
      would be given here instead. -->

   <!-- This immunization was administered (the usual case) -->

  <entryRelationship typeCode="COMP">
    <substanceAdministration classCode="SBADM"  moodCode="EVN"
negationInd="false">

    <templateId root="2.16.840.1.113883.10.20.5.6.17"/> <!-- constraints of
                this guide -->
  ...
  </entryRelationship>

...
</entryRelationship>
```

5.2.50 Outcome Observation

[observation: templateId 2.16.840.1.113883.10.20.5.6.79 (closed)]

This observation records the outcome of an event.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:4610).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:4611).
3. **SHALL** contain [1..1] **code** (CONF:11225).
    a. This code **SHALL** contain [1..1] **@code**="ASSERTION" Assertion (CodeSystem: 2.16.840.1.113883.5.4 HL7ActCode) (CONF:4612).
4. **SHALL** contain [1..1] **statusCode** (CONF:11226).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:4613).
5. **SHALL** contain [1..1] **value** (CONF:4614).

a. If the outcome is known, the value of `@xsi:type` **SHALL** be `CD` and the value of `@code` **SHALL** be selected from Value Set `2.16.840.1.114222.4.11.3386 NHSNOutcomeTypeCode` **STATIC** `20101130`. If the outcome is not known the value of `@nullFlavor` **SHALL** be `NI` 'No information'. (CONF:4641).

Table 40: Outcome Value Set

Value Set: NHSNOutcomeTypeCode 2.16.840.1.114222.4.11.3386 Code System: SNOMED CT 2.16.840.1.113883.6.96		
Code	**Code System**	**Meaning**
255603008	SNOMED CT	major
255606000	SNOMED CT	minor
419620001	SNOMED CT	death

Figure 81: Outcome observation example

```
<observation classCode="OBS" moodCode="EVN">
  <templateId root="2.16.840.1.113883.10.20.5.6.79"/>
  <code code="ASSERTION"
        codeSystem="2.16.840.1.113883.5.4"/>
  <statusCode code="completed"/>
  <value xsi:type="CD"
        codeSystem="2.16.840.1.113883.6.96"
        codeSystemName="SNOMED CT"
        code="419620001"
        displayName="Death"/>
</observation>
```

5.2.51 Pathogen Identified Observation

[`observation`: templateId `2.16.840.1.113883.10.20.5.2.5.1 (closed)`]

A Pathogen Identified Observation either represents a pathogen identified or, using a code from the NHSN Pathogens Value Set, records that no pathogens were identified.

In many cases, the value-set table provides a code for an unspecified species—for example "Acidaminococcus species" (SNOMED CT 131202007, NHSN ACISP)—for use when a more precise code is not available. The code for an unspecified species is preferred to a genus-level code.

1. **SHALL** contain [1..1] **`@classCode`**="`OBS`" Observation (CodeSystem: `2.16.840.1.113883.5.6 HL7ActClass`) (CONF:2040).
2. **SHALL** contain [1..1] **`@moodCode`**="`EVN`" Event (CodeSystem: `2.16.840.1.113883.5.1001 HL7ActMood`) (CONF:2041).
3. **SHALL** contain [1..1] **`code`** (CONF:11227).
    a. This code **SHALL** contain [1..1] **`@code`**="`41852-5`" Microorganism identified (CodeSystem: `2.16.840.1.113883.6.1 LOINC`) (CONF:2042).

4. **SHALL** contain [1..1] **statusCode** (CONF:11228).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:2043).
5. **SHALL** contain [1..1] **value** (CONF:11229).
    a. This value **SHALL** contain [1..1] **@code**, which **SHALL** be selected from ValueSet 2.16.840.1.113883.13.16 NHSNPathogenCode **DYNAMIC** (CONF:2044).

Table 41: Pathogen Value Set (excerpt)

Value Set: NHSNPathogenCode 2.16.840.1.113883.13.16
Code System: SNOMED CT 2.16.840.1.113883.6.96
or cdcNHSN 2.16.840.1.113883.6.277

The full table is shown in the hai_voc.xls file provided with this package.

Category	cdcNHSN	Display Name	SDO Fully Specified Name
--	3119-7	No pathogen identified	
Category	**SNOMED CT Concept ID**	**Display Name**	**SNOMED CT Fully Specified Name**
BACTERIUM	372391001	Abiotrophia species	Abiotrophia species (organism)
PARASITE	50875003	Acanthamoeba	Acanthamoeba (organism)
BACTERIUM	413423003	Achromobacter spp.	Achromobacter species (organism)
BACTERIUM	413424009	Achromobacter xylosoxidans	Achromobacter xylosoxidans (organism)
…			

Figure 82: Pathogen identified observation example

```
<observation classCode="OBS" moodCode="EVN">
  <templateId root="2.16.840.1.113883.10.20.5.2.5.1"/>
  <code  codeSystem="2.16.840.1.113883.6.1"
         codeSystemName="LOINC"
         code="41852-5"
         displayName="Microorganism identified"/>
  <statusCode code="completed"/>
  <value xsi:type="CD"
         codeSystem="2.16.840.1.113883.6.96"
         codeSystemName="SNOMED"
         code="116197008"
         displayName="Staphylococcus, coagulase negative (organism)"/>
</observation>
```

5.2.52 Pathogen Identified Observation (LIO)

[observation: templateId 2.16.840.1.113883.10.20.5.6.52 (closed)]

The Pathogen Identified Observation in a LIO Report records a laboratory-identified microorganism and details of the specimen collection.

The microorganism is recorded in the same way as in the Findings Organizer in Infection Reports.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:3058).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:3059).
3. **SHALL** contain [1..1] **code** (CONF:11230).
    a. This code **SHALL** contain [1..1] **@code**="41852-5" Microorganism identified (CodeSystem: 2.16.840.1.113883.6.1 LOINC) (CONF:3060).
4. **SHALL** contain [1..1] **statusCode** (CONF:11231).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:3061).
5. **SHALL** contain [1..1] **value** (CONF:11232).
    a. This value **SHALL** contain [1..1] **@code**, which **SHALL** be selected from ValueSet 2.16.840.1.114222.4.11.3194 NHSNSignificantPathogenCode **DYNAMIC** (CONF:3062).
6. **SHALL** contain [1..1] **entryRelationship** (CONF:3063).
    a. This entryRelationship **SHALL** contain [1..1] **Specimen Collection Procedure (LIO)** (templateId:2.16.840.1.113883.10.20.5.6.53) (CONF:3064).

Figure 83: Pathogen identified observation (LIO) example

```
<observation classCode="OBS" moodCode="EVN">
  <templateId root="2.16.840.1.113883.10.20.5.6.52"/>
  <code codeSystem="2.16.840.1.113883.6.1" codeSystemName="LOINC"
        code="41852-5" displayName="Microorganism Identified"/>
  <statusCode code="completed"/>
  <value xsi:type="CD" codeSystem="2.16.840.1.113883.6.96"
        codeSystemName="SNOMED CT"
        code="5933001"
        displayName="Clostridium difficile (organism)"/>

  <!-- Specimen collection procedure contains specimen collection encounter -->
  <entryRelationship typeCode="COMP">
    <procedure classCode="PROC" moodCode="EVN">
       <templateId root="2.16.840.1.113883.10.20.5.6.53"/>
       ...
       <!--Specimen Collection Encounter (LIO) -->
       <entryRelationship typeCode="COMP" inversionInd="true">
          <encounter classCode="ENC" moodCode="EVN">
            <templateId root="2.16.840.1.113883.10.20.5.6.54"/>
            ...
          <encounter/>
       <entryRelationship/>
    <procedure/>
  <entryRelationship/>
<observation/>
```

5.2.53 Pathogen Identified Observation in an HAR Report

[observation: templateId 2.16.840.1.113883.10.20.5.6.83 (closed)]

This observation records a pathogen identified. It is used in the HAR Report to report pathogens identified in the patient post-reaction, in the donor post-donation, and in the donation post-transfusion.

This observation differs from the Pathogen Identified Observation used in Infection Reports in two ways. (1) It allows a nullFlavor NASK to indicate that pathogen testing was not done. (2) It allows a specimen element to record that the pathogen was identified in the donation (blood product).

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:4684).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:4685).
3. **SHALL** contain [1..1] **code** (CONF:11235).
    a. This code **SHALL** contain [1..1] **@code**="41852-5" Microorganism identified (CodeSystem: 2.16.840.1.113883.6.1 LOINC) (CONF:4686).
4. **SHALL** contain [1..1] **statusCode** (CONF:11236).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:4687).
5. **SHALL** contain [1..1] **value** (CONF:4688).
    a. If a test to detect a specific pathogen was performed, the value of @code **SHALL** be selected from ValueSet 2.16.840.1.113883.13.16 NHSNPathogenCode **DYNAMIC**. If such a test was not performed, the value of @nullFlavor **SHALL** be NASK (Not asked). (CONF:4689).
6. **MAY** contain [0..1] **specimen** (CONF:4690).
    a. To record that the pathogen was detected in the blood donation, use the specimen element. (CONF:4691).
    b. This specimen, if present, **SHALL** contain [1..1] **specimenRole** (CONF:4692).
        i. This specimenRole **SHALL** contain [1..1] **specimenPlayingEntity** (CONF:4693).
            1. This specimenPlayingEntity **SHALL** contain [1..1] **code** (CONF:4694)
                a. **This code SHALL contain [1..1] @code**="410652009" blood product (CodeSystem: 2.16.840.1.113883.6.96 SNOMEDCT). (CONF:16106)

Figure 84: Pathogen identified observation in an HAR report example

```
<observation classCode="OBS" moodCode="EVN">
  <templateId root="2.16.840.1.113883.10.20.5.6.83"/>
  <code  codeSystem="2.16.840.1.113883.6.1"
         codeSystemName="LOINC"
         code="41852-5"
         displayName="Microorganism identified"/>
  <statusCode code="completed"/>
  <value xsi:type="CD"
         codeSystem="2.16.840.1.113883.6.96"
         codeSystemName="SNOMED"
         code="116197008"
         displayName="Staphylococcus, coagulase negative (organism)"/>
</observation>
```

5.2.54 Pathogen Ranking Observation

[observation: templateId 2.16.840.1.113883.10.20.5.2.5.1.1 (closed)]

The NHSN pathogen findings record up to three pathogens. This observation records the relative importance of a pathogen in that set with respect to its role in the infection.

The value is a coded ordinal, where the value of @code is the number 1 or 2 or 3: 1 represents the highest-ranked pathogen of up to three pathogens recorded.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:2032).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:2033).
3. **SHALL** contain [1..1] **code** (CONF:11233).
    a. This code **SHALL** contain [1..1] **@code**="ASSERTION" Assertion (CodeSystem: 2.16.840.1.113883.5.4 HL7ActCode) (CONF:2034).
4. **SHALL** contain [1..1] **statusCode** (CONF:11234).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:2035).
5. **SHALL** contain [1..1] **value** (CONF:2039).
    a. The value of value/@xsi:type **SHALL** be CO (Coded Ordinal), the value of value/@codeSystem **SHALL** be 2.16.840.1.113883.6.277 cdcNHSN, and the value of value/@code **SHALL** be the number 1 or 2 or 3, where 1 represents the highest-ranked pathogen of up to three pathogens recorded. (CONF:2915).

Figure 85: Pathogen ranking observation example

```
<observation classCode="OBS" moodCode="EVN">
  <templateId root="2.16.840.1.113883.10.20.5.2.5.1.1"/>
  <code codeSystem="2.16.840.1.113883.5.4"
      codeSystemName="HL7"
      code="ASSERTION"/>
  <statusCode code="completed"/>
  <value xsi:type="CO"
         codeSystem="2.16.840.1.113883.6.277"
         codeSystemName="cdcNHSN"
         code="1"
         displayName="Pathogen ranking 1"/>
</observation>
```

5.2.55 Patient Care Observation

[observation: templateId 2.16.840.1.113883.10.20.5.6.30 (closed)]

This observation records whether a person performs direct patient care. It is used in the Immunization Report as submitted for healthcare workers under consideration for immunization.

If the person performs direct patient care, set the value of @negationInd to false. If the person does not perform direct patient care, set the value of @negationInd to true.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:2379).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:2380).
3. **SHALL** contain **@negationInd** (CONF:2381).
4. **SHALL** contain [1..1] **code** (CONF:17031).
    a. This code **SHALL** contain [1..1] **@code**="ASSERTION" Assertion (CodeSystem: 2.16.840.1.113883.5.4 HL7ActCode) (CONF:2382).
5. **SHALL** contain [1..1] **statusCode** (CONF:17032).
    a. This statuscode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:2383).
6. **SHALL** contain [1..1] **value** (CONF:17033).
    a. This value **SHALL** contain [1..1] **@code**="3163-3" Performs direct patient care (CodeSystem: 2.16.840.1.113883.6.277 cdcNHSN) (CONF:2384).

Figure 86: Patient care observation example

```
<--! Patient care observation -->
<observation classCode="OBS" moodCode="EVN" negationInd="false">
   <!-- the person performs direct patient care -->
   <templateId root="2.16.840.1.113883.10.20.5.6.30"/>
   <code code="ASSERTION" codeSystem="2.16.840.1.113883.5.4"/>
   <statusCode code="completed"/>
   <value xsi:type="CD"
          code="3163-3"
          codeSystem="2.16.840.1.113883.6.277"
          codeSystemName="cdcNHSN"
          displayName="Performs direct patient care"/>
</observation>
```

5.2.56 PICC/IV Team

[observation: templateId 2.16.840.1.113883.10.20.5.6.98 (closed)]

This observation records whether the person who performed the central line insertion was a member of the PICC/IV team. It is used in the Central-line Insertion Practice clinical statement.

If the performer was a member of the PICC/IV team, set the value of @negationInd to false. If the performer was not a member of the PICC/IV team, set the value of @negationInd to true.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:17004).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:17005).
3. **SHALL** contain **@negationInd** (CONF:17006).
4. **SHALL** contain [1..1] **code** (CONF:17007).
    a. This code **SHALL** contain [1..1] **@code**="ASSERTION" Assertion (CodeSystem: 2.16.840.1.113883.5.4 HL7ActCode) (CONF:17010).
5. **SHALL** contain [1..1] **statusCode** (CONF:17008).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:17011).
6. **SHALL** contain [1..1] **value** (CONF:17009).
    a. This value **SHALL** contain [1..1] **@code**="2213-7" Performer was member of PICC/IV team (CodeSystem: 2.16.840.1.113883.6.277 cdcNHSN) **STATIC** 20090625 (CONF:17012).

Figure 87: PICC/IV team observation example

```
<observation classCode="OBS" moodCode="EVN"  negationInd="false">
  <templateId root="2.16.840.1.113883.10.20.5.6.98"/>
  <code codeSystem="2.16.840.1.113883.5.4"
      code="ASSERTION"
      codeSystemName="HL7 Act Code"/>
  <statusCode code="completed"/>
  <value xsi:type="CD" code="3104-7"
      codeSystem="2.16.840.1.113883.6.277"
      codeSystemName="cdcNHSN"
      displayName="Performer was member of PICC/IV team"/>
</observation>
```

5.2.57 Positive Blood Culture Observation

`[observation:` templateId `2.16.840.1.113883.10.20.5.6.95 (closed)]`

This clinical statement is an infection indicator. It is used in an Evidence of Infection (Dialysis) Report.

When the infection indicator was present, set the value of `@negationInd` to `false`. When the infection indicator was not present, set the value of `@negationInd` to `true`.

1. **SHALL** contain [1..1] **`@classCode`**`="OBS"` Observation (CodeSystem: `HL7ActClass 2.16.840.1.113883.5.6`) (CONF:10319).
2. **SHALL** contain [1..1] **`@moodCode`**`="EVN"` Event (CodeSystem: `ActMood 2.16.840.1.113883.5.1001`) (CONF:10320).
3. **SHALL** contain [1..1] **`@negationInd`** (CONF:10321).
4. **SHALL** contain [1..1] **`code`** (CONF:11160).
    a. This code **SHALL** contain [1..1] **`@code`**`="ASSERTION"` Assertion (CodeSystem: `ActCode 2.16.840.1.113883.5.4`) (CONF:10322).
5. **SHALL** contain [1..1] **`statusCode`** (CONF:11161).
    a. This statusCode **SHALL** contain [1..1] **`@code`**`="completed"` Completed (CodeSystem: ActStatus `2.16.840.1.113883.5.14`) (CONF:10323).
6. **SHALL** contain [1..1] **`value`** (CONF:11162).
    a. This value **SHALL** contain [1..1] **`@code`**`="1955-4"` Positive blood culture (CodeSystem: `cdcNHSN 2.16.840.1.113883.6.277`) (CONF:10324).

In an Evidence of Infection (Dialysis) Report, the following entryRelationship is required by NHSN protocol when the infection indicator was present.

7. If the value of `@negationInd` is '`false`', this observation (CONF:10325).
    a. **SHALL** contain [1..1] **`entryRelationship`** (CONF:10326) such that it
        i. **SHALL** contain [1..1] **`@typeCode`**`="CAUS"` (CONF:10327).
        ii. **SHALL** contain [1..1] **`@inversionInd`**`="true"` (CONF:10328).
        iii. **SHALL** contain [1..1] **`Suspected Source Observation`** `(2.16.840.1.113883.10.20.5.6.87)` (CONF:10927).

Figure 88: Positive blood culture observation example

```
<observation classCode="OBS" moodCode="EVN" negationInd="false">
  <templateId root=" 2.16.840.1.113883.10.20.5.6.95"/>
  <code code="ASSERTION"
       codeSystem="2.16.840.1.113883.5.4"/>
  <statusCode code="completed"/>
  <value xsi:type="CD"
         codeSystem="2.16.840.1.113883.6.277"
         codeSystemName="cdcNHSN"
         code="1955-4"
         displayName="Positive blood culture"/>

  <!-- Required if a positive blood culture was obtained -->
  <entryRelationship typeCode="CAUS" inversionInd="true">
    <observation classCode="OBS" moodCode="EVN">
      <templateId root="2.16.840.1.113883.10.20.5.6.87"/>
      ...
    </observation>
  </entryRelationship>
</observation>
```

5.2.58 Post -procedure Observation

[observation: templateId 2.16.840.1.113883.10.20.5.6.31 (closed)]

In the context in which it is used in the HAI IG, this observation records whether the reported infection occurred during a post-procedure period.

If the infection was post-procedure, set the value of @negationInd to false. If the infection was not post-procedure, set the value of @negationInd to true.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:2273).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:2274).
3. **SHALL** contain **@negationInd** (CONF:2275).
4. **SHALL** contain [1..1] **code** (CONF:17034).
    a. This code **SHALL** contain [1..1] **@code**="ASSERTION" (CodeSystem: 2.16.840.1.113883.5.4 HL7ActCode) (CONF:2276).
5. **SHALL** contain [1..1] **statusCode** (CONF:17035).
    a. This statuscode **SHALL** contain [1..1] **@code**="completed" (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:2277).
6. **SHALL** contain [1..1] **value** (CONF:17036).
    a. This value **SHALL** contain [1..1] **@code**="3188-0" Infection occurred post-procedure (CodeSystem: 2.16.840.1.113883.6.277 cdcNHSN) (CONF:2278).

Figure 89: Post-procedure observation example

```
<entryRelationship typeCode="SUBJ" inversionInd="true">
 <observation classCode="OBS" moodCode="EVN" negationInd="true">
    <templateId root="2.16.840.1.113883.10.20.5.6.31"/>
    <code codeSystem="2.16.840.1.113883.5.4"
          code="ASSERTION"/>
    <statusCode code="completed"/>
    <value xsi:type="CD"
           codeSystem="2.16.840.1.113883.6.277"
           codeSystemName="cdcNHSN"
           code="3188-0"
           displayName="Infection occurred post-procedure"/>
  </observation>
</entryRelationship>
```

5.2.59 Prior Discharge Encounter

[encounter: templateId 2.16.840.1.113883.10.20.5.6.51 (closed)]

The Prior Discharge Encounter records the date of a prior discharge from the facility. It is used in a LIO Report to record a past discharge within 3 months. This template conforms to the CCD Encounter Activity template (templateId 2.16.840.1.113883.10.20.1.21).

1. **SHALL** contain [1..1] **@classCode**="ENC" Encounter (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:3074).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:3075).
3. **SHALL** contain [1..1] **id** (CONF:3076).
    a. This id **SHALL** contain [1..1] **@nullFlavor**="NI" No information (CodeSystem: 2.16.840.1.113883.5.1008 HL7NullFlavor) (CONF:3208).
4. **SHALL** contain [1..1] **code** (CONF:11482).
    a. This **code SHALL** contain [1..1] **@code**="IMP" Inpatient encounter (CodeSystem: 2.16.840.1.113883.5.4 HL7ActCode) (CONF:3077).
5. **SHALL** contain [1..1] **effectiveTime** (CONF:11163).
    a. This **effectiveTime SHALL** contain [1..1] **high** (CONF:11164).
        i. This high **SHALL** contain [1..1] **@value** (CONF:3078).

Figure 90: Prior discharge encounter example

```
<entry typeCode="DRIV">
  <encounter classCode="ENC" moodCode="EVN">
    <!-- CCD Encounter activity template -->
    <templateId root="2.16.840.1.113883.10.20.1.21"/>
    <!-- HAI Prior Discharge Encounter template -->
    <templateId root="2.16.840.1.113883.10.20.5.6.51"/>
    <id nullFlavor="NI"/>
    <code codeSystem="2.16.840.1.113883.5.4" code="IMP"
          displayName="Inpatient encounter"/>
    <effectiveTime>
       <high value="20081205"/>
    </effectiveTime>
  </encounter>
</entry>
```

5.2.60 Prior Transfusion Encounter

[observation: templateId 2.16.840.1.113883.10.20.5.6.72 (closed)]

This clinical statement records an event in the transfusion history of a patient. It is required in an HAR Report if the adverse reaction was TA-GVHD and the patient received non-irradiated blood products in the two months preceding the reaction.

This template is derived from the CCD Encounter Activity template (templateId 2.16.840.1.113883.10.20.1.21).

1. **SHALL** contain [1..1] **@classCode**="ENC" Encounter (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:4651).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:4652).
3. **SHALL** contain [1..1] **id** (CONF:4658).
    a. This id **SHALL** contain [1..1] **@nullFlavor**="NI" No information (CodeSystem: 2.16.840.1.113883.5.1008 HL7NullFlavor) (CONF:4657).
4. **SHALL** contain [1..1] **code** (CONF:17037).
    a. This code **SHALL** contain [1..1] **@code**="2504-9" Received non-irradiated blood in the two months preceding the reaction (CodeSystem: 2.16.840.1.113883.6.277 cdcNHSN) (CONF:4654).

Figure 91: Prior transfusion encounter example

```
<entry typeCode="DRIV">
  <encounter classCode="ENC" moodCode="EVN">
    <templateId root="2.16.840.1.113883.10.20.5.6.72"/>
    <id nullFlavor="NI"/>
    <code codeSystem="2.16.840.1.113883.6.277" codeSystemName="cdcNHSN"
          code="2504-9"
          displayName="Received non-irradiated blood
                       in the two months preceding the reaction"/>
  </encounter>
</entry>
```

5.2.61 Procedure Details Clinical Statement

5.2.61.1 Comparison Table

The Procedure Details clinical statement is used in the SSI, CLIP, and Procedure Reports. The information recorded in the Procedure Details clinical statement differs substantially according to report type; accordingly the clinical statement has a different `templateId` in each report. The table below summarizes the differences.

NHSN uses the procedure `id`, along with other data, to establish a link between a Procedure Report and an SSI Report; the value of the procedure `id` must be the same in both the report of a procedure and the report of a surgical-site infection resulting from that procedure. The value of the `procedure/id` element must be globally unique and in general need not be an ID used outside the document. Its function is to identify this procedure as being the same as the one documented in the Details Section of the same report. ID values also establish a relationship between two reports, such as the link created between a Procedure Report and an SSI Report. To establish this NHSN link, the procedure ID must be the same in the two reports.

Table 42: Procedure Details Clinical Statement in SSI, CLIP, and Procedure Reports

In all reports		
A procedure element a procedure id a code element recording the NHSN Procedure Category code a templateId		
In SSI Report	**In CLIP Report**	**In Procedure Report**
SSI Location Type effectiveTime low = procedure date	Insertion Site Performer Role Recorder Observation Reason for Procedure Observation effectiveTime	General anesthesia If spinal fusion or refusion: Spinal fusion level Spinal fusion approach If hip replacement or knee replacement: Type effectiveTime low = procedure date width = procedure duration

5.2.61.2 Procedure Details Clinical Statement in a Procedure Report

[procedure: templateId 2.16.840.1.113883.10.20.5.6.97(closed)]

This clinical statement records the detail required in a Procedure Report about a procedure.

NHSN uses the procedure id, along with other data, to establish a link between a Procedure Report and an SSI Report; the value of the procedure id must be the same in both the report of a procedure and the report of a surgical-site infection resulting from that procedure.

1. **SHALL** contain [1..1] **@classCode**="PROC" Procedure (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:2713).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:2714).
3. **SHALL** contain [1..1] **id** (CONF:2715).
4. **SHALL** contain [1..1] **code** (CONF:17038).
    a. This code **SHALL** contain [1..1] **@code**, which **SHALL** be selected from ValueSet 2.16.840.1.113883.13.17 NHSNProcedureCategoryCode **DYNAMIC** (CONF:2716).
5. **SHALL** contain [1..1] **effectiveTime** (CONF:2717).
    a. This effectiveTime **SHALL** contain [1..1] **low** (CONF:2718).
    b. This effectiveTime **SHALL** contain [1..1] **width** (CONF:3200).
6. **SHALL** contain [1..1] **entryRelationship** (CONF:2719) such that it
    a. **SHALL** contain [1..1] **@typeCode**="COMP" Has component, which **SHALL** be selected from ValueSet (CodeSystem: 2.16.840.1.113883.5.1002 HL7ActRelationshipType) (CONF:2720).
    b. **SHALL** contain [1..1] **Anesthesia Administration Clinical Statement** (templateId:2.16.840.1.113883.10.20.5.2.2.7.3) (CONF:2721).
7. **SHALL** contain [1..1] **entryRelationship** (CONF:2722) such that it
    a. **SHALL** contain [1..1] **@typeCode**="COMP" Has component (CodeSystem: 2.16.840.1.113883.5.1002 HL7ActRelationshipType) (CONF:2723).
    b. **SHALL** contain [1..1] **Implant Observation** (templateId:2.16.840.1.113883.10.20.5.6.20) (CONF:2724).
8. **SHALL** contain [1..1] **entryRelationship** (CONF:2725) such that it
    a. **SHALL** contain [1..1] **@typeCode**="COMP" Has component (CodeSystem: 2.16.840.1.113883.5.1002 HL7ActRelationshipType) (CONF:2726).
9. If the procedure is a fusion or refusion (code/@code is either 2137-8 or 2135-2), an approachSiteCode element **SHALL** be present. If the approach site is known, the value of @code **SHALL** be selected from Value Set 2.16.840.1.113883.13.2 NHSNSpinalFusionApproachCode **STATIC** 20090625. If the approach site is not specified, the value of code/@nullFlavor **SHALL** be NI. (CONF:2728).
10. If the procedure is a fusion or refusion, an entryRelationship element where the value of @typeCode is COMP **SHALL** be present, containing a Spinal Fusion Level Observation (templateId 2.16.840.1.113883.10.20.5.2.2.7.8). (CONF:2729).

11. If the procedure category code represents a hip replacement, a `methodCode` element **SHALL** be present where the value of `@code` is selected from Value Set `2.16.840.1.113883.13.3 NHSNHipReplacementCode` **STATIC** `20090625`. (CONF:2730).
12. If the procedure category code represents a knee replacement, a `methodCode` element **SHALL** be present where the value of `@code` is selected from Value Set `2.16.840.1.113883.13.4 NHSNKneeReplacementCode` **STATIC** `20090625`. (CONF:2731).

Table 43: Spinal Fusion Approach Value Set

Value Set: NHSNSpinalFusionApproachCode 2.16.840.1.113883.13.2 Code System: cdcNHSN 2.16.840.1.113883.6.277 or SNOMED CT 2.16.840.1.113883.6.96		
Code	**Code System**	**Meaning**
255549009	SNOMED CT	Anterior
255551008	SNOMED CT	Posterior
1205-4	cdcNHSN	anterior posterior
1210-4	cdcNHSN	lateral transverse

Figure 92: Spinal fusion approach example

```
<procedure classCode="PROC" moodCode="EVN">
  <templateId root="2.16.840.1.113883.10.20.5.6.97"/>
  <id root="2.16.840.1.113883.3.117.1.1.5.2.1.1.4" extension="92"/>
  ...
  <approachSiteCode codeSystem="2.16.840.1.113883.6.277"
                    codeSystemName="cdcNHSN"
                    code="1205-4"
                    displayName="anterior posterior"/>

  <entryRelationship typeCode="COMP">
    <observation>
        ...
    </observation>
  </entryRelationship>
  ...
</procedure>
```

Table 44: Hip Replacement Value Set

Value Set: NHSNHipReplacementCode 2.16.840.1.113883.13.3 Code System: cdcNHSN 2.16.840.1.113883.6.277		
Code	**Code System**	**Meaning**
1305-2	cdcNHSN	partial primary
1310-2	cdcNHSN	partial revision
1320-1	cdcNHSN	total primary
1315-1	cdcNHSN	total revision

Figure 93: Hip replacement methodCode example

```
<procedure>
   ...
  <methodCode codeSystem="2.16.840.1.113883.6.277"
              codeSystemName="cdcNHSN"
              code="1320-1"
              displayName="total primary"/>
<procedure/>
```

Table 45: Knee Replacement Value Set

Value Set: NHSNKneeReplacementCode 2.16.840.1.113883.13.4 Code System: cdcNHSN 2.16.840.1.113883.6.277		
Code	**Code System**	**Meaning**
1410-0	cdcNHSN	primary (total)
1405-0	cdcNHSN	revision (total or partial)

Figure 94: Knee replacement methodCode example

```
<procedure>
  ...
  <methodCode codeSystem="2.16.840.1.113883.6.277"
              codeSystemName="cdcNHSN"
              code="1410-0"
              displayName="total primary"/>
</procedure>
```

5.2.61.3 Procedure Details Clinical Statement in an SSI Report

[`procedure`: templateId `2.16.840.1.113883.10.20.5.6.34 (closed)`]

This clinical statement records the detail required in an SSI Report about a procedure.

1. **SHALL** contain [1..1] **`@classCode`**="`PROC`" Procedure (CodeSystem: `2.16.840.1.113883.5.6 HL7ActClass`) (CONF:2155).
2. **SHALL** contain [1..1] **`@moodCode`**="`EVN`" Event (CodeSystem: `2.16.840.1.113883.5.1001 HL7ActMood`) (CONF:2156).
3. **SHALL** contain [1..1] **`id`** (CONF:2157).
4. **SHALL** contain [1..1] **`code`** (CONF:17039).
    a. This code **SHALL** contain [1..1] @**`code`**, which **SHALL** be selected from ValueSet `2.16.840.1.113883.13.17 NHSNProcedureCategoryCode` **DYNAMIC** (CONF:2158).
5. **SHALL** contain [1..1] **`effectiveTime`** (CONF:2159).
    a. This effectiveTime **SHALL** contain [1..1] **`low`** (CONF:2160).

Table 46: Procedure Category Value Set (excerpt)

Value Set: NHSNProcedureCategoryCode 2.16.840.1.113883.13.17
Code System: cdcNHSN 2.16.840.1.113883.6.277

The full table is shown in the hai_voc.xls file provided with this package.

Code	Code System	Meaning
2105-5	cdcNHSN	Abdominal aortic aneurysm repair
2126-1	cdcNHSN	Limb amputation
2108-9	cdcNHSN	Appendix surgery
2102-2	cdcNHSN	AV shunt for dialysis
....		....

Figure 95: Procedure details example in an SSI report

```
<procedure classCode="PROC" moodCode="EVN">
  <templateId root="2.16.840.1.113883.10.20.5.6.34"/>
  <id root="2.16.840.1.113883.3.117.1.1.5.2.1.1.4" extension="92"/>
  <code codeSystem="2.16.840.1.113883.6.277"
        codeSystemName="cdcNHSN"
        code="2108-9"
        displayName="Appendix Surgery"/>

  <effectiveTime>
    <low value="20061223"/>
  </effectiveTime>
  ...
</procedure>
```

5.2.61.4 Procedure Details Clinical Statement in a CLIP Report

[`procedure`: templateId `2.16.840.1.113883.10.20.5.6.100 (closed)`]

This clinical statement records the detail required in a CLIP Report about the procedure.

If the procedure resulted in a successful central-line insertion, set the value of `statusCode/@code` to `completed`. If the procedure did not result in a successful central-line insertion, set the value of `statusCode/@code` to `aborted`.

The `performer` element records the ID and role of the person who performed the procedure.

The `participant` element identifies the catheter type.

1. **SHALL** contain [1..1] **`@classCode`**="`PROC`" Procedure (CodeSystem: `2.16.840.1.113883.5.6 HL7ActClass`) (CONF:4242).
2. **SHALL** contain [1..1] **`@moodCode`**="`EVN`" Event (CodeSystem: `2.16.840.1.113883.5.1001 HL7ActMood`) (CONF:4243).
3. **SHALL** contain [1..1] **`code`** (CONF:11166).
    a. `This` **`code`** **SHALL** contain [1..1] **`@code`**="`233527006`" Central-line insertion (CodeSystem: `2.16.840.1.113883.6.96 SNOMEDCT`) (CONF:4245).

4. **SHALL** contain [1..1] **statusCode** (CONF:17014).
5. **SHALL** contain [1..1] **effectiveTime** (CONF:4246).
6. **SHALL** contain [1..1] **targetSiteCode** (CONF:11165).
    a. This targetSiteCode **SHALL** contain [1..1] **@code**, which **SHALL** be selected from ValueSet 2.16.840.1.114222.4.11.3180 NHSNInsertionSiteCode **DYNAMIC** (CONF:4247).
7. **SHALL** contain [1..1] **performer** (CONF:11473)
    a. This performer **SHALL** contain [1..1] **assignedEntity** (CONF:4248).
        i. This assignedEntity **SHALL** contain [1..1] **id** (CONF:4249).
            1. If the performer ID is not known, the value of performer/assignedEntity/id/@nullFlavor **SHALL** be UNK. (CONF:4251).
        ii. This assignedEntity **SHALL** contain [1..1] **code** (CONF:4250).
            1. If the occupation is recorded as a code, the value of @xsi:type **SHALL** be CD and the value of @code **SHALL** be selected from ValueSet 2.16.840.1.114222.4.11.3181 NHSNRoleOfPerformerCode **DYNAMIC**. If the occupation is recorded as text, the value of @nullFlavor **SHALL** be OTH and the code element **SHALL** contain an originalText element recording the occupation of the performer. (CONF:4798).
8. **SHALL** contain [1..1] **participant** (CONF:4258).
    a. This participant **SHALL** contain [1..1] **@typeCode**="DEV" Device (CodeSystem: 2.16.840.1.113883.5.90 HL7ParticipationType) (CONF:4259).
    b. This participant **SHALL** contain [1..1] **participantRole** (CONF:4260).
        i. This participantRole **SHALL** contain [1..1] **@classCode**="MANU" Manufactured product (CodeSystem: 2.16.840.1.113883.5.110 HL7RoleClass) (CONF:4261).
        ii. This participantRole **SHALL** contain [1..1] **playingDevice** (CONF:4262).
            1. This playingDevice **SHALL** contain [1..1] **code** (CONF:4263).
                a. To record the catheter type as a code, the value of @code **SHALL** be selected from ValueSet 2.16.840.1.114222.4.11.3185 NHSNCatheterTypeCode **STATIC** 20090625. Or, to record the catheter type as text, the value of @nullFlavor **SHALL** be OTH and an originalText element **SHALL** be present recording the catheter type. (CONF:4530).
9. **SHALL** contain [1..1] **entryRelationship** (CONF:4252) such that it
    a. **SHALL** contain [1..1] **@typeCode**="COMP" Has component (CodeSystem: 2.16.840.1.113883.5.1002 HL7ActRelationshipType) (CONF:4253).
    b. **SHALL** contain [1..1] **Recorder Observation** (templateId:2.16.840.1.113883.10.20.5.6.39) (CONF:4254).
10. **SHALL** contain [1..1] **entryRelationship** (CONF:17002) such that it

a. **SHALL** contain [1..1] **@typeCode**="COMP" Has component (CodeSystem: 2.16.840.1.113883.5.1002 HL7ActRelationshipType) (CONF:17003).
b. **SHALL** contain [1..1] **PICC/IV Team Observation** (templateId:2.16.840.1.113883.10.20.5.6.98) (CONF:17013).

11. **SHALL** contain [1..1] **entryRelationship** (CONF:4255) such that it
a. **SHALL** contain [1..1] **@typeCode**="RSON" Has reason (CodeSystem: 2.16.840.1.113883.5.1002 HL7ActRelationshipType) (CONF:4256).
b. **SHALL** contain [1..1] **Reason for Procedure Observation** (templateId:2.16.840.1.113883.10.20.5.6.38) (CONF:4257).

Table 47: Insertion Site Value Set

Value Set: NHSNInsertionSiteCode 2.16.840.1.114222.4.11.3180 Code System: SNOMED CT 2.16.840.1.113883.6.96		
Code	**Code System**	**Print Name**
9454009	SNOMED CT	Subclavian vein
63190004	SNOMED CT	Jugular vein
83419000	SNOMED CT	Femoral vein
122774002	SNOMED CT	Vein of lower extremity
122775001	SNOMED CT	Vein of upper extremity
307054003	SNOMED CT	Vein of scalp
408728001	SNOMED CT	Umbilical vein or artery

Table 48: Role of Performer Value Set

Value Set: NHSNRoleOfPerformerCode 2.16.840.1.114222.4.11.3181 Code System: SNOMED CT 2.16.840.1.113883.6.96 or cdcNHSN 2.16.840.1.113883.6.277 or NUCC 2.16.840.1.113883.6.101		
Code	**Code System**	**Print Name**
4103-8	cdcNHSN	Fellow
4101-2	cdcNHSN	Physician assistant
4102-0	cdcNHSN	Medical staff not otherwise specified
65853000	SNOMED CT	Student (not medical)
398130009	SNOMED CT	Student (medical)
405277009	SNOMED CT	Intern/resident
405279007	SNOMED CT	Attending physician
363L00000X	NUCC	Nurse practitioner
163W00000X	NUCC	Registered nurse

Table 49: Catheter Type Value Set

Value Set: NHSNCatheterTypeCode 2.16.840.1.114222.4.11.3185 Code System: cdcNHSN 2.16.840.1.113883.6.277		
Code	**Code System**	**Print Name**
1118-9	cdcNHSN	Tunneled, other than dialysis
1119-7	cdcNHSN	Non-tunneled, dialysis
1116-3	cdcNHSN	Umbilical
1120-5	cdcNHSN	Non-tunneled, other than dialysis
1117-1	cdcNHSN	Tunneled, dialysis
3115-3	cdcNHSN	PICC

Figure 96: Procedure details example in a CLIP report

```
<procedure moodCode="EVN" classCode="PROC">
  <templateId root="22.16.840.1.113883.10.20.5.6.100"/>
  <code code="233527006"
        codeSystem="2.16.840.1.113883.6.96"
        codeSystemName="SNOMED CT" displayName="Central-line Insertion"/>
  <statusCode code=”completed”/>
  <effectiveTime value="20080805"/>
  <targetSiteCode code="83419000"
                  codeSystem="2.16.840.1.113883.6.96"
                  codeSystemName="SNOMED CT"
                  displayName="Femoral vein"/>

  <performer>
    <assignedEntity>
      <id nullFlavor="UNK"/>
      <code code="4101-2" codeSystem="2.16.840.1.113883.6.277"
            codeSystemName="cdcNHSN"
            displayName="Physician assistant"/>
    </assignedEntity>
  </performer>

<participant typeCode="DEV">
    <participantRole classCode="MANU">
      <playingDevice>
      <code codeSystem="2.16.840.1.113883.6.277"
            codeSystemName="cdcNHSN"
            code="1119-7"
            displayName="Non-tunneled, dialysis"/>
      </playingDevice>
    </participantRole>
  </participant>

  <entryRelationship typeCode="COMP">
    <observation moodCode="EVN" classCode="OBS" negationInd="false">
      <templateId root="2.16.840.1.113883.10.20.5.6.39"/>
      ...
    </observation>
  </entryRelationship>

  <entryRelationship typeCode="COMP">
    <observation moodCode="EVN" classCode="OBS" negationInd="false">
      <templateId root="2.16.840.1.113883.10.20.5.6.98"/>
      ...
    </observation>
  </entryRelationship>

  <entryRelationship typeCode="RSON">
    <observation moodCode="EVN" classCode="OBS" negationInd="false">
      <templateId root="2.16.840.1.113883.10.20.5.6.38"/>
      ...
    </observation>
  </entryRelationship>
 </procedure>
```

5.2.62 Procedure Risk Factors Clinical Statement in a Procedure Report

[procedure: templateId 2.16.840.1.113883.10.20.5.6.68 (closed)]

This clinical statement records the detail required in a Procedure Report about the circumstances in which a procedure was performed.

The value of the id element must be globally unique and in general need not be an ID used outside the document. Its function is to identify this procedure as being the same as the one documented in the Details Section of the same report.

1. **SHALL** contain [1..1] **@classCode**="PROC" Procedure (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:4464).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:4465).
3. **SHALL** contain [1..1] **id** (CONF:4466).
    a. The value of the id element **SHALL** be the same as the value of the corresponding procedure/id element in the Details Section of the report. (CONF:4467).
4. If the procedure was an emergency, the procedure element **SHALL** contain a methodCode element where the value of @code is 373110003 Emergency procedure 2.16.840.1.113883.6.96 SNOMED CT **STATIC**. (CONF:4468).
5. **SHALL** contain [1..1] **entryRelationship** (CONF:4469) such that it
    a. **SHALL** contain [1..1] **@typeCode**="COMP" Has component (CodeSystem: 2.16.840.1.113883.5.1002 HL7ActRelationshipType) (CONF:4470).
    b. **SHALL** contain [1..1] **Wound Class Observation** (templateId:2.16.840.1.113883.10.20.5.2.1.2) (CONF:4471).
6. **SHALL** contain [1..1] **entryRelationship** (CONF:4472) such that it
    a. **SHALL** contain [1..1] **@typeCode**="COMP" Has component (CodeSystem: 2.16.840.1.113883.5.1002 HL7ActRelationshipType) (CONF:4473).
    b. **SHALL** contain [1..1] **Endoscope Used Clinical Statement** (templateId:2.16.840.1.113883.10.20.5.2.1.3) (CONF:4474).

Figure 97: Procedure risk factors example

```
<procedure classCode="PROC" moodCode="EVN">
  <templateId root="2.16.840.1.113883.10.20.5.6.68"/>
  <id root="2.16.840.1.113883.3.117.1.1.5.2.1.1.4" extension="92"/>
  ...
</procedure>
```

5.2.63 Pus, Redness, or Increased Swelling Observation

`[observation: templateId 2.16.840.1.113883.10.20.5.6.92 (closed)]`

This observation records whether pus, redness, or increased swelling was observed. It is used in an Evidence of Infection (Dialysis) Report to record whether this was observed at a vascular access site.

If the infection indicator was present, set the value of `@negationInd` to `false`. If the infection indicator was not present, set the value of `@negationInd` to `true`.

1. **SHALL** contain [1..1] **`@classCode`**`="OBS"` Observation (CodeSystem: `HL7ActClass 2.16.840.1.113883.5.6`) (CONF:10291).
2. **SHALL** contain [1..1] **`@moodCode`**`="EVN"` Event (CodeSystem: `ActMood 2.16.840.1.113883.5.1001`) (CONF:10292).
3. **SHALL** contain [1..1] **`@negationInd`** (CONF:10293).
4. **SHALL** contain [1..1] **`code`** (CONF:11167).
    a. This code **SHALL** contain [1..1] **`@code`**`="ASSERTION"` Assertion (CodeSystem: `ActCode 2.16.840.1.113883.5.4`) (CONF:10294).
5. **SHALL** contain [1..1] **`statusCode`** (CONF:11168).
    a. This statusCode **SHALL** contain [1..1] **`@code`**`="completed"` Completed (CodeSystem: `ActStatus 2.16.840.1.113883.5.14`) (CONF:10295).
6. **SHALL** contain [1..1] **`value`** (CONF:11169).
    a. This value **SHALL** contain [1..1] **`@code`**`="2305-1"` Pus, redness, or increased swelling (CodeSystem: `cdcNHSN 2.16.840.1.113883.6.277`) (CONF:10296).

In an Evidence of Infection (Dialysis) Report, when this infection indicator is present, NHSN protocol records the vascular access site(s) at which the infection indicator was observed.

7. If the value of `@negationInd` is '`false`', this observation **SHALL** contain one or more [1..*] `targetSiteCode` elements representing the access site(s) which displayed this infection indicator. (CONF:10297).
    a. To record a vascular access site as a code, the value of `@code` **SHALL** be selected from ValueSet `2.16.840.1.114222.4.11.6042 NHSNVascularAccessSiteCode` **STATIC** 20120722 (CONF:10317).
    b. To represent a type of vascular access site that is not listed in the `NHSNVascularAccessSiteCode` value set, set the value of `@nullFlavor` to `OTH` (other) (CONF:10318).

Figure 98: Infection indicator (1) – pus, redness, increased swelling example

```
<observation classCode="OBS" moodCode="EVN" negationInd="false">
   <templateId root=" 2.16.840.1.113883.10.20.5.6.92"/>
   <code code="ASSERTION"
         codeSystem="2.16.840.1.113883.5.4"/>
   <statusCode code="completed"/>

   <value xsi:type="CD"
          codeSystem="2.16.840.1.113883.6.277"
          codeSystemName="cdcNHSN"
          code="2305-1"
          displayName="Pus, redness, or increased swelling"/>

   <!-- If this infection indicator was observed, at which
        vascular access site(s)? -->
   <targetSiteCode code="438503005"
                   codeSystem="2.16.840.1.113883.6.96"
                   codeSystemName="SNOMED CT"
                   displayName="Surgically constructed ateriovenous fistula"/>
 </observation>
```

Table 50: Vascular Access Site Value Set

Value Set: NHSNVascularAccessSiteCode 2.16.840.1.114222.4.11.6042 Code System: SNOMED CT 2.16.840.1.113883.6.96 or cdcNHSN 2.16.840.1.113883.6.277		
Code	**Code System**	**Print Name**
438503005	SNOMED CT	Surgically constructed arteriovenous fistula
439218000	SNOMED CT	Surgically constructed arteriovenous graft
1117-1	cdcNHSN	Site of tunneled central line, dialysis
1119-7	cdcNHSN	Site of non-tunneled central line, dialysis

5.2.64 Reason for Procedure Observation

[`observation`: templateId `2.16.840.1.113883.10.20.5.6.38 (closed)`]

This observation records the reason a procedure was performed. It is used in the CLIP Report to record the reason a central-line insertion procedure was performed, and in the HAR Report to record the primary underlying reason a transfusion was performed.

1. **SHALL** contain [1..1] **`@classCode`**="`OBS`" Observation (CodeSystem: `2.16.840.1.113883.5.6 HL7ActClass`) (CONF:2393).
2. **SHALL** contain [1..1] **`@moodCode`**="`EVN`" Event (CodeSystem: `2.16.840.1.113883.5.1001 HL7ActMood`) (CONF:2394).
3. **SHALL** contain [1..1] **`@negationInd`**="`false`" (CONF:2395).
4. **SHALL** contain [1..1] **`code`** (CONF:11172).
    a. This code **SHALL** contain [1..1] **`@code`**="`ASSERTION`" Assertion (CodeSystem: `2.16.840.1.113883.5.4 HL7ActCode`) (CONF:2396).

5. **SHALL** contain [1..1] **statusCode** (CONF:11173).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:2397).
6. **SHALL** contain [1..1] **value** (CONF:2398).
    a. In an HAR Report, to record the reason as a code, the value of @code **SHALL** be selected from ValueSet 2.16.840.1.114222.4.11.3596 NHSHReasonForTransfusionCode **DYNAMIC**. Or, to record the reason as text, the value of @xsi:type **SHALL** be ST and a text value **SHALL** be present. Or, if the reason is unknown, the value of @xsi:type **SHALL** be CD and the value of @nullFlavor **SHALL** be NI. (CONF:4659).
    b. In a CLIP Report, to record the reason as a code, the value of @xsi:type **SHALL** be CD and the value of @code **SHALL** be selected from ValueSet 2.16.840.1.114222.4.11.3182 ReasonForInsertionCode **STATIC** 20090625. Or, to record the reason as text, the value of @xsi:type **SHALL** be ST and a text value **SHALL** be present. (CONF:4529).
7. In a CLIP Report, if the coded reason is [To replace] An existing central line where infection was suspected (5107-8), an entryRelationship element **SHALL** be present where the value of @typeCode is RSON and the value of @inversionInd is true, containing Guidewire Used Clinical Statement (templateId 2.16.840.1.113883.10.20.5.6.15). (CONF:4241).

Table 51: Reason for Transfusion Value Set

Value Set: NHSNReasonForTansfusionCode 2.16.840.1.114222.4.11.3596 Code System: cdcNHSN 2.16.840.1.113883.6.277 or SNOMED CT 2.16.840.1.113883.6.96		
Code	**Code System**	**Print Name**
2519-7	cdcNHSN	Internal bleeding
2520-5	cdcNHSN	Surgery or trauma
2521-3	cdcNHSN	Medical reason not otherwise specified
32895009	SNOMED CT	Genetic disease (Type:= clinical finding) [FSN = hereditary disease (disorder)]
34093004	SNOMED CT	Hematologic disease (Type:= special concept) [FSN = disorder of hematopoietic system (navigational concept)]
64779008	SNOMED CT	Coagulopathy (Type:= clinical finding) [FSN = blood coagulation disorder (disorder)]
73320003	SNOMED CT	Hemolysis (Type:= clinical finding) [FSN = hemolysis (finding)]
363346000	SNOMED CT	Malignant neoplastic disease (Type:= clinical finding) [FSN = malignant neoplastic disease (disorder)]

Table 52: Reason for Insertion Value Set

Value Set: NHSNReasonForInsertionCode 2.16.840.1.114222.4.11.3182 Code System: cdcNHSN 2.16.840.1.113883.6.277		
Code	**Code System**	**Print Name**
5105-2	cdcNHSN	[To address] A new indication for a central line.
5106-0	cdcNHSN	[To replace] An existing, malfunctioning central line.
5107-8	cdcNHSN	[To replace] An existing central line where infection was suspected.

Figure 99: Reason for procedure observation example

```
<observation classCode="OBS" moodCode="EVN"  negationInd="false">
  <templateId root="2.16.840.1.113883.10.20.5.6.38"/>
  <code codeSystem="2.16.840.1.113883.5.4"
      code="ASSERTION"
      codeSystemName="HL7 Act Code"/>
  <statusCode code="completed"/>
  <value xsi:type="CD" code="5106-0"
      codeSystem="2.16.840.1.113883.6.277"
      codeSystemName="cdcNHSN"
      displayName="[To replace] An existing, malfunctioning central line."/>
</observation>

<!-- Or, if the reason is
    [To replace] An existing central line where infection was suspected:

<observation classCode="OBS" moodCode="EVN"  negationInd="false">
  <templateId root="2.16.840.1.113883.10.20.5.6.38"/>
  <code codeSystem="2.16.840.1.113883.5.4"
      code="ASSERTION"
      codeSystemName="HL7 Act Code"/>
  <statusCode code="completed"/>
  <value xsi:type="CD" code="5107-8"
      codeSystem="2.16.840.1.113883.6.277"
      codeSystemName="cdcNHSN"
      displayName="[To replace] An existing central line where infection was
        suspected."/>

  <entryRelationship typeCode="RSON" inversionInd="true">
    <procedure classCode="PROC" moodCode="EVN" negationInd="false">
      <templateId root="2.16.840.1.113883.10.20.5.6.15"/>
      ...
    </procedure>
  </entryRelationship>

</observation>
 -->
```

Figure 100: Reason for procedure observation example in an HAR report

```
<observation classCode="OBS" moodCode="EVN" negationInd="false">
  <templateId root="2.16.840.1.113883.10.20.5.6.38"/>
  <code codeSystem="2.16.840.1.113883.5.4"
        code="ASSERTION"/>
  <statusCode code="completed"/>
  <value xsi:type="ST">(text: The primary underlying reason for the
         transfusion)</value>
</observation>
```

5.2.65 Reason Offer Declined Observation

[observation: templateId 2.16.840.1.113883.10.20.5.6.37 (closed)]

This observation records the reason(s) given for declining an offer. It is used in the Immunization Report to record whether specified reasons were or were not a factor in declining an offer to vaccinate.

If the reason reported was a factor in declining the offer, set the value of @negationInd to false. If the reason was not a factor in declining the offer, set the value of @negationInd to true.

The template allows the reason for declining to be recorded as a code or as text.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:2385).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:2386).
3. **SHALL** contain **@negationInd** (CONF:2387).
4. **SHALL** contain [1..1] **code** (CONF:11171).
    a. This code **SHALL** contain [1..1] **@code**="ASSERTION" Assertion (CodeSystem: 2.16.840.1.113883.5.4 HL7ActCode) (CONF:2388).
5. **SHALL** contain [1..1] **statusCode** (CONF:11170).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:2389).
6. **SHALL** contain [1..1] **value** (CONF:16159).
    a. This value **SHALL** contain [1..1] **code** (CONF:2390).
        i. To record the reason as a code, the value of @xsi:type **SHALL** be CD and the value of @code **SHALL** be selected from 2.16.840.1.114222.4.11.3187 NHSNReasonForDeclineVaccineCode **DYNAMIC**. Or, to record the reason as text, if it is not specified whether the reason is personal or medical, the value of @nullFlavor **SHALL** be OTH and an originalText element **SHALL** be present (CONF:2392).

Table 53: Reason for Declining Vaccine Value Set

Value Set: NHSNReasonForDeclineVaccineCode 2.16.840.1.114222.4.11.3187 Code System: SNOMED CT 2.16.840.1.113883.6.96 or cdcNHSN 2.16.840.1.113883.6.277

Code	Code System	Print Name
Medical Contraindications		
294640001	SNOMED CT	Allergy to vaccine components
7186-0	cdcNHSN	History of Guillian-Barre syndrome within 6 weeks of previous influenza vaccine
7187-7	cdcNHSN	Current febrile illness (Temp > 101.5)
Personal Reasons		
279926005	SNOMED CT	Fear of needles/injections
7165-4	cdcNHSN	Fear of side effects
7166-2	cdcNHSN	Perceived ineffectiveness of vaccine
7167-0	cdcNHSN	Religious or philosophical objections
7168-8	cdcNHSN	Concern for transmitting vaccine virus to contacts

Figure 101: Reason offer declined observation example

```
<!-- the reason was a factor in declining the immunizing offer -->
<observation classCode="OBS" moodCode="EVN" negationInd="false">
    <templateId root="2.16.840.1.113883.10.20.5.6.37"/>
    <code code="ASSERTION" codeSystem="2.16.840.1.113883.5.4"/>
    <statusCode code="completed"/>
    <value xsi:type="CD"
           code="294640001"
           codeSystem="2.16.840.1.113883.6.96"
           codeSystemName="SNOMED"
           displayName="Allergy to vaccine components"/>
</observation>
```

5.2.66 Recorder Observation

[`observation`: templateId `2.16.840.1.113883.10.20.5.6.39 (closed)`]

This observation records whether the person who recorded the sequence of steps in a practice was also the performer of those steps. It is used in the Central-line Insertion Practice clinical statement.

If the recorder was the performer, set the value of `@negationInd` to `false`. If the recorder was not the performer (i.e., was an observer), set the value of `@negationInd` to `true`.

1. **SHALL** contain [1..1] **`@classCode`**="OBS" Observation (CodeSystem: `2.16.840.1.113883.5.6 HL7ActClass`) (CONF:2399).
2. **SHALL** contain [1..1] **`@moodCode`**="EVN" Event (CodeSystem: `2.16.840.1.113883.5.1001 HL7ActMood`) (CONF:2400).
3. **SHALL** contain **`@negationInd`** (CONF:2401).
4. **SHALL** contain [1..1] **`code`** (CONF:11174).

a. This code **SHALL** contain [1..1] **@code**="ASSERTION" Assertion (CodeSystem: 2.16.840.1.113883.5.4 HL7ActCode) (CONF:2402).

5. **SHALL** contain [1..1] **statusCode** (CONF:11175).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:2403).
6. **SHALL** contain [1..1] **value** (CONF:11176).
    a. This value **SHALL** contain [1..1] **@code**="3104-7" Recorder was performer (CodeSystem: 2.16.840.1.113883.6.277 cdcNHSN) **STATIC** 20090625 (CONF:2404).

Figure 102: Recorder observation example

```
<observation classCode="OBS" moodCode="EVN"  negationInd="false">
  <templateId root="2.16.840.1.113883.10.20.5.6.39"/>
  <code codeSystem="2.16.840.1.113883.5.4"
      code="ASSERTION"
      codeSystemName="HL7 Act Code"/>
  <statusCode code="completed"/>
  <value xsi:type="CD" code="3104-7"
      codeSystem="2.16.840.1.113883.6.277"
      codeSystemName="cdcNHSN"
      displayName="Recorder was performer"/>
</observation>
```

5.2.67 Recovery Type Observation

[observation: templateId 2.16.840.1.113883.10.20.5.6.65 (closed)]

This observation records whether the recovery from a "near-miss" incident was planned or unplanned.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:4370).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:4371).
3. **SHALL** contain [1..1] **code** (CONF:11177).
    a. This **code SHALL** contain [1..1] **@code**="ASSERTION" Assertion (CodeSystem: 2.16.840.1.113883.5.4 HL7ActCode) (CONF:4373).
4. **SHALL** contain [1..1] **statusCode** (CONF:11178).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:4374).
5. **SHALL** contain [1..1] **value** (CONF:11179).
    a. This value **SHALL** contain [1..1] **@code**, which **SHALL** be selected from ValueSet 2.16.840.1.114222.4.11.3330 NHSNHemovigilanceRecoveryTypeCode **STATIC** 20100531 (CONF:4375).

Table 54: Hemovigilance Recovery Type Value Set

Value Set: NHSNHemovigilanceRecoveryTypeCode 2.16.840.1.114222.4.11.3330 Code System: cdcNHSN 2.16.840.1.113883.6.277		
Code	**Code System**	**Print Name**
3457-9	cdcNHSN	Planned recovery
3458-7	cdcNHSN	Unplanned recovery

Figure 103: Recovery type observation example

```
<observation classCode="OBS" moodCode="EVN">
  <templateId root="2.16.840.1.113883.10.20.5.6.65"/>
  <code codeSystem="2.16.840.1.113883.5.4"
        code="ASSERTION"/>
  <statusCode code="completed"/>
  <value xsi:type="CD"
        codeSystem="2.16.840.1.113883.6.277"
        codeSystemName="cdcNHSN"
        code="3457-9"
        displayName="Planned Recovery"/>
        <!-- value set: NHSN Recovery Type Codes -->
</observation>
```

5.2.68 Root Cause Type Observation

[`observation`: templateId `2.16.840.1.113883.10.20.5.6.64 (closed)`]

This observation records whether root-cause analysis identified a particular type of root cause for an incident.

If root-cause analysis was not done, a single Root Cause Type Observation is required, where the value of `value/@nullFlavor` is `NASK` (not asked).

When root-cause analysis has been done, a Root Cause Type Observation must be present for each datum required by the NHSN protocol. The reporting requirements as of publication are shown in the table below. If the cause was identified as a root cause of the incident, set the value of `@negationInd` to `false`.

Additional Root Cause Type Observations may be present with a text value to represent root cause types for which NHSN does not provide a code.

1. **SHALL** contain [1..1] **`@classCode`**="`OBS`" Observation (CodeSystem: `2.16.840.1.113883.5.6 HL7ActClass`) (CONF:4406).
2. **SHALL** contain [1..1] **`@moodCode`**="`EVN`" Event (CodeSystem: `2.16.840.1.113883.5.1001 HL7ActMood`) (CONF:4407).
3. **SHALL** contain **`@negationInd`** (CONF:4424).
4. **SHALL** contain [1..1] **`code]`** (CONF:11181).

a. This code **SHALL** contain [1..1] **@code**="405534009" Adverse incident contributing factor (CodeSystem: 2.16.840.1.113883.6.96 SNOMEDCT) (CONF:4408).

5. **SHALL** contain [1..1] **statusCode** (CONF:11182).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:4409).
6. **SHALL** contain [1..1] **value** (CONF:4410).
    a. To record the root cause as a code, the value of value/@xsi:type **SHALL** be "CD" (code) and the value of value/@code **SHALL** be selected from Value Set 2.16.840.1.114222.4.11.3331 NHSNRootCauseTypeCode **DYNAMIC**. To record a root cause for which NHSN does not provide a code, the value of value/@xsi:type **SHALL** be "ST" (string) and a text value **SHALL** be present. If root-cause analysis was not done, the value of value/@xsi:type **SHALL** be "CD" (code) and the value of value/@nullFlavor **SHALL** be NASK (Not asked). (CONF:4411).

Table 55: Root Cause Type Value Set

Value Set: NHSNRootCauseTypeCode 2.16.840.1.114222.4.11.3331 Code System: cdcNHSN 2.16.840.1.113883.6.277		
Code	**Code System**	**Print Name**
3459-5	cdcNHSN	Technical cause
3460-3	cdcNHSN	Organizational cause
3461-1	cdcNHSN	Human cause
3462-9	cdcNHSN	Patient-related cause

Figure 104: Root cause type observation example

```
<observation classCode="OBS" moodCode="EVN" negationInd="false">
  <templateId root="2.16.840.1.113883.10.20.5.6.64"/>
  <code codeSystem="2.16.840.1.113883.6.96"
        codeSystemName="SNOMED CT"
        code="405534009"
        displayName="Adverse incident contributing factor"/>
  <statusCode code="completed"/>
  <value xsi:type="CD"
        codeSystem="2.16.840.1.113883.6.277"
        codeSystemName="cdcNHSN"
        code="3460-3"
        displayName="Organizational cause"/>
</observation>
```

5.2.69 Seasons Immunized Observation

[observation: templateId 2.16.840.1.113883.10.20.5.6.40 (closed)]

This observation records the seasons for which an immunization is administered. It is used in the HAI Immunization Report as submitted for healthcare workers.

The effectiveTime/low element represents the starting year of the period; the effectiveTime/high element represents the ending year of the period.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:2405).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:2406).
3. **SHALL** contain [1..1] **@negationInd**="false" (CONF:2410).
4. **SHALL** contain [1..1] **code** (CONF:11184).
    a. This code **SHALL** contain [1..1] **@code**="3192-2" Seasons immunized (CodeSystem: 2.16.840.1.113883.6.277 cdcNHSN) (CONF:2407).
5. **SHALL** contain [1..1] **statusCode** (CONF:11185).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:2408).
6. **SHALL** contain [1..1] **effectiveTime** (CONF:2411).
    a. This effectiveTime **SHALL** contain [1..1] **high** (CONF:2413).
    b. This effectiveTime **SHALL** contain [1..1] **low** (CONF:2412).

Figure 105: Seasons immunized observation example

```
<!-- Seasons Immunized Observation -->
<observation classCode="OBS" moodCode="EVN" negationInd="false">
       <templateId root="2.16.840.1.113883.10.20.5.6.40"/>
       <code code="3192-2"
             codeSystem="2.16.840.1.113883.6.277"
             codeSystemName="cdcNHSN"
             displayName="Seasons immunized"/>
       <statusCode code="completed"/>
       <effectiveTime>
             <low value="1998"/>
             <high value="2002"/>
       </effectiveTime>
</observation>
```

5.2.70 Secondary Bloodstream Infection Observation

[observation: templateId 2.16.840.1.113883.10.20.5.2.2.7.15 (closed)]

This observation records whether a secondary bloodstream infection was present.

If a secondary bloodstream infection was present, set the value of observation/@negationInd to false. If a secondary bloodstream infection was not present, set the value of observation/@negationInd to true.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:2150).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:2151).
3. **SHALL** contain **@negationInd** (CONF:2224).

4. **SHALL** contain [1..1] **code** (CONF:11186).
    a. This code **SHALL** contain [1..1] **@code**="ASSERTION" Assertion (CodeSystem: 2.16.840.1.113883.5.4 HL7ActCode) (CONF:2152).
5. **SHALL** contain [1..1] **statusCode** (CONF:11187).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:2153).
6. **SHALL** contain [1..1] **value** (CONF:11188).
    a. This value **SHALL** contain [1..1] **@code**="3111-2" Secondary bloodstream infection (CodeSystem: 2.16.840.1.113883.6.277 cdcNHSN) (CONF:2154).

Figure 106: Secondary bloodstream infection observation example

```
<observation classCode="OBS" moodCode="EVN" negationInd="false">
  <templateId root="2.16.840.1.113883.10.20.5.2.2.7.15"/>
    <code code="ASSERTION"
          codeSystem="2.16.840.1.113883.5.4"/>
    <statusCode code="completed"/>
    <value
          xsi:type="CD"
          code="3111-2"
          codeSystem="2.16.840.1.113883.6.277"
          codeSystemName="cdcNHSN"
          displayName="Secondary bloodstream infection"/>
</observation>
```

5.2.71 Significant Pathogens Observation

[observation: templateId 2.16.840.1.113883.10.20.5.6.41 (closed)]

This observation records the finding of up to three of the most-significant pathogens. This is recorded separately from the drug-test Findings Organizers.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:2279).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:2280).
3. **SHALL** contain [1..1] **code** (CONF:11189).
    a. This code **SHALL** contain [1..1] **@code**="41852-5" Microorganism Identified (CodeSystem: 2.16.840.1.113883.6.1 LOINC) (CONF:2281).
4. **SHALL** contain [1..1] **statusCode** (CONF:11190).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:2282).
5. **SHALL** contain [1..3] **value** (CONF:17001).
    a. This value **SHALL** contain [1..1] **@code**, which **SHALL** be selected from ValueSet 2.16.840.1.114222.4.11.3194 NHSNSignificantPathogenCode **DYNAMIC** (CONF:2283).

Table 56: Significant Pathogens Value Set

Value Set: NHSNSignificantPathogenCode 2.16.840.1.114222.4.11.3194 Code System: SNOMED CT 2.16.840.1.113883.6.96 or cdcNHSN 2.16.840.1.113883.6.277		
Code	**Code System**	**Meaning**
115329001	SNOMED CT	MRSA
417943000	SNOMED CT	MSSA
113727004	SNOMED CT	VRE
2015-6	cdcNHSN	MDR-KLEB
2010-7	cdcNHSN	MDR-ACINE
5933001	SNOMED CT	CDIF
2016-4	cdcNHSN	CephR-Klebsiella (CEPHRKLEB)
2017-2	cdcNHSN	CRE-Klebsiella (CREKLEB)
2018-0	cdcNHSN	CRE-Ecoli (CREECOLI)

Figure 107: Significant pathogens observation example

```
<observation classCode="OBS" moodCode="EVN">
  <templateId root="2.16.840.1.113883.10.20.5.6.41"/>
  <code  codeSystem="2.16.840.1.113883.6.1"
         codeSystemName="LOINC"
         code="41852-5"
         displayName="Microorganism identified"/>

  <value xsi:type="CD"
         codeSystem="2.16.840.1.113883.6.96"
         codeSystemName="SNOMED"
         code="5933001"
         displayName="CDIF"/>
  <statusCode code="completed"/>
  <value xsi:type="CD"
         codeSystem="2.16.840.1.113883.6.96"
         codeSystemName="SNOMED"
         code="113727004"
         displayName="VRE"/>
</observation>
```

5.2.72 Skin Preparation Clinical Statement

[substanceAdministration: templateId 2.16.840.1.113883.10.20.5.6.101 (closed)]

This observation records a skin-preparation solution. It is used in the Skin-preparation Solutions Applied clinical statement in the Central-line Insertion Practice Report.

If the preparation step included application of the solution specified, set the value of `@negationInd` to `false`. If the preparation step did not include application of the solution specified, set the value of `@negationInd` to `true`.

1. **SHALL** contain [1..1] **`@classCode`**="SBADM" Substance administration (CodeSystem: `2.16.840.1.113883.5.6 HL7ActClass`) (CONF:2414).
2. **SHALL** contain [1..1] **`@moodCode`**="EVN" Event (CodeSystem: `2.16.840.1.113883.5.1001 HL7ActMood`) (CONF:2415).
3. **SHALL** contain **`@negationInd`** (CONF:3209).
4. **SHALL** contain [1..1] **`consumable`** (CONF:11191).
    a. `This` **`consumable`** **SHALL** contain [1..1] **`manufacturedProduct`** (CONF:2416).
        i. This manufacturedProduct **SHALL** contain [1..1] **`@classCode`**="MANU" Manufactured product (CodeSystem: `2.16.840.1.113883.5.110 HL7RoleClass`) (CONF:2417).
        ii. This manufacturedProduct **SHALL** contain [1..1] **`manufacturedMaterial`** (CONF:2418).
            1. This manufacturedMaterial **SHALL** contain [1..1] **`@classCode`**="MMAT" Manufactured material (CodeSystem: `2.16.840.1.113883.5.41 HL7EntityClass`) (CONF:2419).
            2. This manufacturedMaterial **SHALL** contain [1..1] **`code`** (CONF:2420).
                a. To record a skin-preparation solution as a code, the value of `@code` **SHALL** be selected from ValueSet `2.16.840.1.114222.4.11.3183 NHSNSkinPreparationCode` **DYNAMIC**. Or, to record a skin-preparation solution as text, the value of `@nullFlavor` **SHALL** be `OTH` and an `originalText` element **SHALL** be present recording the skin-preparation solution. (CONF:4531).

When recording whether chlorhexidine gluconate was applied, if it was not applied, NHSN protocol records whether there was a contraindication to it.

5. If chlorhexidine gluconate was not applied, this clinical statement **SHALL** contain [1..1] **`entryRelationship`** (CONF:16987).
    a. This entryRelationship **SHALL** contain [1..1] **`@typeCode`**=" RSON" Has reason (CodeSystem: `2.16.840.1.113883.5.1002 HL7ActRelationshipType`) (CONF:16988).
    b. This entryRelationship **SHALL** contain [1..1] **`Contraindicated Observation (templateId:2.16.840.1.113883.10.20.5.6.99)`** (CONF:16999).

Table 57: Skin Preparations Value Set

Value Set: NHSNSkinPreparationCode 2.16.840.1.114222.4.11.3183 Code System: RxNorm 2.16.840.1.113883.6.88		
Code	**Code System**	**Print Name**
20791	RxNorm	Chlorhexidine gluconate
8611	RxNorm	Povidone iodine
6052	RxNorm	Alcohol

Figure 108: Skin preparation clinical statement example

```
<substanceAdministration moodCode="EVN" classCode="SBADM" negationInd="true">
  <templateId root="2.16.840.1.113883.10.20.5.6.101"/>

  <consumable>
      <manufacturedProduct classCode="MANU">
          <manufacturedMaterial classCode="MMAT">
            <code code="8611"
                  codeSystem="2.16.840.1.113883.6.88"
                  codeSystemName="RxNorm"
                  displayName="Povidone iodine"/>
          </manufacturedMaterial>
      </manufacturedProduct>
  </consumable>

</substanceAdministration>
```

5.2.73 Solutions Dried Observation

[`observation`: templateId `2.16.840.1.113883.10.20.5.6.44 (closed)`]

This clinical statement represents the second step in the Central-line Insertion Practice sequence: whether the skin-preparation solution(s) applied had dried before the next step, which is the central-line insertion itself.

If the step was completed at this place in the sequence, set the value of `@negationInd` to `false`. If this step was not completed at this place in the sequence, set the value of `@negationInd` to `true`.

1. **SHALL** contain [1..1] **`@classCode`**="`OBS`" Observation (CodeSystem: `2.16.840.1.113883.5.6 HL7ActClass`) (CONF:2421).
2. **SHALL** contain [1..1] **`@moodCode`**="`EVN`" Event (CodeSystem: `2.16.840.1.113883.5.1001 HL7ActMood`) (CONF:2422).
3. **SHALL** contain **`@negationInd`** (CONF:2423).
4. **SHALL** contain [1..1] **`code`** (CONF:17040).
    a. This code **SHALL** contain [1..1] **`@code`**="`ASSERTION`" Assertion (CodeSystem: `2.16.840.1.113883.5.4 HL7ActCode`) (CONF:2424).
5. **SHALL** contain [1..1] **`statusCode`** (CONF:17041).
    a. This statusCode **SHALL** contain [1..1] **`@code`**="`completed`" Completed (CodeSystem: `2.16.840.1.113883.5.14 HL7ActStatus`) (CONF:2425).
6. **SHALL** contain [1..1] **`value`** (CONF:17042).
    a. This value **SHALL** contain [1..1] **`@code`**="`3114-6`" Solution(s) had dried (CodeSystem: `2.16.840.1.113883.6.277 cdcNHSN`) (CONF:2426).

Figure 109: Solutions dried observation example

```
<sequenceNumber value="2"/>
<observation moodCode="EVN" classCode="OBS" negationInd="false">
  <templateId root="2.16.840.1.113883.10.20.5.6.44"/>
  <code code="ASSERTION"
      codeSystem="2.16.840.1.113883.5.4"
      codeSystemName="HL7 Act Code"/>
  <statusCode code="completed"/>
  <value xsi:type="CD"
      code="3114-6"
      codeSystem="2.16.840.1.113883.6.277"
      codeSystemName="cdcNHSN"
      displayName="Solution(s) had dried"/>
</observation>
```

5.2.74 Specimen Collection Encounter (LIO)

[`encounter`: templateId `2.16.840.1.113883.10.20.5.6.54 (closed)`]

The Specimen Collection Encounter (LIO) records the in-facility location where a specimen was collected and, if the patient was an inpatient, the date the patient was admitted or transferred to that in-facility location.

This template conforms to the CCD Encounter Activity template (`templateId 2.16.840.1.113883.10.20.1.21`). That template requires an `id`; in the NHSN LIO Report, the `id` of the encounter is not reported.

The `participant` element represents the in-facility location where the specimen was drawn, and conforms to the CCD Encounter Location template (`templateId 2.16.840.1.113883.10.20.1.45`). The value of `participantRole/id/@root` will be the same as the `healthCareFacility` in the `encompassingEncounter`, but here it is scoping the in-facility location where the specimen was collected, represented in the `@extension`.

1. **SHALL** contain [1..1] **`@classCode`**="`ENC`" Encounter (CodeSystem: `2.16.840.1.113883.5.6 HL7ActClass`) (CONF:17044).
2. **SHALL** contain [1..1] **`@moodCode`**="`EVN`" Event (CodeSystem: `2.16.840.1.113883.5.1001 HL7ActMood`) (CONF:17045).
3. **SHALL** contain [1..1] **`id`** (CONF:3034).
    a. This id **SHALL** contain [1..1] **`@nullFlavor`**="`NI`" No information (CodeSystem: `2.16.840.1.113883.5.1002 HL7ActRelationshipType`) (CONF:3210).
4. If the patient was an inpatient, an `effectiveTime/low` element **SHALL** be present representing the date the patient was admitted or transferred to that location. (CONF:3035).
5. **SHALL** contain [1..1] **`participant`** (CONF:3036).
    a. This participant **SHALL** contain [1..1] **`@typeCode`**="`LOC`" Location (CodeSystem: `2.16.840.1.113883.5.90 HL7ParticipationType`) (CONF:3037).
    b. This participant **SHALL** contain [1..1] **`participantRole`** (CONF:3038).

i. This participantRole **SHALL** contain [1..1] **@classCode**="SDLOC" Service delivery location (CodeSystem: 2.16.840.1.113883.5.110 HL7RoleClass) (CONF:3039).

ii. This participantRole **SHALL** contain [1..1] **id** (CONF:3040).

1. This id **SHALL** contain **@root** (CONF:3041).
2. This id **SHALL** contain **@extension** (CONF:3042).

iii. This participantRole **SHALL** contain [1..1] **playingEntity** (CONF:3043).

1. This playingEntity **SHALL** contain [1..1] **@classCode**="PLC" Place (CodeSystem: 2.16.840.1.113883.5.41 HL7EntityClass) (CONF:3044).
    a. This playingEntity **SHALL** contain [1..1] **code** (CONF:17043).
        i. This code **SHALL** contain [1..1] **@code**, which **SHALL** be selected from ValueSet 2.16.840.1.113883.13.19 NHSNHealthcareServiceLocationCode **DYNAMIC** (CONF:3045).

Figure 110: Specimen collection location and admission date example

```
<encounter classCode="ENC" moodCode="EVN">
  <templateId root="2.16.840.1.113883.10.20.5.6.54"/>

  <id nullFlavor="NI" />

  <!-- If person was an inpatient at the in-facility location
       where the specimen was taken:
       date admitted/transferred there -->
  <effectiveTime>
    <low value="20090117" />
  </effectiveTime>

  <!-- The in-facility location where the specimen was taken -->
  <participant typeCode="LOC">
    <templateId root="2.16.840.1.113883.10.20.1.45"/> <!-- CCD -->

    <participantRole classCode="SDLOC">
      <id root="2.16.840.1.113883.3.117.1.1.5.1.1" extension="9W"/>

      <playingEntity classCode="PLC">
        <code codeSystem="2.16.840.1.113883.6.259"
              codeSystemName="HL7 Healthcare Service Location Code"
              code="1029-8"
              displayName="Medical/Surgical Critical Care"/>
      </playingEntity>
```

```
    </participantRole>
  </participant>
</encounter>
```

5.2.75 Specimen Collection Procedure (LIO)

[procedure: templateId 2.16.840.1.113883.10.20.5.6.53 (closed)]

The Specimen Collection Procedure (LIO) records the date a specimen was collected and the type of specimen. It includes a Specimen Collection Encounter (LIO), which records the in-facility location where the specimen was drawn and, for an inpatient, the date the patient was admitted or transferred to that in-facility location.

The template is derived from the NICV Specimen Collection Procedure (templateId 2.16.840.1.113883.10.20.15.3.2). In the NHSN LIO Report, a collection procedure code is not recorded. The effectiveTime element records the date when the specimen was collected. The participant element records the specimen type.

1. **SHALL** contain [1..1] **@classCode**="PROC" Procedure (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:3046).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:3047).
3. **SHALL** contain [1..1] **effectiveTime** (CONF:11159).
    a. This effectiveTime **SHALL** contain [1..1] **@value** (CONF:3048).
4. **SHALL** contain [1..1] **participant** (CONF:3049).
    a. This participant **SHALL** contain [1..1] **@typeCode**="PRD" Product (CodeSystem: 2.16.840.1.113883.5.90 HL7ParticipationType) (CONF:3050).
    b. This participant **SHALL** contain [1..1] **participantRole** (CONF:3051).
        i. This participantRole **SHALL** contain [1..1] **@classCode**="SPEC" Specimen (CodeSystem: 2.16.840.1.113883.5.110 HL7RoleClass) (CONF:3052).
        iv. This participantRole **SHALL** contain [1..1] **playingEntity** (CONF:11465).
            1. This playingEntity **SHALL** contain [1..1] **code** (CONF:3053).
                a. To record a specimen type, the value of @xsi:type **SHALL** be CD and @code **SHALL** be present where the value is selected from 2.16.840.1.114222.4.11.3249 NHSNSpecimenTypeCode **DYNAMIC**. To record that the specimen type is not known, the value of code/@nullFlavor **SHALL** be UNK (CONF:10898).
5. **SHALL** contain [1..1] **entryRelationship** (CONF:3054).
    a. This entryRelationship **SHALL** contain [1..1] **@typeCode**="COMP" Has component (CodeSystem: 2.16.840.1.113883.5.1002 HL7ActRelationshipType) (CONF:3055).
    b. This entryRelationship **SHALL** contain [1..1] **@inversionInd**="true" (CONF:3056).

c. This entryRelationship **SHALL** contain [1..1] **Specimen Collection Encounter (LIO)** (templateId:2.16.840.1.113883.10.20.5.6.54) (CONF:3057).

Table 58: Specimen Type Value Set (excerpt)

Value Set: NSHNSpecimenTypeCode 2.16.840.1.114222.4.11.3249 Code System: SNOMED CT 2.16.840.1.113883.6.96 The full table is shown in the hai_voc.xls file provided with this package.		
SNOMED CT Concept ID	**SNOMED CT Fully Specified Name**	**NHSN Description**
258541006	Cardiovascular sample (specimen)	Cardiovascular (NOS)
309479002	Artery sample (specimen)	Artery sample
119297000	Blood specimen (specimen)	Blood specimen
258452003	Chylous fluid sample (specimen)	Chylous fluid sample
127462005	Specimen from heart (specimen)	Specimen from heart
…		

Figure 111: Specimen collection date and type example

```
<procedure classCode="PROC" moodCode="EVN">
  <templateId root="2.16.840.1.113883.10.20.5.6.53"/>

<!-- Date specimen collected -->
  <effectiveTime value="20090121"/>

  <!-- Specimen type -->
  <participant typeCode="PRD">
    <participantRole classCode="SPEC">
      <playingEntity>
        <code codeSystem="2.16.840.1.113883.6.96"
              codeSystemName="SNOMED CT"
              code="122571007"
              displayName="Pericardial fluid"> </code>
      </playingEntity>
    </participantRole>
  </participant>
  ...
</procedure>
```

5.2.76 Spinal Fusion Level Observation

[observation: templateId 2.16.840.1.113883.10.20.5.2.2.7.8 (closed)]

This observation records the spinal level of a spinal fusion procedure.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:2433).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:2434).
3. **SHALL** contain [1..1] **code** (CONF:17044).
    a. This code **SHALL** contain [1..1] **@code**="ASSERTION" Assertion (CodeSystem: 2.16.840.1.113883.5.4 HL7ActCode) (CONF:2436).
4. **SHALL** contain [1..1] **statusCode** (CONF:17045).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:2437).
5. **SHALL** contain [1..1] **value** (CONF:2438).
    a. The value of value/@xsi:type **SHALL** be CD. (CONF:2613).
    b. If the spinal fusion level is known, the value of value/@code **SHALL** be selected from Value Set 2.16.840.1.113883.13.11 NHSNSpinalFusionLevelCode **STATIC** 20090625. Or, if the spinal fusion level is not known, the value of value/@nullFlavor **SHALL** be NI. (CONF:2439).

Table 59: Spinal Fusion Level Value Set

Value Set: NHSNSpinalFusionLevelCode 2.16.840.1.113883.13.11 Code System: cdcNHSN 2.16.840.1.113883.6.277		
Code	**Code System**	**Print Name**
1101-5	cdcNHSN	atlas-axis (C1-C2 only)
1102-3	cdcNHSN	atlas-axis/cervical (C1-C7: any combination)
1103-1	cdcNHSN	cervical (C3-C7: any combination)
1104-9	cdcNHSN	cervical/dorsal/dorsolumbar (Extends from any cervical through any lumbar levels)
1105-6	cdcNHSN	dorsal/dorsolumbar (T1-L5: any combination)
1106-4	cdcNHSN	lumbar/lumbosacral (L1-S5: any combination)

Figure 112: Spinal fusion level observation example

```
<observation classCode="OBS" moodCode="EVN">
  <templateId root="2.16.840.1.113883.10.20.5.2.2.7.8"/>
  <code codeSystem="2.16.840.1.113883.5.4"
        code="ASSERTION"/>
  <statusCode code="completed"/>
  <value xsi:type="CD"
         codeSystem="2.16.840.1.113883.6.277"
         codeSystemName="cdcNHSN"
         code="1101-5"
         displayName="Spinal Fusion of Atlas-Axis"/>
</observation>
```

5.2.77 Sterile Barriers Applied Clinical Statement

[procedure: templateId 2.16.840.1.113883.10.20.5.6.45 (closed)]

This clinical statement records sterile barriers applied. It is used in the first, preparatory step in the Central-line Insertion Practice.

1. **SHALL** contain [1..1] **@classCode**="PROC" Procedure (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:2440).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:2441).
3. **SHALL** contain [1..1] **@negationInd**="false" (CONF:2442).
4. **SHALL** contain [1..1] **code** (CONF:17046).
    a. This code **SHALL** contain [1..1] **@code**="370822003" Use of sterile technique (CodeSystem: 2.16.840.1.113883.6.96 SNOMEDCT) (CONF:2443).
5. **MAY** contain [0..*] **participant** (CONF:2444).
    a. Such participants, if present, **SHALL** contain [1..1] **@typeCode**="DEV" Device (CodeSystem: 2.16.840.1.113883.5.90 HL7ParticipationType) (CONF:2445).
    b. Such participants, if present, **SHALL** contain [1..1] **participantRole** (CONF:2446).
        i. This participantRole **SHALL** contain [1..1] **@classCode**="MANU" (CodeSystem: 2.16.840.1.113883.5.110 HL7RoleClass) (CONF:2447).
        ii. This participantRole **SHALL** contain [1..1] **playingDevice** (CONF:11156).
            1. This playingDevice **SHALL** contain [1..1] **code**, which **SHALL** be selected from ValueSet 2.16.840.1.114222.4.11.3184 NHSNSterileBarrierCode **DYNAMIC** (CONF:11157).
                a. This code **SHALL** contain [1..1] **@code**, which **SHALL** be selected from ValueSet 2.16.840.1.114222.4.11.3184 NHSNSterileBarrierCode **DYNAMIC** (CONF:2448).

Table 60: Sterile Barriers Applied Value Set

Value Set: NHSNSterileBarrierCode 2.16.840.1.114222.4.11.3184 Code System: cdcNHSN 2.16.840.1.113883.6.277		
Code	**Code System**	**Print Name**
6122-6	cdcNHSN	Cap
6112-7	cdcNHSN	Large sterile drape
6110-1	cdcNHSN	Mask/Eye shield
6113-5	cdcNHSN	Sterile gloves
6111-9	cdcNHSN	Sterile gown

Figure 113: Sterile barriers applied clinical statement example

```
<procedure moodCode="EVN" classCode="PROC" negationInd="false">
  <templateId root="2.16.840.1.113883.10.20.5.6.45"/>
  <code code="370822003"
        codeSystem="2.16.840.1.113883.6.96"
        codeSystemName="SNOMED CT"
        displayName="Use of Sterile Technique"/>

    <participant typeCode="DEV">
      <participantRole classCode="MANU">
        <playingDevice>
          <code code="6110-1"
                codeSystem="2.16.840.1.113883.6.277"
                codeSystemName="cdcNHSN"
                displayName="Mask/Eye shield"/>
        </playingDevice>
      </participantRole>
    </participant>
    ...
</procedure>
```

5.2.78 Suspected Source Observation

[observation: templateId 2.16.840.1.113883.10.20.5.6.87 (closed)]

This observation records a suspected source of a finding.

This observation and its value set are used in an Evidence of Infection (Dialysis) Report. It could be generalized for broader use.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: HL7ActClass 2.16.840.1.113883.5.6) (CONF:10008).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: ActMood 2.16.840.1.113883.5.1001) (CONF:10009).
3. **SHALL** contain [1..1] **@negationInd**="false" (CONF:10010).
4. **SHALL** contain [1..1] **code** (CONF:10011).
    a. This code **SHALL** contain [1..1] **@code**="ASSERTION" Assertion (CodeSystem: ActCode 2.16.840.1.113883.5.4) (CONF:11466)
5. **SHALL** contain [1..1] **statusCode** (CONF:10012).

a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: HL7ActStatus 2.16.840.1.113883.5.14) (CONF:11467).

6. **SHALL** contain [1..1] **value** (CONF:10015).
    a. In an Evidence of Infection (Dialysis) report, to represent the suspected source as a code, the value of @code **SHALL** be selected from ValueSet 2.16.840.1.114222.4.11.6008 NHSNSuspectedSourceTypeCode **STATIC** 20111215 (CONF:10016).
    b. If the suspected source is not listed in Value Set 2.16.840.1.114222.4.11.6008 NHSNSuspectedSourceTypeCode , set the value of @nullFlavor to 'OTH' (CONF:10017).
    c. If the suspected source is uncertain, set the value of @nullFlavor to NI (CONF:10018).

    In an Evidence of Infection (Dialysis) Report, NHSN protocol requires an Imputability Observation with the value "Possible" to represent that a definitive etiology is not being asserted.
7. **SHALL** contain [1..1] **entryRelationship** (CONF:10019) such that it
    a. This entryRelationship **SHALL** contain [1..1] **@typeCode**="COMP" Has component (CodeSystem: 2.16.840.1.113883.5.1002 HL7ActRelationshipType) (CONF:10020).
    b. This entryRelationship **SHALL** contain [1..1] **Imputability Observation** (2.16.840.1.113883.10.20.5.6.82) (CONF:10021) such that
        i. This Imputability Observation **SHALL** contain [1..1] **code** (CONF:11154).
            1. This code **SHALL** contain [1..1] **@code**="2307-7" Imputability of positive blood culture to the suspected source (CodeSystem: cdcNHSN 2.16.840.1.113883.6.277) (CONF:10022).
        ii. This Imputability Observation **SHALL** contain [1..1] **value** (CONF:11155).
            1. This value **SHALL** contain [1..1] **@code**="60022001" Possible (CodeSystem: SNOMEDCT 2.16.840.1.113883.6.96) (CONF:10023).

Table 61: Suspected Source Type Value Set

Value Set: NHSNSuspectedSourceTypeCode 2.16.840.1.114222.4.11.6008 Code System: cdcNHSN 2.16.840.1.113883.6.277 or SNOMED CT 2.16.840.1.113883.6.96		
Code	**Code System**	**Print Name**
34362008	SNOMED CT	Vascular access device
2303-6	cdcNHSN	Contaminant

Figure 114: Suspected source observation example

```
<observation classCode="OBS" moodCode="EVN" negationInd="false">
   <templateId root=" 2.16.840.1.113883.10.20.5.6.87"/>
   <code code="ASSERTION"
         codeSystem="2.16.840.1.113883.5.4"/>
   <statusCode code="completed"/>
   <value xsi:type="CD"
          codeSystem="2.16.840.1.113883.6.96"
          codeSystemName="SNOMED CT"
          code="34362008"
          displayName="Vascular access"/>

   <!-- Imputability = possible  (the "suspected" source) -->
   <entryRelationship typeCode="COMP">
      <observation classCode="OBS" moodCode="EVN" negationInd="false">
        <templateId root="2.16.840.1.113883.10.20.5.6.82"/>
        <code codeSystem="2.16.840.1.113883.6.277"
              codeSystemName="cdcNHSN"
              code="2307-7"
              displayName="Imputability of positive blood culture
                           to the suspected source"/>
        <statusCode code="completed"/>
        <value xsi:type="CD"
               codeSystem="2.16.840.1.113883.6.96"
               codeSystemName="SNOMED CT"
               code="60022001"
               displayName="Possible"/>
      </observation>
   </entryRelationship>
 </observation>
```

5.2.79 Transfusion Clinical Statement

[substanceAdministration: templateId 2.16.840.1.113883.10.20.5.6.73 (closed)]

This clinical statement groups together information about the transfusion, including the reason for the procedure, information about the individual blood components transfused, and information arising from investigation into an adverse reaction.

1. **SHALL** contain [1..1] **@classCode**="SBADM" Substance administration (CodeSystem: HL7ActClass 2.16.840.1.113883.5.6) (CONF:4754).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: ActMood 2.16.840.1.113883.5.1001) (CONF:4755).
3. **SHALL** contain [1..1] **@negationInd**="false" (CONF:4756).
4. **SHALL** contain [1..1] **@code**="410652009" Blood product (CodeSystem: SNOMEDCT 2.16.840.1.113883.6.96) (CONF:4757).
5. **SHALL** contain [1..1] **consumable** (CONF:4758).
    a. This consumable **SHALL** contain [1..1] **manufacturedProduct** (CONF:4759).
        i. This manufacturedProduct **SHALL** contain [1..1] **manufacturedMaterial** (CONF:4760).
6. **SHALL** contain [1..*] **entryRelationship** (CONF:4761) such that it

a. **SHALL** contain [1..1] **@typeCode**="COMP" Has component (CodeSystem: HL7ActRelationshipType 2.16.840.1.113883.5.1002) (CONF:4762).
b. **SHALL** contain [1..1] **Blood Product Transfused Observation** (2.16.840.1.113883.10.20.5.6.74) (CONF:4763).

7. **SHALL** contain [1..1] **entryRelationship** (CONF:4764) such that it
   a. **SHALL** contain [1..1] **@typeCode**="RSON" Has reason (CodeSystem: HL7ActRelationshipType 2.16.840.1.113883.5.1002) (CONF:4765).
   b. **SHALL** contain [1..1] **Reason for Procedure Observation** (2.16.840.1.113883.10.20.5.6.38) (CONF:4766).
8. **SHALL** contain [1..1] **entryRelationship** (CONF:4767) such that it
   a. **SHALL** contain [1..1] **@typeCode**="MFST" Is manifestation of (CodeSystem: HL7ActRelationshipType 2.16.840.1.113883.5.1002) (CONF:4768).
   b. **SHALL** contain [1..1] **@inversionInd**="true" (CONF:4792).
   c. **SHALL** contain [1..1] **Hemovigilance Adverse Reaction Observation** (2.16.840.1.113883.10.20.5.6.76) (CONF:4769).

Figure 115: Transfusion clinical statement example

```
<substanceAdministration classCode="SBADM" moodCode="EVN" negationInd="false">
  <templateId root="2.16.840.1.113883.10.20.5.6.73"/>
  <code codeSystem="2.16.840.1.113883.6.96"
        codeSystemName="SNOMED CT"
        code="410652009"
        displayName="blood product"/>

  <!-- required by CDA -->
  <consumable>
    <manufacturedProduct>
      <manufacturedMaterial/>
    </manufacturedProduct>
  </consumable>

  <!-- Blood Product Transfused Observation (HAR): one for each component
       reported -->
  <entryRelationship typeCode="COMP">
    <observation classCode="OBS" moodCode="EVN">
      <templateId root="2.16.840.1.113883.10.20.5.6.74"/>
      ...
    </observation>
  </entryRelationship>

  <!-- Reason for Procedure Observation -->
  <entryRelationship typeCode="RSON">
    <observation classCode="OBS" moodCode="EVN" negationInd="false">
      <templateId root="2.16.840.1.113883.10.20.5.6.38"/>
      ...
    </observation>
  </entryRelationship>
```

```
  <!-- Hemovigilance Adverse Reaction Observation  -->
  <entryRelationship typeCode="MFST" inversionInd="true">
    <observation classCode="OBS" moodCode="EVN" negationInd="false">
      <templateId root="2.16.840.1.113883.10.20.5.6.76"/>
      ...
    </observation>
  </entryRelationship> <!-- end of adverse reaction -->

</substanceAdministration>
```

5.2.80 Transient Patient Observation

`[observation:` templateId `2.16.840.1.113883.10.20.5.6.91 (closed)]`

This observation records whether the service location submitting the report is the location where the patient is usually seen. It is used in the Evidence of Infection (Dialysis) Report.

When the service location is not the location where the patient is usually seen, set the value of `@negationInd` to `true`. When the service location is the location where the patient is usually seen, set the value of `@negationInd` to `false`.

1. **SHALL** contain [1..1] **`@classCode`**`="OBS"` Observation (CodeSystem: `HL7ActClass 2.16.840.1.113883.5.6`) (CONF:10254).
2. **SHALL** contain [1..1] **`@moodCode`**`="EVN"` Event (CodeSystem: `ActMood 2.16.840.1.113883.5.1001`) (CONF:10255).
3. **SHALL** contain [1..1] **`@negationInd`** (CONF:10256).
4. **SHALL** contain [1..1] **`code`** (CONF:11151).
    a. This code **SHALL** contain [1..1] **`@code`**`="ASSERTION"` Assertion (CodeSystem: `ActCode 2.16.840.1.113883.5.4`) (CONF:10257).
5. **SHALL** contain [1..1] **`statusCode`** (CONF:11152).
    a. This statusCode **SHALL** contain [1..1] **`@code`**`="completed"` Completed (CodeSystem:HL7ActStatus `2.16.840.1.113883.5.14`) (CONF:10258).
6. **SHALL** contain [1..1] **`value`** (CONF:11153).
    a. This value **SHALL** contain [1..1] **`@code`**`="2304-4"` Transient Patient (CodeSystem: `cdcNHSN 2.16.840.1.113883.6.277`) (CONF:10259).

Figure 116: Transient patient observation example

```
<!-- The patient is a transient patient, not usually seen at the
     service location submitting the report. -->
<observation classCode="OBS" moodCode="EVN" negationInd="false">
   <templateId root="2.16.840.1.113883.10.20.5.6.91"/>
   <code code="ASSERTION"
         codeSystem="2.16.840.1.113883.5.4"/>
   <statusCode code="completed"/>

   <value xsi:type="CD"
          codeSystem="2.16.840.1.113883.6.277"
          codeSystemName="cdcNHSN"
          code="2304-4"
          displayName="Transient patient/>
</observation>
```

5.2.81 Trauma Observation

[observation: templateId 2.16.840.1.113883.10.20.5.2.2.7.5 (closed)]

This observation records whether the person had trauma. It is used in reporting the circumstances of a procedure.

If trauma was involved, set the value of @negationInd to false. If trauma was not involved, set the value of @negationInd to true.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:2450).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:2451).
3. **SHALL** contain **@negationInd** (CONF:2452).
4. **SHALL** contain [1..1] **code** (CONF:17047).
    a. This code **SHALL** contain [1..1] **@code**="ASSERTION" Assertion (CodeSystem: 2.16.840.1.113883.5.4 HL7ActCode) (CONF:2453).
5. **SHALL** contain [1..1] **statusCode** (CONF:17048).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:2454).
6. **SHALL** contain [1..1] **value** (CONF:17049).
    a. This value **SHALL** contain [1..1] **@code**="417746004" Trauma (CodeSystem: 2.16.840.1.113883.6.96 SNOMEDCT) (CONF:2455).

Figure 117: Trauma observation example

```
<observation classCode="OBS" moodCode="EVN" negationInd="false">
  <templateId root="2.16.840.1.113883.10.20.5.2.2.7.5"/>
  <code codeSystem="2.16.840.1.113883.5.4" code="ASSERTION"/>
  <statusCode code="completed"/>
  <value xsi:type="CD"
         code="417746004"
         codeSystem="2.16.840.1.113883.6.96"
         codeSystemName="SNOMED"
         displayName="Trauma"/>
</observation>
```

5.2.82 Urinary Catheter Observation

[observation: templateId 2.16.840.1.113883.10.20.5.6.48 (closed)]

This observation records whether the person was using a urinary catheter.

If a urinary catheter is present, set the value of @negationInd to false. If the urinary catheter is not present, set the value of @negationInd to true.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:2456).

2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:2457).
3. **SHALL** contain **@negationInd** (CONF:2458).
4. **SHALL** contain [1..1] **code** (CONF:17050).
    a. This code **SHALL** contain [1..1] **@code**="ASSERTION" Assertion (CodeSystem: 2.16.840.1.113883.5.4 HL7ActCode) (CONF:2459).
5. **SHALL** contain [1..1] **statusCode** (CONF:17051).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:2460).
6. **SHALL** contain [1..1] **value** (CONF:17052).
    a. This value **SHALL** contain [1..1] **@code**="3191-4" Urinary catheter present (CodeSystem: 2.16.840.1.113883.6.277 cdcNHSN) (CONF:2461).
7. If a urinary catheter is not present (@negationInd="true"), an entryRelationship **SHALL** be present where the value of @typeCode is COMP containing a History of Object Presence Observation (templateId:2.16.840.1.113883.10.20.5.6.56) . (CONF:4208).

Figure 118: Urinary catheter observation example

```
<entry>
 <observation classCode="OBS" moodCode="EVN" negationInd="false">
    <templateId root="2.16.840.1.113883.10.20.5.6.48"/>
    <code codeSystem="2.16.840.1.113883.5.4"
          code="ASSERTION"/>
    <statusCode code="completed"/>
    <value xsi:type="CD"
           codeSystem="2.16.840.1.113883.6.277"
           codeSystemName="cdcNHSN"
           code="3191-4"
           displayName="Urinary Catheter Present"/>
  </observation>
</entry>
```

5.2.83 Vaccine Information Statement Type

[observation: templateId 2.16.840.1.113883.10.20.5.6.49 (closed)]

This observation records the vaccination information statement provided to the person to whom immunization was administered.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:2462).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:2463).
3. **SHALL** contain [1..1] **@negationInd**="false" (CONF:2464).
4. **SHALL** contain [1..1] **code** (CONF:17053).
    a. This code **SHALL** contain [1..1] **@code**="ASSERTION" Assertion (CodeSystem: 2.16.840.1.113883.5.4 HL7ActCode) (CONF:2465).
5. **SHALL** contain [1..1] **statusCode** (CONF:17054).

a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:2466).

6. **SHALL** contain [1..1] **value** (CONF:17055).
   a. This value **SHALL** contain [1..1] **@code**, which **SHALL** be selected from ValueSet 2.16.840.1.114222.4.11.3192 NHSNInformationStatementCode **STATIC** 20090625 (CONF:2467).

Table 62: Vaccine Information Statement Value Set

Value Set: NHSNInformationStatementCode 2.16.840.1.114222.4.11.3192 Code System: cdcNHSN 2.16.840.1.113883.6.277		
Code	**Code System**	**Print Name**
8178-6	cdcNHSN	Live Attenuated Influenza Vaccine Information Statement
8179-4	cdcNHSN	Inactivated Influenza Vaccine Information Statement

Figure 119: Vaccine information statement example

```
<!-- Vaccine Information Statement Type Observation -->
<observation classCode="OBS" moodCode="EVN" negationInd="false">
      <templateId root="2.16.840.1.113883.10.20.5.6.49"/>
      <code codeSystem="2.16.840.1.113883.5.4"
            code="ASSERTION"/>
      <statusCode code="completed"/>
      <value xsi:type="CD"
             code="8178-6"
             codeSystem="2.16.840.1.113883.6.277"
             codeSystemName="cdcNHSN"
             displayName="Live Attenuated Influenza Vaccine Information
                 Statement"/>
</observation>
```

5.2.84 Vascular Access Type Observation

[observation: templateId 2.16.840.1.113883.10.20.5.6.84 (closed)]

This observation records the presence or absence of a type of vascular access. This clinical statement is used in the Risk Factors Section in an Evidence of Infection (Dialysis) Report.

NHSN protocol requires one such observation for each value in the Vascular Access Type value set, and an additional such observation that records whether any other type of vascular access was present.

The value of effectiveTime/low represents the access placement date. NHSN protocol specifies that this date be recorded as year and month. CDA requires that the year be recorded as four digits: the form of an access placement date will be yyyymm.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: HL7ActClass 2.16.840.1.113883.5.6) (CONF:10266).

2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: ActMood 2.16.840.1.113883.5.1001) (CONF:10267).
3. **SHALL** contain **@negationInd** (CONF:10268).
4. **SHALL** contain [1..1] **code** (CONF:11149).
    a. This code **SHALL** contain [1..1] **@code**="ASSERTION" Assertion (CodeSystem: ActCode 2.16.840.1.113883.5.4) (CONF:10269).
5. **SHALL** contain [1..1] **statusCode** (CONF:11150).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: ActStatus 2.16.840.1.113883.5.14) (CONF:10270).
6. **SHALL** contain [1..1] **effectiveTime** (CONF:11476).
    a. This effectiveTime **SHALL** contain [1..1] **low** (CONF:10271).
        i. When the access placement date is known, it SHALL be recorded as year and month (yyyymm).
        ii. When the access placement date is not known, the value of @nullFlavor **SHALL** be NI (no information) (CONF:10272).
7. **SHALL** contain [1..1] **value** (CONF:10273).
    a. To record the presence or absence of a vascular access type that is listed in the NHSN Vascular Access Type value set, the value of @code **SHALL** be selected from ValueSet 2.16.840.1.114222.4.11.6007 NHSNVascularAccessTypeCode **STATIC** 20110930 (CONF:10274).
    b. To record that another type of vascular access is present, set the value of @nullFlavor to OTH (other) (CONF:10275).

In an Evidence of Infection (Dialysis) Report, when the vascular access type is fistula, NHSN protocol further requires a record of whether the fistula was accessed by the buttonhole cannulation technique in the most recent treatments.

8. If the vascular access type is "Surgically constructed arteriovenous fistula" (SNOMED CT 438503005), this observation **SHALL** contain an entryRelationship element (CONF:10276), such that it
    a. **SHALL** contain [1..1] **@typeCode**="COMP" component (CONF:10277).
    b. **SHALL** contain [1..1] **Buttonhole Cannulation Observation** (2.16.840.1.113883.10.20.5.6.96) (CONF:10278).

Table 63: Vascular Access Type Value Set

Value Set: NHSNVascularAccessTypeCode 2.16.840.1.114222.4.11.6007 Code System: SNOMED CT 2.16.840.1.113883.6.96 or cdcNHSN 2.16.840.1.113883.6.277		
Code	**Code System**	**Print Name**
438503005	SNOMED CT	Surgically constructed arteriovenous fistula
439218000	SNOMED CT	Surgically constructed arteriovenous graft
1117-1	cdcNHSN	Tunnelled central line, dialysis
1119-7	cdcNHSN	Non-tunnelled central line, dialysis

Figure 120: Vascular access type example

```
<observation classCode="OBS" moodCode="EVN" negationInd="false">
   <templateId root=" 2.16.840.1.113883.10.20.5.6.84"/>
   <code codeSystem="2.16.840.1.113883.5.4" code="ASSERTION"/>
   <statusCode code="completed"/>

   <!-- Access placement date; may be unknown @nullFlavor="NI" -->
   <effectiveTime>
     <low value="200708"/>
   </effectiveTime>

   <value xsi:type="CD"
          codeSystem="2.16.840.1.113883.6.96"
          codeSystemName="SNOMED CT"
          code="438503005"
          displayName="Surgically constructed arteriovenous fistula"/>

  <!-- If a fistula, specify whether buttonhole cannulation is used -->
  <entryRelationship typeCode="COMP">
    <observation classCode="OBS" moodCode="EVN">
      <templateId root="2.16.840.1.113883.10.20.5.6.96"/>
      ...
    </observation>
  </entryRelationship>

</observation>
```

5.2.85 Ventilator Observation

[observation: templateId 2.16.840.1.113883.10.20.5.6.50 (closed)]

This observation records whether the person was on a ventilator.

If the patient was on a ventilator, set the value of @negationInd to false. If the patient was not on a ventilator, set the value of @negationInd to true.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:2468).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:2469).
3. **SHALL** contain **@negationInd** (CONF:2470).
4. **SHALL** contain [1..1] **code** (CONF:11666).
    a. This code **SHALL** contain [1..1] **@code**="ASSERTION" Assertion (CodeSystem: 2.16.840.1.113883.5.4 HL7ActCode) (CONF:2471).
5. **SHALL** contain [1..1] **statusCode** (CONF:17056).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:2472).
6. **SHALL** contain [1..1] **value** (CONF:11667).

a. This value **SHALL** contain [1..1] **@code**="371820004" Patient ventilated (CodeSystem: 2.16.840.1.113883.6.96 SNOMEDCT) (CONF:2473).

Figure 121: Ventilator observation example

```
<entry>
 <observation classCode="OBS" moodCode="EVN" negationInd="true">
    <templateId root="2.16.840.1.113883.10.20.5.6.50"/>
    <code codeSystem="2.16.840.1.113883.5.4"
          code="ASSERTION"/>
    <statusCode code="completed"/>
    <value xsi:type="CD"
           codeSystem="2.16.840.1.113883.6.96"
           codeSystemName="SNOMED CT"
           code="371820004"
           displayName="Patient ventilated"/>
  </observation>
</entry>
```

5.2.86 Weight Observation

[observation: templateId 2.16.840.1.113883.10.20.5.2.2.7.10 (closed)]

This observation records a body weight. NHSN protocol requires that the value be an integer.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:2482).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:2483).
3. **SHALL** contain [1..1] **@negationInd**="false" (CONF:4220).
4. **SHALL** contain [1..1] **code** (CONF:11665)
    a. This code **SHALL** contain [1..1] **@code**="27113001" Body weight (CodeSystem: 2.16.840.1.113883.6.96 SNOMEDCT) (CONF:2484).
5. **SHALL** contain [1..1] **statusCode** (CONF:17057)
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:2485).
6. **SHALL** contain [1..1] **value** (CONF:2486).
    a. This value **SHALL** contain [1..1] **@xsi:type**="PQ" (CONF:4539).
    b. The value of value/@value **SHALL** be a non-negative real number representing the body weight. (CONF:2488).

Figure 122: Weight observation example

```
<observation classCode="OBS" moodCode="EVN" negationInd="false">
  <templateId root="2.16.840.1.113883.10.20.5.2.2.7.10"/>
  <code code="27113001"
        codeSystem="2.16.840.1.113883.6.96"
        codeSystemName="SNOMED"
        displayName="Body weight"/>
  <statusCode code="completed"/>
  <value xsi:type="PQ" value="65" unit="kg"/>
</observation>
```

5.2.87 Wound Class Observation

[observation: templateId 2.16.840.1.113883.10.20.5.2.1.2 (closed)]

NHSN patient safety protocol on this topic is an adaptation of (not a change to) the American College of Surgeons (ACoS) definitions, which are the definitions used by SNOMED. Thus, SNOMED wound-class codes are appropriate for use with this observation.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:2474).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:2475).
3. **SHALL** contain [1..1] **code** (CONF:11664).
    a. This code **SHALL** contain [1..1] **@code**="420089007" CDC Wound Classification Category (CodeSystem: 2.16.840.1.113883.6.96 SNOMEDCT) (CONF:2477).
4. **SHALL** contain [1..1] **statusCode** (CONF:17058).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" Completed (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:2478).
5. **SHALL** contain [1..1] **value** (CONF:2598).
    a. If the wound classification is known, the value of value/@code **SHALL** be selected from Value Set 2.16.840.1.113883.13.9 NHSNWoundClassCode **STATIC** 20080130. Or, if the wound classification is not known, the value of value/@nullFlavor **SHALL** be UNK. (CONF:2597).

Table 64: Wound Class Value Set

Value Set: NHSNWoundClassCode 2.16.840.1.113883.13.9 Code System: SNOMED CT 2.16.840.1.113883.6.96		
Code	**Code System**	**Print Name**
418780004	SNOMED CT	Class I/Clean (Clean)
418115006	SNOMED CT	Class II/Clean Contaminated (Clean-contaminated)

419877002	SNOMED CT	Class III/Contaminated (Contaminated)
418422005	SNOMED CT	Class IV/Dirty Infected (Dirty)

Figure 123: Wound class observation example

```
<observation classCode="OBS" moodCode="EVN">
  <templateId root="2.16.840.1.113883.10.20.5.2.1.2"/>
  <code codeSystem="2.16.840.1.113883.6.96"
        codeSystemName="SNOMED"
        code="420089007"
        displayName="CDC Wound Classification Category"/>
  <statusCode code="completed"/>
  <value xsi:type="CD"
         codeSystem="2.16.840.1.113883.6.96"
         codeSystemName="SNOMED"
         code="418115006"
         displayName="Class II/Clean Contaminated"/>
</observation>

<!-- If the wound class is unknown: -->

<observation classCode="OBS" moodCode="EVN">
  <templateId root="2.16.840.1.113883.10.20.5.2.1.2"/>
  <code codeSystem="2.16.840.1.113883.6.96"
        codeSystemName="SNOMED"
        code="420089007"
        displayName="CDC Wound Classification Category"/>
  <statusCode code="completed"/>
  <value xsi:type="CD" nullFlavor="UNK"/>
</observation>
```

6 POPULATION-SUMMARY REPORT BODY

6.1 Introduction

A population-summary report records summary data for a group, such as the patients in a ward, or the hemovigilance incidents in a facility, during a specified period.

Two characteristics of these reports are that they deal with a group, rather than an individual (see the section on Header Constraints, HAI Population Summary Report), and that they report concepts defined by the NHSN protocol that are not expected to see widespread external use and so are reported with NHSN local codes.

The sections immediately below define the header template and the body patterns for all HAI population-summary reports. The specific requirements for each type of population-summary report follow those.

This Implementation Guide covers the following population-summary reports:

- ICU. The preferred title for the CDA document is “Denominator for Intensive Care Unit (ICU)/Other Locations (not NICU or SCA) Report”.
- NICU. The preferred title for the CDA document is “Denominator for Neonatal Intensive Care Unit (NICU)”.
- SCA. The preferred title for the CDA document is “Denominator for Specialty Care Area (SCA)”.
- Monthly Influenza Method A. The preferred title for the CDA document is “Influenza Vaccination Method A Denominator Report”.
- Monthly Influenza Method B. The preferred title for the CDA document is “Influenza Vaccination Method B Denominator Report”.
- POM. The preferred title for the CDA document is “Prevention Process and Outcome Measures (POM) Monthly Monitoring”.
- HI. The preferred title for the CDA document is “Hemovigilance Incidents (HI) Summary Report”.
- BPU. The preferred title for the CDA document is the “Blood Products Usage (BPU) Summary Report”.
- HAR. The preferred title for the CDA document is the “Hemovigilance Adverse Reaction (HAR) Summary Report”.
- AUP. The preferred title for the CDA document is the “Antimicrobial Use, Pharmacy Option (AUP) Summary Report”.
- VAT. The preferred title for the CDA document is “Maintenance Hemodialysis Patients Stratified by Vascular Access Type Report”.

6.2 Population Summary Report Patterns

The structured body of a population-summary report consists of a single section that contains one or more encounter elements. The encounter has a participant recording the encounter location, and observations that record the data. This basic structure is:

- HAI Population Summary Report (`templateId: 2.16.840.1.113883.10.20.5.23`)
  - Population Summary Header template (`templateId: 2.16.840.1.113883.10.20.5.4.4`) as described in [sec]

    Includes the code that identifies the specific type of summary report, the facility identifier, and the period of the encounter.
  - Structured Body
    - Summary Data Section (`templateId: 2.16.840.1.113883.10.20.5.5.23`)
      - Summary Encounter (`templateId: 2.16.840.1.113883.10.20.5.6.70`)
        - Location Participant (described in the template for the Summary Encounter above)
        - Summary Data Observations (`templateId: 2.16.840.1.113883.10.20.5.6.69`)

Figure 124: Population-summary report structure

```
<ClinicalDocument>
  ...
  <component>
    <structuredBody>
      <component>
        <section>
          ...
          <!-- Population Summary Encounter -->
          <entry typeCode="DRIV">
            <encounter>
              ...
              <participant typeCode="LOC">
                ...
              </participant>

              <entryRelationship typeCode="COMP">
                <observation classCode="OBS" moodCode="EVN">
                  <code .../>
                  <statusCode code="completed"/>
                  <value .../>
                </observation>
              </entryRelationship>

              <!-- more observations here -->
              ...
            </encounter>
          </entry>
        </section>
      </component>
    </structuredBody>
```

```
  </component>
</ClinicalDocument>
```

6.2.1 HAI Population-summary Report

[ClinicalDocument: templateId 2.16.840.1.113883.10.20.5.23 (closed)]

This template defines the population-summary report.

1. Conforms to Header Constraints, HAI Population-summary Reports template (templateId: 2.16.840.1.113883.10.20.5.4.4).
2. **SHALL** contain [1..1] **component** (CONF:16967).
    a. This component **SHALL** contain [1..1] **structuredBody** (CONF:4601).
        i. This structuredBody **SHALL** contain [1..1] **component** (CONF:4602).
            1. This component **SHALL** contain [1..1] **Summary Data Section** (templateId:2.16.840.1.113883.10.20.5.5.23) (CONF:4603).

6.2.2 Summary Data Section

[section: templateId 2.16.840.1.113883.10.20.5.5.23 (closed)]

The Summary Data section contains a Summary Encounter that records a location and the data pertinent to that location for the period reported. The section is represented by the same LOINC section code and templateId in any population-summary report.

Most population-summary reports contain only a single Summary Encounter. The NICU summary report is a special case: the data are categorized by patient birth weight, and each category is represented by a separate Summary Encounter element.

4. Conforms to HAI Section Generic Constraints template (templateId: 2.16.840.1.113883.10.20.5.4.3).
5. **SHALL** contain [1..1] **code** (CONF:11659).
    a. This code **SHALL** contain [1..1] **@code**="51900-9" Summary Data Section (CodeSystem: 2.16.840.1.113883.6.1 LOINC) (CONF:4596).
6. **SHALL** contain [1..*] **entry** (CONF:4597).
    a. Such entries **SHALL** contain [1..1] **Summary Encounter** (templateId:2.16.840.1.113883.10.20.5.6.70) (CONF:4598).

Figure 125: Summary data section example

```
<section>
  <templateId root="2.16.840.1.113883.10.20.5.5.23"/>
  <code codeSystem="2.16.840.1.113883.6.1"
        codeSystemName="LOINC"
        code="51900-9"
        displayName="Summary Data Section"/>
  <title>Population Summary - ICU - June 2006</title>
  <entry>
    ...
  </entry>
</section>
```

6.2.3 Summary Encounter

[encounter: templateId 2.16.840.1.113883.10.20.5.6.70 (closed)]

The Summary Encounter records a set of summary data, usually for a population such as the patients in a ward in a specified period.

The Summary Encounter requires a participant element representing the facility or in-facility location to which the data pertain. This participant element has three parts: a location id, a location type code, and a scoping entity. The location id has the form:

`<id root="…" extension="…"/>` to represent a location such as ward 9W,

or `<id root="…"/>` to represent the whole facility.

The scoping entity is optional in CDA when an id is present. This is the case when reporting on a specific unit within a facility. By contrast, there is no NHSN location id for specialized subset of the facility such as "All inpatient beds"; when reporting on these locations, the scoping entity must be present. The example code in this section illustrates both cases.

Following the location participant, the Summary Encounter contains Summary Data Observations. The NHSN protocol defines which data to record for each type of summary report, how those data are defined, and how to prioritize for counting. The data requirements at the time of publication are shown in tables with the Summary Data Observation template. For example, the table Codes for Intensive Care (ICU) Summary Data shows that four data are required: Number of Patient Days, Number of Central Line Days, Number of Urinary Catheter Days, and Number of Ventilator Days. Thus, the Summary Encounter for an ICU ward will contain four Summary Data Observations.

A few summary reports have additional requirements for the Summary Encounter. They are recorded in the report-specific section for each kind of population-summary report. Those constraints in are a continuation of the template specified here.

1. **SHALL** contain [1..1] **@classCode**="ENC" Encounter (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:4573).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:4574).
3. **SHALL** contain [1..1] **participant** (CONF:4575) such that it

a. **SHALL** contain [1..1] **@typeCode**="LOC" Location (CodeSystem: 2.16.840.1.113883.5.90 HL7ParticipationType) (CONF:4577).
b. **SHALL** contain [1..1] **participantRole** (CONF:4578).
    i. This participantRole **SHALL** contain [1..1] **@classCode**="SDLOC" Service Delivery Location (CodeSystem: 2.16.840.1.113883.5.41 HL7EntityClass) (CONF:4579).
    ii. If recording data from a facility unit, the participantRole element **SHALL** contain an id element with both @root and @extension, and a code element where the value is selected from ValueSet 2.16.840.1.113883.13.19 NHSNHealthcareServiceLocationCode **DYNAMIC,** recording the type of location (CONF:4816).
    iii. Or, if recording data from the whole facility, the participantRole element **SHALL** contain an id element with @root (CONF:4817).
    iv. Or, if recording data from a specialized subset of a facility, the participantRole element **SHALL** contain a code element where the value is selected from ValueSet 2.16.840.1.113883.13.19 NHSNHealthcareServiceLocationCode **DYNAMIC,** recording the type of location, and a scopingEntity element where the value of @classCode is "PLC" and id/@root is present (CONF:4818).

4. **SHALL** contain [1..*] **entryRelationship** (CONF:4593).
    a. Such entryRelationships **SHALL** contain [1..1] **@typeCode**="COMP" Has component (CodeSystem: 2.16.840.1.113883.5.1002 HL7ActRelationshipType) (CONF:4594).
    b. Such entryRelationships **SHALL** contain [1..1] **Summary Data Observation** (templateId:2.16.840.1.113883.10.20.5.6.69) (CONF:4595).

Figure 126: Summary encounter example – unit ID and type

```
<encounter classCode="ENC" moodCode="EVN">
  <templateId root="2.16.840.1.113883.10.20.5.6.70"/>

  <participant typeCode="LOC">
    <participantRole classCode="SDLOC">

      <!-- the location ID -->
      <id root="2.16.840.1.113883.3.117.1.1.5.1.1" extension="9W"/>

      <!-- the location type -->
      <code codeSystem="2.16.840.1.113883.6.259"
            codeSystemName="HL7 Healthcare Service Location Code"
            code="1029-8"
            displayName="Medical/Surgical Critical Care"/>

      <!-- the scoping entity: not required if id is present -->
      <scopingEntity classCode="PLC">
        <id root="2.16.840.1.113883.3.117.1.1.5.1.1"/>
      </scopingEntity>

    </participantRole>
  </participant>

  <!-- The data -->
  <entryRelationship typeCode="COMP">
    <observation classCode="OBS" moodCode="EVN">
      <templateId root="2.16.840.1.113883.10.20.5.6.69"/>
       ...
    </observation>
  </entryRelationship>

  <entryRelationship typeCode="COMP">
    <observation classCode="OBS" moodCode="EVN">
      <templateId root="2.16.840.1.113883.10.20.5.6.69"/>
       ...
    </observation>
  </entryRelationship>
  ...
</encounter>
```

6.2.4 Summary Data Observation

[observation: templateId 2.16.840.1.113883.10.20.5.6.69 (closed)]

The Summary Data Observation is used in population-summary reports. The data-reporting requirements are set out in the NHSN protocol.

The documentationOf/serviceEvent/code in the header identifies the category of population-summary report. For example, cdcNHSN code 1879-6 indicates that the data content is “Summary data reporting catheter and ventilator use in an ICU”.

Most Summary Data Observations are a simple code/value pair. The code element identifies the datum being reported, and the value element records a number of days or a number of patients. This section shows the simple pattern. The figure Summary data

observation example (1) is an example of this pattern. The report-specific sections below show what data to report and how to use the Summary Data Observation to record it.

A few summary reports have additional requirements for the Summary Data Observation. They are specified in the report-specific section for each report. Those constraints in those sections are a continuation of the template specified here.

1. **SHALL** contain [1..1] **@classCode**="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) (CONF:4562).
2. **SHALL** contain [1..1] **@moodCode**="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) (CONF:4563).
3. **SHALL** contain [1..1] **code** (CONF:4564).
4. **SHALL** contain [1..1] **statusCode** (CONF:4565).
    a. This statusCode **SHALL** contain [1..1] **@code**="completed" (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) (CONF:4565).
5. **SHALL** contain [1..1] **value** (CONF:4566).
    a. If the observation reports a number of days, the value of value/xsi:type **SHALL** be PQ and the value of value/@unit **SHALL** be d. If the observation reports a number of patients, the value of value/@xsi:type **SHALL** be INT. If the value is a code, the value of value/@xsi:type **SHALL** be CD. (CONF:4567).
6. **MAY** contain [0..*] entryRelationship.

Figure 127: Summary data observation example

```
<encounter classCode="ENC" moodCode="EVN">
  <templateId root="2.16.840.1.113883.10.20.5.6.70"/>
  <entryRelationship typeCode="COMP">

    <observation classCode="OBS" moodCode="EVN">
      <templateId root="2.16.840.1.113883.10.20.5.6.69"/>
      <code codeSystem="2.16.840.1.113883.6.277"
            codeSystemName="cdcNHSN"
            code="1851-5"
            displayName="Number of Patient Days"/>
      <statusCode code="completed"/>
      <value xsi:type="PQ" unit="d" value="100"/>
    </observation>

  </entryRelationship>
  ...
</encounter>
```

6.3 Report-specific Requirements

This section of the guide details how each type of population-summary report uses the Summary Encounter and Summary Data Observation templates. Each of the following sections specifies:

- The preferred title for the CDA document,
- The `documentationOf/serviceEvent/code` that identifies the kind of information being reported, which corresponds to the NHSN form type,
- The data to report, and
- How to represent that data using the Summary Data Observation.

6.3.1 Intensive Care Unit (ICU) Summary Report

The preferred title for the CDA document is "Denominator for Intensive Care Unit (ICU)/Other Locations (not NICU or SCA) Report". The table below shows the data required by NHSN at the time of publication.

The value for `ClinicalDocument/documentationOf/serviceEvent/code/@code` is "1879-6" "Summary data reporting catheter and ventilator use in an ICU" (CodeSystem: `2.16.840.1.113883.6.277 cdcNHSN`).

This summary report uses the basic pattern for Summary Encounter and Summary Data Observation.

Table 65: Codes for Intensive Care Unit (ICU) Summary Data

Code	Display Name	Code System	Code System Name
1833-3	Number of central line days	2.16.840.1.113883.6.277	cdcNHSN
1851-5	Number of patient days	2.16.840.1.113883.6.277	cdcNHSN
1852-3	Number of ventilator days	2.16.840.1.113883.6.277	cdcNHSN
1853-1	Number of urinary catheter days	2.16.840.1.113883.6.277	cdcNHSN

Figure 128: Summary data observation (ICU) example

```
<observation classCode="OBS" moodCode="EVN">
  <templateId root="2.16.840.1.113883.10.20.5.6.69"/>
  <code  codeSystem="2.16.840.1.113883.6.277"
         codeSystemName="cdcNHSN"
         code="1851-5"
         displayName="Number of Patient Days"/>
  <statusCode code="completed"/>
  <value xsi:type="PQ"
        unit="d"
         value="100"/>
</observation>
```

6.3.2 Monthly Influenza Method A (Detailed Form) Summary Report

The preferred title for the CDA document is "Influenza Vaccination Method A Denominator Report". The table below shows the data required at the time of publication.

The value for `ClinicalDocument/documentationOf/serviceEvent/code/@code` is "1882-0" “Summary data reporting vaccinations – detailed” (CodeSystem: `2.16.840.1.113883.6.277 cdcNHSN`).

This summary report uses the basic pattern for Summary Encounter and Summary Data Observation.

Table 66: Codes for Influenza Vaccination Summary Data (Method A)

Code	Display Name	Code System	Code System Name
1851-5	Number of patient days	2.16.840.1.113883.6.277	cdcNHSN
1856-4	Number of patients meeting high risk criteria for influenza vaccination	2.16.840.1.113883.6.277	cdcNHSN
1857-2	Number of patients previously vaccinated for influenza during the current influenza season	2.16.840.1.113883.6.277	cdcNHSN
1858-0	Number of patients meeting high-risk criteria and previously vaccinated for influenza during the current influenza season	2.16.840.1.113883.6.277	cdcNHSN
1859-8	Number of patients meeting high-risk criteria for influenza vaccination and offered influenza vaccination and declining for reasons other than medical contraindication	2.16.840.1.113883.6.277	cdcNHSN
1860-6	Number of patients meeting high-risk criteria and offered influenza vaccination and [declining because of] having medical contraindication	2.16.840.1.113883.6.277	cdcNHSN
1861-4	Number of patients meeting high-risk criteria and receiving vaccination during admission	2.16.840.1.113883.6.277	cdcNHSN

Figure 129: Summary data observation monthly influenza Method A example

```
<observation classCode="OBS" moodCode="EVN">
   <templateId root="2.16.840.1.113883.10.20.5.6.69"/>
   <code  codeSystem="2.16.840.1.113883.6.277"
          codeSystemName="cdcNHSN"
          code="1851-5"
          displayName="Number of Patient Days"/>
   <statusCode code="completed"/>
   <value  xsi:type="PQ"
           unit="d"
           value="100"/>
</observation>
```

6.3.3 Monthly Influenza Method B (Short Form) Summary Report

The preferred title for the CDA document is “Influenza Vaccination Method B Denominator Report”. The table below shows the data required at time of publication.

The value for `ClinicalDocument/documentationOf/serviceEvent/code/@code` is "1883-8" “Summary data reporting vaccinations – short” (CodeSystem: `2.16.840.1.113883.6.277 cdcNHSN`).

This summary report uses the basic pattern for Summary Encounter and Summary Data Observation.

Table 67: Codes for Influenza Vaccination Summary Data (Method B)

Code	Display Name	Code System	Code System Name
1851-5	Number of Patient Days	2.16.840.1.113883.6.277	cdcNHSN
1857-2	Number of patients previously vaccinated for influenza during current influenza season	2.16.840.1.113883.6.277	cdcNHSN
1858-0	Number of patients meeting high-risk criteria and previously vaccinated for influenza during current influenza season	2.16.840.1.113883.6.277	cdcNHSN

Figure 130: Summary data observation monthly influenza Method B example

```
<observation classCode="OBS" moodCode="EVN">
  <templateId root="2.16.840.1.113883.10.20.5.6.69"/>
  <code  codeSystem="2.16.840.1.113883.6.277"
         codeSystemName="cdcNHSN"
         code="1851-5"
         displayName="Number of Patient Days"/>
  <statusCode code="completed"/>
  <value  xsi:type="PQ"
          unit="d"
          value="100"/>
</observation>
```

6.3.4 Neonatal Intensive Care Unit (NICU) Summary Report

The preferred title for the CDA document is "Denominator for Neonatal Intensive Care Unit (NICU)". The tables below show the data required at the time of publication.

The value for `ClinicalDocument/documentationOf/serviceEvent/code/@code` is "`1881-2`" "Summary data reporting catheter and ventilator use in a NICU" (CodeSystem: `2.16.840.1.113883.6.277 cdcNHSN`).

The NICU Report extends the simple pattern for Summary Encounter. This report is stratified by birth weight. Each category is recorded in a separate Summary Encounter. The category is recorded as a participant in the encounter, in addition to the location participant that is required in all Summary Encounters.

1. In a NICU Report, the Summary Encounter **SHALL** contain [1..1] **`participant`** (CONF:4587) such that it
    a. **SHALL** contain [1..1] **`@typeCode`**`="SBJ"` Subject (CodeSystem: `2.16.840.1.113883.5.90 HL7ParticipationType`) (CONF:4588).
    b. **SHALL** contain [1..1] **`@contextControlCode`**`="OP"` (CodeSystem: `2.16.840.1.113883.5.1057 HL7 Context Control Code`) (CONF:4589).
    c. **SHALL** contain [1..1] **`participantRole`** (CONF:4590).
        i. This participantRole **SHALL** contain [1..1] **`@classCode`**`="PRS"` Person (CodeSystem: `2.16.840.1.113883.5.41 HL7EntityClass`) (CONF:4591).
        ii. This participantRole **SHALL** contain [1..1] **`code`** (CONF:12129)**.**
            1. This code **SHALL** contain [1..1] **`@code`**, which **SHALL** be selected from ValueSet `2.16.840.1.114222.4.11.3234 NHSNPopulationCategoryCode` **STATIC** 20090625 (CONF:12130).

Table 68: Codes for Neonatal Intensive Care Unit (NICU) Summary Data

Code	Display Name	Code System	Code System Name
1851-5	Number of patient days	2.16.840.1.113883.6.277	cdcNHSN
1852-3	Number of ventilator days	2.16.840.1.113883.6.277	cdcNHSN
1833-3	Number of central line days	2.16.840.1.113883.6.277	cdcNHSN
1854-9	Number of central line days including umbilical catheter	2.16.840.1.113883.6.277	cdcNHSN

Table 69: Population Category Value Set

Value Set: NHSNPopulationCategoryCode 2.16.840.1.114222.4.11.3234 Code System: cdcNHSN 2.16.840.1.113883.6.277		
Code	**Code System**	**Print Name**
3300-1	cdcNHSN	The subset of patients whose birth weight is under 750gm
3301-9	cdcNHSN	Birth weight 751-1000gm [same for all rows]
3302-7	cdcNHSN	Birth weight 1001-1500gm
3303-5	cdcNHSN	Birth weight 1501-2500gm
3304-3	cdcNHSN	Birth weight over 2500gm

Figure 131: Summary data observation (NICU) example

```
<!-- second participant: a subgroup of population reported on -->
<participant typeCode="SBJ" contextControlCode="OP">
   <participantRole classCode="PRS">
      <code codeSystem="2.16.840.1.113883.6.277"
           codeSystemName="cdcNHSN"
           code="3300-1"
           displayName="The subset of inpatients whose
                        birth weight is under 750gm"/>
   </participantRole>
</participant>

<entryRelationship typeCode="COMP">
   <observation classCode="OBS" moodCode="EVN">
    <templateId root="2.16.840.1.113883.10.20.5.6.69"/>
    <code code="numPtDays"
          codeSystem="2.16.840.1.113883.6.270"
          codeSystemName="NHSN Summary Data"
          displayName="Patient Days" />
    <statusCode code="completed" />
    <value unit="d"
           value="23"
           xsi:type="PQ" />
   </observation>
</entryRelationship>
```

6.3.5 Specialty Care Area (SCA) Summary Report

The preferred title for the CDA document is “Denominator for Specialty Care Area (SCA)”.

The value for `ClinicalDocument/documentationOf/serviceEvent/code/@code` is "`1880-4`" “Summary data reporting catheter and ventilator use in a SCA” (CodeSystem: `2.16.840.1.113883.6.277 cdcNHSN`).

This summary report uses the basic pattern for Summary Encounter and Summary Data Observation. Consult the NHSN protocol for which data to report. The table below shows the data required at time of publication.

Table 70: Codes for Specialty Care Area (SCA) Summary Data

Code	Display Name	Code System	Code System Name
1851-5	Number of patient days	2.16.840.1.113883.6.277	cdcNHSN
1852-3	Number of ventilator days	2.16.840.1.113883.6.277	cdcNHSN
1853-1	Number of urinary catheter days	2.16.840.1.113883.6.277	cdcNHSN
3306-8	Number of permanent central line days	2.16.840.1.113883.6.277	cdcNHSN
3305-0	Number of temporary central line days	2.16.840.1.113883.6.277	cdcNHSN

Figure 132: Summary data observation (SCA) example

```
<observation classCode="OBS" moodCode="EVN">
  <templateId root="2.16.840.1.113883.10.20.5.6.69"/>
  <code  codeSystem="2.16.840.1.113883.6.277"
         codeSystemName="cdcNHSN"
        code="1851-5"
        displayName="Number of Patient Days"/>
  <statusCode code="completed"/>
  <value xsi:type="PQ"
         unit="d"
         value="100"/>
</observation>
```

6.3.6 Prevention Process and Outcome Measures (POM) Summary Report

The preferred title for the CDA document is “Prevention Process and Outcome Measures (POM) Monthly Monitoring”. The table below shows the data specified at time of publication.

The POM Report records summary data for a location during a specified period. It can be submitted at the facility-wide level or at the unit level.

- In either case, the data reported is Number of Patient Days and Number of Admissions, or Number of Encounters (as appropriate for an inpatient location or an outpatient location).
- In a *facility-level report*, if the facility includes reporting for C.difficile at the facility-wide level in its monthly plan, data adjusted for C.difficile reporting are required; see the NHSN protocol for definitions and calculations.
- In a *unit-level report*, NHSN protocol allows (but does not require) data about adherence measures and AST outcome measures.
    - The timing of monitoring and eligibility for monitoring are recorded within the Observation that records the organism was monitored; see `CONF:4568-4570` and the figure Summary data observation example (2) – POM (showing AST for MRSA).

The value for `ClinicalDocument/documentationOf/serviceEvent/code/@code` is "1884-6" "Summary data reporting Active Surveillance Testing" (CodeSystem: `2.16.840.1.113883.6.277 cdcNHSN`).

The POM Report extends the simple pattern for Summary Data Observation. When recording AST outcome measures, Summary Data Observations record the organism monitored, and the data required by NHSN protocol are recorded within those observations.

2. In a POM Report,
    a. To record which organism was monitored (`code/@code 3193-0 AST Organism Monitored`), the value of `value/@code` **SHALL** be selected from Value Set `NHSNOrganismASTCode 2.16.840.1.114222.4.11.3283` **DYNAMIC**, and this observation **SHALL** contain, as `entryRelationships` where the value of `@typeCode` is `COMP`, Summary Data Observations (`templateId 2.16.840.1.113883.10.20.5.6.69`) recording the data collected for that class. The specific data required are specified by the NHSN protocol (CONF:4568).
    b. To record the timing of monitoring (`code/@code 1870-5 Timing`), the value of `value/@code` **SHALL** be selected from Value Set `2.16.840.1.114222.4.11.3247 NHSNTimingCode` **STATIC** `20091030` (CONF:4569).
    c. To record eligibility criteria for monitoring (`code/@code 1871-3 Eligibility`), the value of `value/@code` **SHALL** be selected from Value Set `2.16.840.1.114222.4.11.3248 NHSNEligibilityCode` **DYNAMIC** (CONF:4570).

Table 71: Codes for POM Summary Data

Code	Display Name	Code System	Code System Name
Codes to report data required for an inpatient location			
1851-5	Number of patient days	2.16.840.1.113883.6.277	cdcNHSN
1862-2	Number of admissions	2.16.840.1.113883.6.277	cdcNHSN
1830-9	Number of patient days as adjusted for C.diff. reporting	2.16.840.1.113883.6.277	cdcNHSN

Code	Display Name	Code System	Code System Name
1831-7	Number of admissions as adjusted for C.diff. reporting	2.16.840.1.113883.6.277	cdcNHSN
Code to report data required for an outpatient location			
1863-0	Number of encounters	2.16.840.1.113883.6.277	cdcNHSN
1832-5	Number of encounters as adjusted for C.diff. reporting	2.16.840.1.113883.6.277	cdcNHSN
Codes to report hand hygiene			
1864-8	Number of observations in which hand hygiene was indicated	2.16.840.1.113883.6.277	cdcNHSN
1865-5	Number of observations in which hand hygiene was performed	2.16.840.1.113883.6.277	cdcNHSN
Codes to report use of gown and gloves			
1866-3	Number of observations in which the use of gown and gloves was indicated	2.16.840.1.113883.6.277	cdcNHSN
1867-1	Number of observations in which gown and gloves were used	2.16.840.1.113883.6.277	cdcNHSN
Codes to report AST protocol factors			
3193-0	AST organism monitored	2.16.840.1.113883.6.277	cdcNHSN
1870-5	Timing	2.16.840.1.113883.6.277	cdcNHSN
1871-3	Eligibility	2.16.840.1.113883.6.277	cdcNHSN
Codes to report AST observations (within observation reporting AST for an organism			
1872-1	Number of patients eligible for monitoring at admission/transfer in	2.16.840.1.113883.6.277	cdcNHSN
1873-9	Number of patients on which monitoring was performed at admission/transfer in	2.16.840.1.113883.6.277	cdcNHSN
1874-7	Number of patients eligible for monitoring at discharge/transfer out	2.16.840.1.113883.6.277	cdcNHSN
1875-4	Number of patients on which monitoring was performed at discharge/transfer out	2.16.840.1.113883.6.277	cdcNHSN
1876-2	Number of prevalent cases identified by monitoring (clinical positive)	2.16.840.1.113883.6.277	cdcNHSN
1877-0	Number of prevalent cases previously known	2.16.840.1.113883.6.277	cdcNHSN
1878-8	Number of incident cases identified by monitoring (clinical positive)	2.16.840.1.113883.6.277	cdcNHSN

Table 72: AST Organism Monitored Value Set

Value Set: NHSNOrganismASTCode 2.16.840.1.114222.4.11.3283 Code System: SNOMED CT 2.16.840.1.113883.6.96		
Code	**Code System**	**Meaning**
115329001	SNOMED CT	MRSA
113727004	SNOMED CT	VRE

Table 73: Timing Value Set

Value Set: NHSNTimingCode 2.16.840.1.114222.4.11.3247 Code System: cdcNHSN 2.16.840.1.113883.6.277		
Code	**Code System**	**Meaning**
2201-2	cdcNHSN	On admission only
2202-0	cdcNHSN	On admission and on discharge/transfer

Table 74: Eligibility Value Set

Value Set: NHSNEligibilityCode 2.16.840.1.114222.4.11.3248 Code System: cdcNHSN 2.16.840.1.113883.6.277		
Code	**Code System**	**Meaning**
2301-0	cdcNHSN	All patients
2302-8	cdcNHSN	Only patients with no prior documentation of colonization or infection

Figure 133: Summary data observation (POM) example (showing AST for MRSA)

```
<!-- The organism monitored was MRSA.
     Within this observation are child observations
     that record additional information about the monitoring
     and the data reported by the monitoring.  -->

<!-- AST Organism Monitored -->
<entryRelationship typeCode="COMP" negationInd="false">
  <observation classCode="OBS" moodCode="EVN">
      <templateId root="2.16.840.1.113883.10.20.5.6.69"/>
      <code codeSystem="2.16.840.1.113883.6.277"
            codeSystemName="cdcNHSN"
            code="3193-0
            displayName="AST Organism Monitored"/>
      <statusCode code="completed"/>
      <value xsi:type="CD"
             codeSystem="2.16.840.1.113883.6.96"
             codeSystemName="SNOMED CT"
             code="115329001"
             displayName="MRSA"/>

    <!-- The observations below are within
         the observation of what organism was monitored -->

    <!-- Timing of monitoring -->
    <entryRelationship typeCode="COMP">
      <observation classCode="OBS" moodCode="EVN">
        <templateId root="2.16.840.1.113883.10.20.5.6.69"/>
          ...
      </observation>
    </entryRelationship>

    <!-- Eligibility for monitoring -->
    <entryRelationship typeCode="COMP">
      <observation classCode="OBS" moodCode="EVN">
        <templateId root="2.16.840.1.113883.10.20.5.6.69"/>
          ...
      </observation>
    </entryRelationship>

    <!-- Number eligible on admission-->
    ...
    <!-- Number performed on admission-->
    ...
    <!-- Number eligible on discharge/transfer -->
    ...
    <!-- Number performed on discharge/transfer-->
    ...
    <!-- Number prevalent cases AST/clinical positive-->
    ...
```

```
    <!-- Number prevalent cases previously known-->
    ...
    <!-- Number incident cases -->
    ...

  </observation>
  <!-- end of data about monitoring for this organism -->
</entryRelationship>
<!-- end of data about monitoring -->
```

6.3.7 Hemovigilance Incidents (HI) Summary Report

The preferred title for the CDA document is “Hemovigilance Incidents (HI) Summary Report”. The table below shows the data required at time of publication.

The value for `ClinicalDocument/documentationOf/serviceEvent/code/@code` is "`1885-3`" “Summary data reporting blood-product incidents” (CodeSystem: `2.16.840.1.113883.6.277 cdcNHSN`).

The HI summary report extends the simple pattern for Summary Data Observation. Within each observation that records a blood-product incident, a child observation records the number of adverse reactions associated with that incident type.

1. In an HI summary report, within each observation of a blood-product incident, an `entryRelationship` **SHALL** be present where the value of `@typeCode` is `REFR`, containing a Summary Data Observation that records the number of associated adverse reactions (`code/@code 3499-1`). (CONF:4571).

Table 75: Codes for Hemovigilance Incidents Summary Data (excerpt)

Code	Display Name	Code System	Code System Name
Code to report number of adverse reactions			
3499-1	Number of adverse reactions	2.16.840.1.113883.6.277	cdcNHSN
Codes to report hemovigilance incident types			
3202-9	Number of incidents classed as: Product check-in - Detail not specified	2.16.840.1.113883.6.277	cdcNHSN
3203-9	Number of incidents classed as: Product check-in - Data entry incomplete/not performed/incorrect	2.16.840.1.113883.6.277	cdcNHSN
3204-7	Number of incidents classed as: Product check-in - Shipment incomplete/incorrect	2.16.840.1.113883.6.277	cdcNHSN
The full list of codes is shown in the hai_voc.xls file provided with this package.			

Figure 134: Summary data observation (HI) example

```
<?xml version="1.0" encoding="UTF-8"?>
<!-- This observation reports 100 Hemovigilance incidents
     attributed to "Data entry incomplete/not performed/incorrect".
     There are 8 associated (REFR) adverse reactions -->
<observation classCode="OBS" moodCode="EVN">
  <templateId root="2.16.840.1.113883.10.20.5.6.69" />
  <code codeSystem="2.16.840.1.113883.6.277"
        codeSystemName="cdcNHSN"
        code="3203-9"
        displayName="Number of hemovigilance incidents classed as: Product
                     Check-in - Data entry incomplete/not performed/incorrect"/>
  <statusCode code="completed" />
  <value xsi:type="INT" value="100" />

  <entryRelationship typeCode="REFR">
    <observation classCode="OBS" moodCode="EVN">
      <templateId root="2.16.840.1.113883.10.20.5.6.69" />
      <code codeSystem="2.16.840.1.113883.6.277"
            codeSystemName="cdcNHSN" code="3499-1"
            displayName="Number of adverse reactions" />
      <statusCode code="completed" />
      <value xsi:type="INT" value="8" />
    </observation>
  </entryRelationship>
</observation>
```

6.3.8 Blood Products Usage (BPU) Summary Report

The preferred title for the CDA document is the “Blood Products Usage (BPU) Summary Report”. The table below shows the data required at time of publication.

The value for `ClinicalDocument/documentationOf/serviceEvent/code/@code` is "`1886-1`" “Summary data reporting blood-product usage” (CodeSystem: `2.16.840.1.113883.6.277 cdcNHSN`).

This summary report uses the basic pattern for Summary Encounter and Summary Data Observation.

Table 76: Codes for Blood Product Usage Summary Data (excerpt)

Code	Display Name	Code System	Code System Name
3401-7	Total number of units transfused – Whole-blood-derived red blood cells	2.16.840.1.113883.6.277	cdcNHSN
3402-5	Total number of aliquots transfused – Whole-blood-derived red blood cells	2.16.840.1.113883.6.277	cdcNHSN

Code	Display Name	Code System	Code System Name
3403-3	Number of units transfused - Irradiated whole-blood-derived red blood cells	2.16.840.1.113883.6.277	cdcNHSN
3404-1	Number of aliquots transfused - Irradiated whole-blood-derived red blood cells	2.16.840.1.113883.6.277	cdcNHSN
The full list of codes is shown in the hai_voc.xls file provided with this package.			

Figure 135: Summary data observation (BPU) example

```
<observation classCode="OBS" moodCode="EVN">
  <templateId root="2.16.840.1.113883.10.20.5.6.69"/>
  <code codeSystem="2.16.840.1.113883.6.277"
        codeSystemName="cdcNHSN"
        code="3401-7"
        displayName="Total number of units transfused - Whole blood
                     derived red blood cells"/>
  <statusCode code="completed"/>
  <value xsi:type="INT" value="30"/>
</observation>
```

6.3.9 Antimicrobial Use (AUP) Summary Report

The preferred title for the CDA document is the “Antimicrobial Use, Pharmacy Option (AUP) Summary Report”. The table below shows the data required at time of publication. See the NHSN protocol for how to calculate the values.

The value for `ClinicalDocument/documentationOf/serviceEvent/code/@code` is "`1887-9`" “Summary data reporting antimicrobial usage” (CodeSystem: `2.16.840.1.113883.6.277 cdcNHSN`).

NHSN reporting requires:

- Patient presence:
  - If the reporting location is a single unit such as a ward, Number of Patient-Present Days, or
  - If the encounter location is facility-wide rather than a single unit, Number of Admissions and Number of Patient-present Days.
- Antimicrobial usage: for each antimicrobial reported,
  - Number of Therapy Days for the antimicrobial (this is not a simple total of the stratified data; consult the NHSN protocol for the calculation)
  - Number of Therapy Days for the antimicrobial stratified by route of actual administration (four observations, one for each route)

The AUP Report extends the simple pattern of both the Summary Encounter and the Summary Data Observation.

A Summary Encounter records patient presence.

1. In an AUR Report, a Summary Encounter **SHALL** be present that records Number of Patient-present Days for the reporting location. If the reporting location is facility-wide inpatient units, this Summary Encounter **SHALL** contain a second Summary Data element that records Number of Admissions. (CONF:4820).

In an Antimicrobial Use Report, each antimicrobial is represented by a Summary Encounter. The antimicrobial is recorded as a participant in the encounter, in addition to the location participant.

In an AUP Report, Pharmacy Option (documentationOf/serviceEvent/code/@code 1887-9), an encounter contains a Summary Data Observation recording Number of Therapy Days for an antimicrobial. Within each such observation, four entryRelationships SHALL be present where the value of @typeCode is REFR, containing a Summary Data Observation that records data for the antimicrobial stratified by route of administration. (See the NHSN protocol for how the values are calculated.) If a value is not applicable for a combination of drug and route, the value of @nullFlavor SHALL be NA. (CONF:4572)

2. **SHALL** contain [1..1] **participant** (CONF:4605) such that it
    a. **SHALL** contain [1..1] **@typeCode**="CSM" Consumable (CodeSystem: 2.16.840.1.113883.5.90 HL7ParticipationType) (CONF:4606).
    b. **SHALL** contain [1..1] **participantRole** (CONF:4607).
        i. This participantRole **SHALL** contain [1..1] **@classCode**="MANU" (CodeSystem: 2.16.840.1.113883.5.110 HL7RoleClass) (CONF:4608).
        ii. This participantRole **SHALL** contain [1..1] **code** (CONF:17150).
            1. This code **SHALL** contain [1..1] **@code**, which **SHALL** be selected from ValueSet 2.16.840.1.114222.4.11.3360 NHSNAntimicrobialAgentAUCode **DYNAMIC** (CONF:4609).

Following those participants, Summary Data Observations record Number of Therapy Days for the antimicrobial unstratified and stratified by route of administration. If a value is not applicable for a combination of drug and route, set the value of @nullFlavor to NA.

In an AUP Report, an observation recording number of therapy days stratified by route,

3. **SHALL** contain [1..1] **methodCode** (CONF:17151).
    a. This methodCode **SHALL** contain [1..1] **@code**, which **SHALL** be selected from ValueSet 2.16.840.1.114222.4.11.3361 NHSNRouteOfAdministrationAUCode **DYNAMIC** (CONF:4604).

Table 77: Codes for Antimicrobial Usage, Pharmacy (AUP) Summary Data

Code	Display Name	Code System	Code System Name
2524-7	Number of therapy days	2.16.840.1.113883.6.277	cdcNHSN
2525-4	Number of patient-present days	2.16.840.1.113883.6.277	cdcNHSN
1862-2	Number of admissions (for facility-wide inpatient reporting)	2.16.840.1.113883.6.277	cdcNHSN

Table 78: Antimicrobial Agent Value Set (AU) (excerpt)

Value Set: NHSNAntimicrobialAgentAUCode 2.16.840.1.114222.4.11.3360
Code System: RxNorm 2.16.840.1.113883.6.88
or cdcNHSN 2.16.840.1.113883.6.277

The full table is shown in the hai_voc.xls file provided with this package.

Code	Code System	Meaning
620	RxNorm	Amantadine
641	RxNorm	Amikacin
732	RxNorm	Amphotericin B
…		

Table 79: Route of Administration (AU) Value Set

Value Set: NHSNRouteOfAdministrationAUCode 2.16.840.1.114222.4.11.3361
Code System: SNOMED CT 2.16.840.1.113883.6.96
or cdcNHSN 2.16.840.1.113883.6.277

Code	Code System	Meaning
2522-1	cdcNHSN	Digestive tract route [A route that begins anywhere in the digestive tract, extending from the mouth through rectum.]
2523-9	cdcNHSN	Respiratory tract route [A route that begins within the respiratory tract, including the oropharynx and nasopharynx.]
47625008	SNOMED CT	Intravenous route [An intravascular route that begins with a vein.]
78421000	SNOMED CT	Intramuscular route [A route that begins within a muscle.]

Figure 136: Summary encounter (AU) example 1

```
<!-- encounter recording patient presence -->
<encounter classCode="ENC" moodCode="EVN">
  <templateId root="2.16.840.1.113883.10.20.5.6.70"/>

  <!-- the location ID and type -->
  <participant typeCode="LOC">
    <participantRole classCode="SDLOC">
      <id root="2.16.840.1.113883.3.117.1.1.5.1.1" extension="9W"/>
      <code codeSystem="2.16.840.1.113883.6.259"
            codeSystemName="HL7 Healthcare Service Location Code"
            code="1029-8"
            displayName="Medical/Surgical Critical Care"/>
    </participantRole>
  </participant>

  <!-- report for a single unit: Number of Patient-present Days -->
  <entryRelationship typeCode="COMP">
    <observation classCode="OBS" moodCode="EVN">
      <templateId root="2.16.840.1.113883.10.20.5.6.69"/>
       ...
    </observation>
  </entryRelationship>

  <!-- if the reporting location is facility-wide inpatient units,
       a second observation recording Number of Admissions -->

</encounter>
```

Figure 137: Summary encounter (AU) example 2

```
<!-- encounter reporting data for one antimicrobial -->
<encounter classCode="ENC" moodCode="EVN">
  <templateId root="2.16.840.1.113883.10.20.5.6.70"/>

  <!-- the location ID and type -->
  <participant typeCode="LOC">
    ...
  </participant>

  <!-- the antimicrobial agent reported -->
  <participant typeCode="CSM">
    <participantRole classCode="MANU">
      <code codeSystem="2.16.840.1.113883.6.88"
            codeSystemName="RxNorm"
            code="7980"
            displayName="Penicillin G"/>
    </participantRole>
  </participant>

  <!-- five data observations -->
  <entryRelationship typeCode="COMP">
    <observation classCode="OBS" moodCode="EVN">
      <templateId root="2.16.840.1.113883.10.20.5.6.69"/>

      <code codeSystem="2.16.840.1.113883.6.277"
            codeSystemName="cdcNHSN"
            code="2524-7"
            displayName="Number of Therapy Days"/>

      <statusCode code="completed"/>

      <value xsi:type="PQ" unit="d" value="36"/>

      <!-- use this when recording the four stratified data
      <methodCode codeSystem="2.16.840.1.113883.6.96"
                  codeSystemName="SNOMED CT"
                  code="47625008"
                  displayName="Intravenous route" />
      -->

    </observation>
  </entryRelationship>

  <!-- ... four more observations here -->

</encounter> <!-- end of encounter for this antimicrobial -->
```

Figure 138: Summary data observation (AU) example

```
<observation classCode="OBS" moodCode="EVN">
  <templateId root="2.16.840.1.113883.10.20.5.6.69" />

  <code codeSystem="2.16.840.1.113883.6.277"
        codeSystemName="cdcNHSN"
        code="2524-7"
        displayName="Number of Therapy Days" />

  <statusCode code="completed" />

  <value xsi:type="PQ" unit="d" value="3" />

</observation>
```

6.3.10 Hemovigilance Adverse Reaction (HAR) Summary Report

The preferred title for the CDA document is the "Hemovigilance Adverse Reaction (HAR) Summary Report". The table below shows the data required at time of publication.

The value for `ClinicalDocument/documentationOf/serviceEvent/code/@code` is "1885-3" "Summary data reporting blood-product incidents" (CodeSystem: `2.16.840.1.113883.6.277 cdcNHSN`).

This summary report uses the simple pattern for Summary Encounter and Summary Data Observation.

Table 80: Codes for Hemovigilance Incidents Summary Data (excerpt)

Code	Display Name	Code System	Code System Name
Code to report number of adverse reactions			
3499-1	Number of adverse reactions	2.16.840.1.113883.6.277	cdcNHSN
Codes to report hemovigilance incident types			
3202-9	Number of incidents classed as: Product check-in - Detail not specified	2.16.840.1.113883.6.277	cdcNHSN
3203-9	Number of incidents classed as: Product check-in - Data entry incomplete/not performed/incorrect	2.16.840.1.113883.6.277	cdcNHSN
3204-7	Number of incidents classed as: Product check-in - Shipment incomplete/incorrect	2.16.840.1.113883.6.277	cdcNHSN
The full list of codes is shown in the hai_voc.xls file provided with this package.			

Figure 139: Summary data observation (HAR) example

```
<observation classCode="OBS" moodCode="EVN">
  <templateId root="2.16.840.1.113883.10.20.5.6.69" />
  <code codeSystem="2.16.840.1.113883.6.277"
        codeSystemName="cdcNHSN"
        code="1851-5"
        displayName="Number of Patient Days" />
  <statusCode code="completed" />
  <value xsi:type="PQ" unit="d" value="100" />
</observation>
```

6.3.11 Vascular Access Type Report (VAT) Summary Report

The preferred title for the CDA document is "Maintenance Hemodialysis Patients Stratified by Vascular Access Type Report". The table below shows the data required at time of publication. Consult the NHSN protocol for how to calculate the data for a patient who has more than one vascular access type.

The value for `ClinicalDocument/documentationOf/serviceEvent/code/@code` is "`2316-8`" "Summary dialysis data reporting vascular access types in maintenance (chronic) hemodialysis patients" (CodeSystem: `2.16.840.1.113883.6.277 cdcNHSN`).

This summary report uses the simple pattern for Summary Encounter and Summary Data Observation, except when the vascular access type is fistula.

1. In a VAT Report, the Summary Observation recording the number of patients with fistula **SHALL** contain an entryRelationship where the value of @typeCode is COMP, that contains a Summary Data Observation recording the number of those patients with buttonhole cannulation.(CONF:17152)

Table 81: Codes for Vascular Access Type (Dialysis) Summary Data

Code	Display Name	Code System	Code System Name
2310-1	Number of chronic hemodialysis patients, vascular access type is fistula	2.16.840.1.113883.6.277	cdcNHSN
2311-9	Number of chronic hemodialysis patients, vascular access type is fistula, buttonhole cannulation	2.16.840.1.113883.6.277	cdcNHSN
2312-7	Number of chronic hemodialysis patients, vascular access type is graft	2.16.840.1.113883.6.277	cdcNHSN
2313-5	Number of chronic hemodialysis patients, vascular access type is tunnelled central line, dialysis	2.16.840.1.113883.6.277	cdcNHSN
2314-3	Number of chronic hemodialysis patients, vascular access type is non-tunnelled central line, dialysis	2.16.840.1.113883.6.277	cdcNHSN

Code	Display Name	Code System	Code System Name
2315-0	Number of chronic hemodialysis patients, vascular access type is other than fistula, graft, or tunneled central line	2.16.840.1.113883.6.277	cdcNHSN

Figure 140: Summary data observation (VAT) example

```
<observation classCode="OBS" moodCode="EVN">
  <templateId root="2.16.840.1.113883.10.20.5.6.69" />

  <code code="2310-1"
        codeSystem="2.16.840.1.113883.6.277"
        codeSystemName="cdcNHSN"
        displayName="Number of Chronic Hemodialysis Patients, vascular access
                     type is fistula" />

  <statusCode code="completed" />

  <value value="100" xsi:type="INT" />

  <!-- When recording fistula, the patients with buttonhole cannulation
       is also required -->
  <entryRelationship typeCode="COMP">
    <observation classCode="OBS" moodCode="EVN">
      <templateId root="2.16.840.1.113883.10.20.5.6.69" />
      <code code="2311-9"
            codeSystem="2.16.840.1.113883.6.277"
            codeSystemName="cdcNHSN"
            displayName="Number of chronic hemodialysis patients, vascular
                         access type is fistula, buttonhole cannulation" />
      <statusCode code="completed" />
      <value value="20" xsi:type="INT" />
    </observation>
  </entryRelationship>

</observation>
```

7 REFERENCES

- CDA Validator, http://www.lantanagroup.com/validator.
- Dolin RH, Alschuler L, Boyer S, Beebe C, Behlen FM, Biron PV, Shabo A, (Editors). *HL7 Clinical Document Architecture, Release 2.0*. ANSI-approved HL7 Standard; May 2005. Ann Arbor, Mich.: Health Level Seven, Inc. Available at: http://www.hl7.org/documentcenter/private/standards/cda/r2/cda_r2_normativewebedition.zip.
- Dolin RH, Alschuler L, Boyer S, Beebe C, Behlen FM, Biron PV, Shabo A., HL7 Clinical Document Architecture, Release 2. *J Am Med Inform Assoc.* 2006;13:30-39. Available at: http://www.jamia.org/cgi/reprint/13/1/30.
- "The Clinical Document Architecture Quick Start Guide (CDA QSG)", Alschuler Associates, LLC (became Lantana Consulting Group on January 1, 2011). Available at: http://www.lantanagroup.com/resources/quick-start-guides/.
- Extensible Markup Language, www.w3.org/XML.
- The German federal institute for medical documentation provides a comprehensible set of catalogs for procedures. International organizations considering this guide for implementation should review terminology available (in German): http://www.dimdi.de/static/de/klassi/prozeduren/ops301/opshtml2008/fr-ops.htm. The different versions of this catalog are listed in its table 0396.
- HL7 Governance and Operations Manual, http://www.hl7.org/documentcenter/public/membership/HL7_Governance_and_Operations_Manual.pdf.
- HL7 Version 3 Publishing Facilitator's Guide, http://www.hl7.org/v3ballot/html/help/pfg/pfg.htm.
- "The Clinical Document Architecture Quick Start Guide (CDA QSG)"
- LOINC®: Logical Observation Identifiers Names and Codes, Regenstrief Institute. Available at: http://www.regenstrief.org/medinformatics/loinc/.
- NHSN members' website, http://www.cdc.gov/nhsn/.
- Schematron, www.schematron.com.
- SNOMED CT®: SNOMED Clinical Terms SNOMED International Organization. Available at: http://www.ihtsdo.org/snomed-ct.

APPENDIX A — ACRONYMS AND ABBREVIATIONS

ACoS	American College of Surgeons
AUP	Antimicrobial Use, Pharmacy Option (AUP) Summary Report
BPU	Blood Products Usage Summary Report
BSI	Bloodstream Infection
CCD	Continuity of Care Document
CDA	Clinical Document Architecture
CDAD	C. difficile-associated disease
CDA R2	CDA Release 2
CDI	C. difficile
CDC	Centers for Disease Control and Prevention
CHI	Consolidated Health Informatics
CLIP	Central-line Insertion Practices
DSTU	Draft Standard for Trial Use
EOID	Evidence of Infection (Dialysis) Report
GIN	Generic Incident Notification
HAI	Healthcare Associated Infection
HAR	Hemovigilance Adverse Reaction (HAR) Summary Report
HI	Hemovigilance Incident Report
HIS	Hemovigilance Incidents Summary Report
HL7	Health Level Seven
ICP	infection control professional
ICU	Intensive Care Unit
IG	implementation guide
LIO	Laboratory-identified Organism
MDRO	Multi-drug-resistant Organism
NCPDCID	National Center for Preparedness, Detection, and Control of Infectious Diseases
NHSN	National Healthcare Safety Network
NICU	Neonatal Intensive Care Unit
OID	object identifier

PHCR	Public Health Case Reports
PHIN VADS	Public Health Information Network Vocabulary Access and Distribution System
PNEU	Pneumonia
POM	Prevention Process and Outcome Measures Monthly Monitoring
RIM	Reference Information Model
RMIM	Refined Message Information Model
SCA	Specialty Care Area
SDWG	Structured Documents Working Group
SSI	Surgical Site Infection
TA-GVHD	Transfusion associated graft vs. host disease
UTI	Urinary Tract Infection
VAT	Denominator for Maintenance Hemodialysis Patients Stratified by Vascular Access Type Report
XML	Extensible Markup Language

APPENDIX B — DOCUMENT AND SECTION CODES (NON-NORMATIVE)

This guide uses LOINC codes to identify the document type and section types. The document and section templates specify which code to use. This appendix is provided as a convenient summary for the implementer.

Table 82: Document and Section Codes

codeSystem	Name	code	Meaning
2.16.840.1.113883.6.1	LOINC	51897-7	Healthcare Associated Infection Report
		51898-5	Risk Factors Section
		51899-3	Details Section
		18769-0	Findings Section
		51900-9	Summary Data Section
		46240-8	History of Encounters

APPENDIX C — TEMPLATE IDS (NON-NORMATIVE)

This appendix lists all templates in this implementation guide: NHSN templates by template OID, by template title, and by template type, as well as HITSP templates and CCD templates.

The Sequence of Sections / Templates within Report Types table in section 3.1 provides an overview of the NHSN template requirements across report types.

Table 83: NHSN Templates by Template OID

Template OID	Template Title
2.16.840.1.113883.10.20.5.13	HAI Immunization Numerator Report
2.16.840.1.113883.10.20.5.17	HAI Laboratory-identified Organism (LIO) Report
2.16.840.1.113883.10.20.5.18	HAI Central-line Insertion Practice Numerator Report
2.16.840.1.113883.10.20.5.2.1.1.1	Infection Risk Factors Observation
2.16.840.1.113883.10.20.5.2.1.1.2	Infection Risk Factors Measurement Observation
2.16.840.1.113883.10.20.5.2.1.2	Wound Class Observation
2.16.840.1.113883.10.20.5.2.1.3	Endoscope Used Clinical Statement
2.16.840.1.113883.10.20.5.2.2.7.10	Weight Observation
2.16.840.1.113883.10.20.5.2.2.7.11	Duration of Labor Observation
2.16.840.1.113883.10.20.5.2.2.7.15	Secondary Bloodstream Infection Observation
2.16.840.1.113883.10.20.5.2.2.7.3	Anesthesia Administration Clinical Statement
2.16.840.1.113883.10.20.5.2.2.7.4	ASA Class Observation
2.16.840.1.113883.10.20.5.2.2.7.5	Trauma Observation
2.16.840.1.113883.10.20.5.2.2.7.7	Diabetes Mellitus Observation
2.16.840.1.113883.10.20.5.2.2.7.8	Spinal Fusion Level Observation
2.16.840.1.113883.10.20.5.2.2.7.9	Height Observation
2.16.840.1.113883.10.20.5.2.5.1	Pathogen Identified Observation
2.16.840.1.113883.10.20.5.2.5.1.1	Pathogen Ranking Observation
2.16.840.1.113883.10.20.5.2.5.1.2	Drug-susceptibility Test Observation
2.16.840.1.113883.10.20.5.21	HAI Hemovigilance Incident Report
2.16.840.1.113883.10.20.5.30	HAI Procedure Denominator Report
2.16.840.1.113883.10.20.5.23	HAI Population Summary Report
2.16.840.1.113883.10.20.5.24	HAI Hemovigilance Adverse Reaction Report (HAR)
2.16.840.1.113883.10.20.5.25	Evidence of Infection (Dialysis) Report
2.16.840.1.113883.10.20.5.26	HAI Bloodstream Infection Report (BSI)
2.16.840.1.113883.10.20.5.27	HAI Surgical Site Infection Report (SSI)
2.16.840.1.113883.10.20.5.28	HAI Pneumonia Infection Numerator Report (PNEU)
2.16.840.1.113883.10.20.5.29	HAI Urinary Tract Infection Numerator Report (UTI)
2.16.840.1.113883.10.20.5.4.1	Header Constraints, HAI Single-person Reports
2.16.840.1.113883.10.20.5.4.23	Healthcare Associated Infection Report

Template OID	Template Title
2.16.840.1.113883.10.20.5.4.3	HAI Section Generic Constraints
2.16.840.1.113883.10.20.5.4.4	Header Constraints, HAI Population-summary Reports
2.16.840.1.113883.10.20.5.5.1	Infection Risk Factors Section in a BSI Report
2.16.840.1.113883.10.20.5.5.10	Infection Details Section in a UTI Report
2.16.840.1.113883.10.20.5.5.12	Procedure Details Section in an Immunization Report
2.16.840.1.113883.10.20.5.5.31	Procedure Details Section in a Procedure Report
2.16.840.1.113883.10.20.5.5.16	Encounters Section in a LIO Report
2.16.840.1.113883.10.20.5.5.17	Findings Section (LIO)
2.16.840.1.113883.10.20.5.5.18	Procedure Details Section in a CLIP Report
2.16.840.1.113883.10.20.5.5.19	Infection Risk Factors Section in a CLIP Report
2.16.840.1.113883.10.20.5.5.20	Incident Details Section
2.16.840.1.113883.10.20.5.5.30	Infection Risk Factors Section in a Procedure Report
2.16.840.1.113883.10.20.5.5.23	Summary Data Section
2.16.840.1.113883.10.20.5.5.24	Encounters Section in an HAR Report
2.16.840.1.113883.10.20.5.5.25	Details Section in an HAR Report
2.16.840.1.113883.10.20.5.5.26	Risk Factors Section in an Evidence of Infection (Dialysis) Report
2.16.840.1.113883.10.20.5.5.27	Details Section in a Evidence of Infection (Dialysis) Report
2.16.840.1.113883.10.20.5.5.28	Findings Section in an Infection-type Report
2.16.840.1.113883.10.20.5.5.3	Infection Risk Factors Section in a Pneumonia Infection Report
2.16.840.1.113883.10.20.5.5.4	Infection Risk Factors Section in a UTI Report
2.16.840.1.113883.10.20.5.5.6	Infection Details Section in a BSI Report
2.16.840.1.113883.10.20.5.5.7	Infection Details Section in an SSI Report
2.16.840.1.113883.10.20.5.5.9	Infection Details Section in a Pneumonia Infection Report
2.16.840.1.113883.10.20.5.6.1	Admission to ICU Clinical Statement
2.16.840.1.113883.10.20.5.6.10	Criterion of Diagnosis Observation
2.16.840.1.113883.10.20.5.6.11	Criteria of Diagnosis Organizer
2.16.840.1.113883.10.20.5.6.12	Death Observation
2.16.840.1.113883.10.20.5.6.13	Eligibility Criterion Observation
2.16.840.1.113883.10.20.5.6.14	Findings Organizer
2.16.840.1.113883.10.20.5.6.15	Guidewire Used Clinical Statement
2.16.840.1.113883.10.20.5.6.16	Hand Hygiene Performed Clinical Statement
2.16.840.1.113883.10.20.5.6.17	Immunization Clinical Statement
2.16.840.1.113883.10.20.5.6.18	Immunization Offer Clinical Statement
2.16.840.1.113883.10.20.5.6.19	Immunocompromised Observation

Template OID	Template Title
2.16.840.1.113883.10.20.5.6.2	Adverse Reaction Type Observation
2.16.840.1.113883.10.20.5.6.20	Implant Observation
2.16.840.1.113883.10.20.5.6.21	Infection Condition Observation
2.16.840.1.113883.10.20.5.6.22	Infection Contributed to Death Observation
2.16.840.1.113883.10.20.5.6.23	Infection-type Observation
2.16.840.1.113883.10.20.5.6.27	Occasion of HAI Detection Observation
2.16.840.1.113883.10.20.5.6.28	Occupation and Clinical Specialty Observation
2.16.840.1.113883.10.20.5.6.29	Offer Declined Observation
2.16.840.1.113883.10.20.5.6.30	Patient Care Observation
2.16.840.1.113883.10.20.5.6.31	Post-procedure Observation
2.16.840.1.113883.10.20.5.6.97	Procedure Details Clinical Statement in a Procedure Report
2.16.840.1.113883.10.20.5.6.34	Procedure Details Clinical Statement in an SSI Report
2.16.840.1.113883.10.20.5.6.37	Reason Offer Declined Observation
2.16.840.1.113883.10.20.5.6.38	Reason for Procedure Observation
2.16.840.1.113883.10.20.5.6.39	Recorder Observation
2.16.840.1.113883.10.20.5.6.4	Bloodstream Infection Evidence Type Observation
2.16.840.1.113883.10.20.5.6.40	Seasons Immunized Observation
2.16.840.1.113883.10.20.5.6.41	Significant Pathogens Observation
2.16.840.1.113883.10.20.5.6.101	Skin Preparation Clinical Statement
2.16.840.1.113883.10.20.5.6.43	Skin-preparation Solutions Applied Organizer
2.16.840.1.113883.10.20.5.6.44	Solutions Dried Observation
2.16.840.1.113883.10.20.5.6.45	Sterile Barriers Applied Clinical Statement
2.16.840.1.113883.10.20.5.6.48	Urinary Catheter Observation
2.16.840.1.113883.10.20.5.6.49	Vaccine Information Statement Type
2.16.840.1.113883.10.20.5.6.5	CDAD Observation
2.16.840.1.113883.10.20.5.6.50	Ventilator Observation
2.16.840.1.113883.10.20.5.6.51	Prior Discharge Encounter
2.16.840.1.113883.10.20.5.6.52	Pathogen Identified Observation (LIO)
2.16.840.1.113883.10.20.5.6.53	Specimen Collection Procedure (LIO)
2.16.840.1.113883.10.20.5.6.54	Specimen Collection Encounter (LIO)
2.16.840.1.113883.10.20.5.6.56	History of Object Presence Observation
2.16.840.1.113883.10.20.5.6.57	Central-line Insertion Practice Clinical Statement
2.16.840.1.113883.10.20.5.6.100	Procedure Details Clinical Statement in a CLIP Report
2.16.840.1.113883.10.20.5.6.6	CDAD-related Surgery
2.16.840.1.113883.10.20.5.6.61	Incident Detail Clinical Statement
2.16.840.1.113883.10.20.5.6.62	Adverse Reaction Observation
2.16.840.1.113883.10.20.5.6.63	Non-product Action Observation

Template OID	Template Title
2.16.840.1.113883.10.20.5.6.64	Root Cause Type Observation
2.16.840.1.113883.10.20.5.6.65	Recovery Type Observation
2.16.840.1.113883.10.20.5.6.66	Blood Product Disposition Observation
2.16.840.1.113883.10.20.5.6.67	First Discovery Observation
2.16.840.1.113883.10.20.5.6.68	Procedure Risk Factors Clinical Statement in a Procedure Report
2.16.840.1.113883.10.20.5.6.69	Summary Data Observation
2.16.840.1.113883.10.20.5.6.70	Summary Encounter
2.16.840.1.113883.10.20.5.6.71	Blood Group Observation
2.16.840.1.113883.10.20.5.6.72	Prior Transfusion Encounter
2.16.840.1.113883.10.20.5.6.73	Transfusion Clinical Statement
2.16.840.1.113883.10.20.5.6.74	Blood Product Transfused Observation
2.16.840.1.113883.10.20.5.6.75	Implicated Observation
2.16.840.1.113883.10.20.5.6.76	Hemovigilance Adverse Reaction Observation
2.16.840.1.113883.10.20.5.6.77	HAI Severity Observation
2.16.840.1.113883.10.20.5.6.78	Case Definition Relationship Observation
2.16.840.1.113883.10.20.5.6.79	Outcome Observation
2.16.840.1.113883.10.20.5.6.8	Central-line Insertion Preparation Organizer
2.16.840.1.113883.10.20.5.6.80	Patient Pathogens Organizer
2.16.840.1.113883.10.20.5.6.81	Donor and Donation Pathogens Organizer
2.16.840.1.113883.10.20.5.6.82	Imputability Observation
2.16.840.1.113883.10.20.5.6.83	Pathogen Identified Observation in an HAR Report
2.16.840.1.113883.10.20.5.6.84	Vascular Access Type Observation
2.16.840.1.113883.10.20.5.6.85	Dialysis Patient Observation
2.16.840.1.113883.10.20.5.6.86	Infection Indicator Organizer
2.16.840.1.113883.10.20.5.6.87	Suspected Source Observation
2.16.840.1.113883.10.20.5.6.88	Hospital Admission Act
2.16.840.1.113883.10.20.5.6.89	Death Observation in an Evidence of Infection (Dialysis) Report
2.16.840.1.113883.10.20.5.6.9	Clinical Specialty Observation
2.16.840.1.113883.10.20.5.6.90	MDRO/CDI Observation
2.16.840.1.113883.10.20.5.6.91	Transient Patient Observation
2.16.840.1.113883.10.20.5.6.92	Pus, Redness, or Increased Swelling Observation
2.16.840.1.113883.10.20.5.6.93	IV Antibiotic Start Clinical Statement
2.16.840.1.113883.10.20.5.6.94	IV Antifungal Start Clinical Statement
2.16.840.1.113883.10.20.5.6.95	Positive Blood Culture Observation
2.16.840.1.113883.10.20.5.6.96	Buttonhole Cannulation Observation

Table 84: NHSN Templates by Template Title

Template Title	Template OID
Admission to ICU Clinical Statement	2.16.840.1.113883.10.20.5.6.1
Adverse Reaction Observation	2.16.840.1.113883.10.20.5.6.62
Adverse Reaction Type Observation	2.16.840.1.113883.10.20.5.6.2
Anesthesia Administration Clinical Statement	2.16.840.1.113883.10.20.5.2.2.7.3
ASA Class Observation	2.16.840.1.113883.10.20.5.2.2.7.4
Blood Group Observation	2.16.840.1.113883.10.20.5.6.71
Blood Product Disposition Observation	2.16.840.1.113883.10.20.5.6.66
Blood Product Transfused Observation	2.16.840.1.113883.10.20.5.6.74
Bloodstream Infection Evidence Type Observation	2.16.840.1.113883.10.20.5.6.4
Buttonhole Cannulation Observation	2.16.840.1.113883.10.20.5.6.96
Case Definition Relationship Observation	2.16.840.1.113883.10.20.5.6.78
CDAD Observation	2.16.840.1.113883.10.20.5.6.5
CDAD-related Surgery	2.16.840.1.113883.10.20.5.6.6
Central-line Insertion Practice Clinical Statement	2.16.840.1.113883.10.20.5.6.57
Central-line Insertion Preparation Organizer	2.16.840.1.113883.10.20.5.6.8
Clinical Specialty Observation	2.16.840.1.113883.10.20.5.6.9
Criteria of Diagnosis Organizer	2.16.840.1.113883.10.20.5.6.11
Criterion of Diagnosis Observation	2.16.840.1.113883.10.20.5.6.10
Death Observation	2.16.840.1.113883.10.20.5.6.12
Death Observation in an Evidence of Infection (Dialysis) Report	2.16.840.1.113883.10.20.5.6.89
Details Section in a Evidence of Infection (Dialysis) Report	2.16.840.1.113883.10.20.5.5.27
Details Section in an HAR Report	2.16.840.1.113883.10.20.5.5.25
Diabetes Mellitus Observation	2.16.840.1.113883.10.20.5.2.2.7.7
Dialysis Patient Observation	2.16.840.1.113883.10.20.5.6.85
Donor and Donation Pathogens Organizer	2.16.840.1.113883.10.20.5.6.81
Drug-susceptibility Test Observation	2.16.840.1.113883.10.20.5.2.5.1.2
Duration of Labor Observation	2.16.840.1.113883.10.20.5.2.2.7.11
Eligibility Criterion Observation	2.16.840.1.113883.10.20.5.6.13
Encounters Section in a LIO Report	2.16.840.1.113883.10.20.5.5.16
Encounters Section in an HAR Report	2.16.840.1.113883.10.20.5.5.24
Endoscope Used Clinical Statement	2.16.840.1.113883.10.20.5.2.1.3
Evidence of Infection (Dialysis) Report	2.16.840.1.113883.10.20.5.25
Findings Organizer	2.16.840.1.113883.10.20.5.6.14
Findings Section (LIO)	2.16.840.1.113883.10.20.5.5.17
Findings Section in an Infection-type Report	2.16.840.1.113883.10.20.5.5.28
First Discovery Observation	2.16.840.1.113883.10.20.5.6.67
Guidewire Used Clinical Statement	2.16.840.1.113883.10.20.5.6.15

Template Title	Template OID
HAI Bloodstream Infection Report (BSI)	2.16.840.1.113883.10.20.5.26
HAI Central-line Insertion Practice Numerator Report	2.16.840.1.113883.10.20.5.18
HAI Hemovigilance Adverse Reaction Report (HAR)	2.16.840.1.113883.10.20.5.24
HAI Hemovigilance Incident Report	2.16.840.1.113883.10.20.5.21
HAI Immunization Numerator Report	2.16.840.1.113883.10.20.5.13
HAI Laboratory-identified Organism (LIO) Report	2.16.840.1.113883.10.20.5.17
HAI Pneumonia Infection Numerator Report (PNEU)	2.16.840.1.113883.10.20.5.28
HAI Population Summary Report	2.16.840.1.113883.10.20.5.23
HAI Procedure Denominator Report	2.16.840.1.113883.10.20.5.23
HAI Section Generic Constraints	2.16.840.1.113883.10.20.5.4.3
HAI Severity Observation	2.16.840.1.113883.10.20.5.6.77
HAI Surgical Site Infection Report (SSI)	2.16.840.1.113883.10.20.5.27
HAI Urinary Tract Infection Numerator Report (UTI)	2.16.840.1.113883.10.20.5.29
Hand Hygiene Performed Clinical Statement	2.16.840.1.113883.10.20.5.6.16
Header Constraints, HAI Population-summary Reports	2.16.840.1.113883.10.20.5.4.4
Header Constraints, HAI Single-person Reports	2.16.840.1.113883.10.20.5.4.1
Healthcare Associated Infection Report	2.16.840.1.113883.10.20.5.4.23
Height Observation	2.16.840.1.113883.10.20.5.2.2.7.9
Hemovigilance Adverse Reaction Observation	2.16.840.1.113883.10.20.5.6.76
History of Object Presence Observation	2.16.840.1.113883.10.20.5.6.56
Hospital Admission Act	2.16.840.1.113883.10.20.5.6.88
Immunization Clinical Statement	2.16.840.1.113883.10.20.5.6.17
Immunization Offer Clinical Statement	2.16.840.1.113883.10.20.5.6.18
Immunocompromised Observation	2.16.840.1.113883.10.20.5.6.19
Implant Observation	2.16.840.1.113883.10.20.5.6.20
Implicated Observation	2.16.840.1.113883.10.20.5.6.75
Imputability Observation	2.16.840.1.113883.10.20.5.6.82
Incident Detail Clinical Statement	2.16.840.1.113883.10.20.5.6.61
Incident Details Section	2.16.840.1.113883.10.20.5.5.20
Infection Condition Observation	2.16.840.1.113883.10.20.5.6.21
Infection Contributed to Death Observation	2.16.840.1.113883.10.20.5.6.22
Infection Details Section in a BSI Report	2.16.840.1.113883.10.20.5.5.6
Infection Details Section in a Pneumonia Infection Report	2.16.840.1.113883.10.20.5.5.9
Infection Details Section in a UTI Report	2.16.840.1.113883.10.20.5.5.10
Infection Details Section in an SSI Report	2.16.840.1.113883.10.20.5.5.7
Infection Indicator Organizer	2.16.840.1.113883.10.20.5.6.86

Template Title	Template OID
Infection Risk Factors Measurement Observation	2.16.840.1.113883.10.20.5.2.1.1.2
Infection Risk Factors Observation	2.16.840.1.113883.10.20.5.2.1.1.1
Infection Risk Factors Section in a BSI Report	2.16.840.1.113883.10.20.5.5.1
Infection Risk Factors Section in a CLIP Report	2.16.840.1.113883.10.20.5.5.19
Infection Risk Factors Section in a Pneumonia Infection Report	2.16.840.1.113883.10.20.5.5.3
Infection Risk Factors Section in a Procedure Report	2.16.840.1.113883.10.20.5.5.30
Infection Risk Factors Section in a UTI Report	2.16.840.1.113883.10.20.5.5.4
Infection-type Observation	2.16.840.1.113883.10.20.5.6.23
IV Antibiotic Start Clinical Statement	2.16.840.1.113883.10.20.5.6.93
IV Antifungal Start Clinical Statement	2.16.840.1.113883.10.20.5.6.94
MDRO/CDI Observation	2.16.840.1.113883.10.20.5.6.90
Non-product Action Observation	2.16.840.1.113883.10.20.5.6.63
Occasion of HAI Detection Observation	2.16.840.1.113883.10.20.5.6.27
Occupation and Clinical Specialty Observation	2.16.840.1.113883.10.20.5.6.28
Offer Declined Observation	2.16.840.1.113883.10.20.5.6.29
Outcome Observation	2.16.840.1.113883.10.20.5.6.79
Pathogen Identified Observation	2.16.840.1.113883.10.20.5.2.5.1
Pathogen Identified Observation (LIO)	2.16.840.1.113883.10.20.5.6.52
Pathogen Identified Observation in an HAR Report	2.16.840.1.113883.10.20.5.6.83
Pathogen Ranking Observation	2.16.840.1.113883.10.20.5.2.5.1.1
Patient Care Observation	2.16.840.1.113883.10.20.5.6.30
Patient Pathogens Organizer	2.16.840.1.113883.10.20.5.6.80
Positive Blood Culture Observation	2.16.840.1.113883.10.20.5.6.95
Post-procedure Observation	2.16.840.1.113883.10.20.5.6.31
Prior Discharge Encounter	2.16.840.1.113883.10.20.5.6.51
Prior Transfusion Encounter	2.16.840.1.113883.10.20.5.6.72
Procedure Details Clinical Statement in a CLIP Report	2.16.840.1.113883.10.20.5.6.100
Procedure Details Clinical Statement in a Procedure Report	2.16.840.1.113883.10.20.5.6.97
Procedure Details Clinical Statement in an SSI Report	2.16.840.1.113883.10.20.5.6.34
Procedure Details Section in a CLIP Report	2.16.840.1.113883.10.20.5.5.18
Procedure Details Section in a Procedure Report	2.16.840.1.113883.10.20.5.5.31
Procedure Details Section in an Immunization Report	2.16.840.1.113883.10.20.5.5.12
Procedure Risk Factors Clinical Statement in a Procedure Report	2.16.840.1.113883.10.20.5.6.68
Pus, Redness, or Increased Swelling Observation	2.16.840.1.113883.10.20.5.6.92
Reason for Procedure Observation	2.16.840.1.113883.10.20.5.6.38

Template Title	Template OID
Reason Offer Declined Observation	2.16.840.1.113883.10.20.5.6.37
Recorder Observation	2.16.840.1.113883.10.20.5.6.39
Recovery Type Observation	2.16.840.1.113883.10.20.5.6.65
Risk Factors Section in an Evidence of Infection (Dialysis) Report	2.16.840.1.113883.10.20.5.5.26
Root Cause Type Observation	2.16.840.1.113883.10.20.5.6.64
Seasons Immunized Observation	2.16.840.1.113883.10.20.5.6.40
Secondary Bloodstream Infection Observation	2.16.840.1.113883.10.20.5.2.2.7.15
Significant Pathogens Observation	2.16.840.1.113883.10.20.5.6.41
Skin Preparation Clinical Statement	2.16.840.1.113883.10.20.5.6.101
Skin-preparation Solutions Applied Organizer	2.16.840.1.113883.10.20.5.6.43
Solutions Dried Observation	2.16.840.1.113883.10.20.5.6.44
Specimen Collection Encounter (LIO)	2.16.840.1.113883.10.20.5.6.54
Specimen Collection Procedure (LIO)	2.16.840.1.113883.10.20.5.6.53
Spinal Fusion Level Observation	2.16.840.1.113883.10.20.5.2.2.7.8
Sterile Barriers Applied Clinical Statement	2.16.840.1.113883.10.20.5.6.45
Summary Data Observation	2.16.840.1.113883.10.20.5.6.69
Summary Data Section	2.16.840.1.113883.10.20.5.5.23
Summary Encounter	2.16.840.1.113883.10.20.5.6.70
Suspected Source Observation	2.16.840.1.113883.10.20.5.6.87
Transfusion Clinical Statement	2.16.840.1.113883.10.20.5.6.73
Transient Patient Observation	2.16.840.1.113883.10.20.5.6.91
Trauma Observation	2.16.840.1.113883.10.20.5.2.2.7.5
Urinary Catheter Observation	2.16.840.1.113883.10.20.5.6.48
Vaccine Information Statement Type	2.16.840.1.113883.10.20.5.6.49
Vascular Access Type Observation	2.16.840.1.113883.10.20.5.6.84
Ventilator Observation	2.16.840.1.113883.10.20.5.6.50
Weight Observation	2.16.840.1.113883.10.20.5.2.2.7.10
Wound Class Observation	2.16.840.1.113883.10.20.5.2.1.2

Table 85: NHSN Templates by Template Type

Template Title	Template OID
Document Templates	
Evidence of Infection (Dialysis) Report	2.16.840.1.113883.10.20.5.25
HAI Bloodstream Infection Report (BSI)	2.16.840.1.113883.10.20.5.26
HAI Central-line Insertion Practice Numerator Report	2.16.840.1.113883.10.20.5.18
HAI Hemovigilance Adverse Reaction Report (HAR)	2.16.840.1.113883.10.20.5.24

Template Title	Template OID
HAI Hemovigilance Incident Report	2.16.840.1.113883.10.20.5.21
HAI Immunization Numerator Report	2.16.840.1.113883.10.20.5.13
HAI Laboratory-identified Organism (LIO) Report	2.16.840.1.113883.10.20.5.17
HAI Pneumonia Infection Numerator Report (PNEU)	2.16.840.1.113883.10.20.5.28
HAI Population Summary Report	2.16.840.1.113883.10.20.5.23
HAI Procedure Denominator Report	2.16.840.1.113883.10.20.5.23
HAI Surgical Site Infection Report (SSI)	2.16.840.1.113883.10.20.5.27
HAI Urinary Tract Infection Numerator Report (UTI)	2.16.840.1.113883.10.20.5.29
Header Constraints, HAI Population-summary Reports	2.16.840.1.113883.10.20.5.4.4
Header Constraints, HAI Single-person Reports	2.16.840.1.113883.10.20.5.4.1
Healthcare Associated Infection Report	2.16.840.1.113883.10.20.5.4.23
Section Templates	
Details Section in a Evidence of Infection (Dialysis) Report	2.16.840.1.113883.10.20.5.5.27
Details Section in an HAR Report	2.16.840.1.113883.10.20.5.5.25
Encounters Section in a LIO Report	2.16.840.1.113883.10.20.5.5.16
Encounters Section in an HAR Report	2.16.840.1.113883.10.20.5.5.24
Findings Section (LIO)	2.16.840.1.113883.10.20.5.5.17
Findings Section in an Infection-type Report	2.16.840.1.113883.10.20.5.5.28
HAI Section Generic Constraints	2.16.840.1.113883.10.20.5.4.3
Incident Details Section	2.16.840.1.113883.10.20.5.5.20
Infection Details Section in a BSI Report	2.16.840.1.113883.10.20.5.5.6
Infection Details Section in a Pneumonia Infection Report	2.16.840.1.113883.10.20.5.5.9
Infection Details Section in a UTI Report	2.16.840.1.113883.10.20.5.5.10
Infection Details Section in an SSI Report	2.16.840.1.113883.10.20.5.5.7
Infection Risk Factors Section in a BSI Report	2.16.840.1.113883.10.20.5.5.1
Infection Risk Factors Section in a CLIP Report	2.16.840.1.113883.10.20.5.5.19
Infection Risk Factors Section in a Pneumonia Infection Report	2.16.840.1.113883.10.20.5.5.3
Infection Risk Factors Section in a Procedure Report	2.16.840.1.113883.10.20.5.5.30
Infection Risk Factors Section in a UTI Report	2.16.840.1.113883.10.20.5.5.4
Procedure Details Section in a CLIP Report	2.16.840.1.113883.10.20.5.5.18
Procedure Details Section in a Procedure Report	2.16.840.1.113883.10.20.5.5.31
Procedure Details Section in an Immunization Report	2.16.840.1.113883.10.20.5.5.12
Risk Factors Section in an Evidence of Infection (Dialysis) Report	2.16.840.1.113883.10.20.5.5.26
Summary Data Section	2.16.840.1.113883.10.20.5.5.23
Clinical Statement Templates	
Admission to ICU Clinical Statement	2.16.840.1.113883.10.20.5.6.1

Template Title	Template OID
Adverse Reaction Observation	2.16.840.1.113883.10.20.5.6.62
Adverse Reaction Type Observation	2.16.840.1.113883.10.20.5.6.2
Anesthesia Administration Clinical Statement	2.16.840.1.113883.10.20.5.2.2.7.3
ASA Class Observation	2.16.840.1.113883.10.20.5.2.2.7.4
Blood Group Observation	2.16.840.1.113883.10.20.5.6.71
Blood Product Disposition Observation	2.16.840.1.113883.10.20.5.6.66
Blood Product Transfused Observation	2.16.840.1.113883.10.20.5.6.74
Bloodstream Infection Evidence Type Observation	2.16.840.1.113883.10.20.5.6.4
Buttonhole Cannulation Observation	2.16.840.1.113883.10.20.5.6.96
Case Definition Relationship Observation	2.16.840.1.113883.10.20.5.6.78
CDAD Observation	2.16.840.1.113883.10.20.5.6.5
CDAD-related Surgery	2.16.840.1.113883.10.20.5.6.6
Central-line Insertion Practice Clinical Statement	2.16.840.1.113883.10.20.5.6.57
Central-line Insertion Preparation Organizer	2.16.840.1.113883.10.20.5.6.8
Clinical Specialty Observation	2.16.840.1.113883.10.20.5.6.9
Criteria of Diagnosis Organizer	2.16.840.1.113883.10.20.5.6.11
Criterion of Diagnosis Observation	2.16.840.1.113883.10.20.5.6.10
Death Observation	2.16.840.1.113883.10.20.5.6.12
Death Observation in an Evidence of Infection (Dialysis) Report	2.16.840.1.113883.10.20.5.6.89
Diabetes Mellitus Observation	2.16.840.1.113883.10.20.5.2.2.7.7
Dialysis Patient Observation	2.16.840.1.113883.10.20.5.6.85
Donor and Donation Pathogens Organizer	2.16.840.1.113883.10.20.5.6.81
Drug-susceptibility Test Observation	2.16.840.1.113883.10.20.5.2.5.1.2
Duration of Labor Observation	2.16.840.1.113883.10.20.5.2.2.7.11
Eligibility Criterion Observation	2.16.840.1.113883.10.20.5.6.13
Endoscope Used Clinical Statement	2.16.840.1.113883.10.20.5.2.1.3
Findings Organizer	2.16.840.1.113883.10.20.5.6.14
First Discovery Observation	2.16.840.1.113883.10.20.5.6.67
Guidewire Used Clinical Statement	2.16.840.1.113883.10.20.5.6.15
HAI Severity Observation	2.16.840.1.113883.10.20.5.6.77
Hand Hygiene Performed Clinical Statement	2.16.840.1.113883.10.20.5.6.16
Height Observation	2.16.840.1.113883.10.20.5.2.2.7.9
Hemovigilance Adverse Reaction Observation	2.16.840.1.113883.10.20.5.6.76
History of Object Presence Observation	2.16.840.1.113883.10.20.5.6.56
Hospital Admission Act	2.16.840.1.113883.10.20.5.6.88
Immunization Clinical Statement	2.16.840.1.113883.10.20.5.6.17

Template Title	Template OID
Immunization Offer Clinical Statement	2.16.840.1.113883.10.20.5.6.18
Immunocompromised Observation	2.16.840.1.113883.10.20.5.6.19
Implant Observation	2.16.840.1.113883.10.20.5.6.20
Implicated Observation	2.16.840.1.113883.10.20.5.6.75
Imputability Observation	2.16.840.1.113883.10.20.5.6.82
Incident Detail Clinical Statement	2.16.840.1.113883.10.20.5.6.61
Infection Condition Observation	2.16.840.1.113883.10.20.5.6.21
Infection Contributed to Death Observation	2.16.840.1.113883.10.20.5.6.22
Infection Indicator Organizer	2.16.840.1.113883.10.20.5.6.86
Infection Risk Factors Measurement Observation	2.16.840.1.113883.10.20.5.2.1.1.2
Infection Risk Factors Observation	2.16.840.1.113883.10.20.5.2.1.1.1
Infection-type Observation	2.16.840.1.113883.10.20.5.6.23
IV Antibiotic Start Clinical Statement	2.16.840.1.113883.10.20.5.6.93
IV Antifungal Start Clinical Statement	2.16.840.1.113883.10.20.5.6.94
MDRO/CDI Observation	2.16.840.1.113883.10.20.5.6.90
Non-product Action Observation	2.16.840.1.113883.10.20.5.6.63
Occasion of HAI Detection Observation	2.16.840.1.113883.10.20.5.6.27
Occupation and Clinical Specialty Observation	2.16.840.1.113883.10.20.5.6.28
Offer Declined Observation	2.16.840.1.113883.10.20.5.6.29
Outcome Observation	2.16.840.1.113883.10.20.5.6.79
Pathogen Identified Observation	2.16.840.1.113883.10.20.5.2.5.1
Pathogen Identified Observation (LIO)	2.16.840.1.113883.10.20.5.6.52
Pathogen Identified Observation in an HAR Report	2.16.840.1.113883.10.20.5.6.83
Pathogen Ranking Observation	2.16.840.1.113883.10.20.5.2.5.1.1
Patient Care Observation	2.16.840.1.113883.10.20.5.6.30
Patient Pathogens Organizer	2.16.840.1.113883.10.20.5.6.80
Positive Blood Culture Observation	2.16.840.1.113883.10.20.5.6.95
Post-procedure Observation	2.16.840.1.113883.10.20.5.6.31
Prior Discharge Encounter	2.16.840.1.113883.10.20.5.6.51
Prior Transfusion Encounter	2.16.840.1.113883.10.20.5.6.72
Procedure Details Clinical Statement in a CLIP Report	2.16.840.1.113883.10.20.5.6.100
Procedure Details Clinical Statement in a Procedure Report	2.16.840.1.113883.10.20.5.6.97
Procedure Details Clinical Statement in an SSI Report	2.16.840.1.113883.10.20.5.6.34
Procedure Risk Factors Clinical Statement in a Procedure Report	2.16.840.1.113883.10.20.5.6.68
Pus, Redness, or Increased Swelling Observation	2.16.840.1.113883.10.20.5.6.92
Reason for Procedure Observation	2.16.840.1.113883.10.20.5.6.38
Reason Offer Declined Observation	2.16.840.1.113883.10.20.5.6.37
Recorder Observation	2.16.840.1.113883.10.20.5.6.39

Template Title	Template OID
Recovery Type Observation	2.16.840.1.113883.10.20.5.6.65
Root Cause Type Observation	2.16.840.1.113883.10.20.5.6.64
Seasons Immunized Observation	2.16.840.1.113883.10.20.5.6.40
Secondary Bloodstream Infection Observation	2.16.840.1.113883.10.20.5.2.2.7.15
Significant Pathogens Observation	2.16.840.1.113883.10.20.5.6.41
Skin Preparation Clinical Statement	2.16.840.1.113883.10.20.5.6.101
Skin-preparation Solutions Applied Organizer	2.16.840.1.113883.10.20.5.6.43
Solutions Dried Observation	2.16.840.1.113883.10.20.5.6.44
Specimen Collection Encounter (LIO)	2.16.840.1.113883.10.20.5.6.54
Specimen Collection Procedure (LIO)	2.16.840.1.113883.10.20.5.6.53
Spinal Fusion Level Observation	2.16.840.1.113883.10.20.5.2.2.7.8
Sterile Barriers Applied Clinical Statement	2.16.840.1.113883.10.20.5.6.45
Summary Data Observation	2.16.840.1.113883.10.20.5.6.69
Summary Encounter	2.16.840.1.113883.10.20.5.6.70
Suspected Source Observation	2.16.840.1.113883.10.20.5.6.87
Transfusion Clinical Statement	2.16.840.1.113883.10.20.5.6.73
Transient Patient Observation	2.16.840.1.113883.10.20.5.6.91
Trauma Observation	2.16.840.1.113883.10.20.5.2.2.7.5
Urinary Catheter Observation	2.16.840.1.113883.10.20.5.6.48
Vaccine Information Statement Type	2.16.840.1.113883.10.20.5.6.49
Vascular Access Type Observation	2.16.840.1.113883.10.20.5.6.84
Ventilator Observation	2.16.840.1.113883.10.20.5.6.50
Weight Observation	2.16.840.1.113883.10.20.5.2.2.7.10
Wound Class Observation	2.16.840.1.113883.10.20.5.2.1.2

Table 86: HITSP TemplateIds

Template Title	Template OID
IHE Immunizations entry (C83-1 – C83-4)	1.3.6.1.4.1.19376.1.5.3.1.4.12
HITSP Immunizations entry	2.16.840.1.113883.3.88.11.83.13

Table 87: CCD TemplateIds

Template Title	Template OID
Encounter Section Template (conf. 453-457)	2.16.840.1.113883.10.20.1.3
Encounter Activity Template (conf. 485-470)	2.16.840.1.113883.10.20.1.21
Encounter Location Template (conf. 471-479)	2.16.840.1.113883.10.20.1.45
Medication Activity Template (conf. 304-315)	2.16.840.1.113883.10.20.1.24
Reaction Observation Template (conf. 282-286)	2.16.840.1.113883.10.20.1.54
Representation of a Product Template (conf. 354-370)	2.16.840.1.113883.10.20.1.53
Severity Observation Template (conf. 287-295)	2.16.840.1.113883.10.20.1.55

APPENDIX D — CHANGES IN RELEASE 8

This appendix details the changes made for HAI Release 8.

New Reports

This release adds no new reports.

Changes to Data Reported

The Procedure Report (templateId …2.5.30) no longer collects maternal blood loss, nor whether a transplant was non-autologous.

In the CLIP Report,

- When chlorhexidine gluconate was not applied (…5.6.42), the report now records whether chlorhexidine was contraindicated (…5.6.99).
- The Central Line Insertion Procedure (…5.6.58) now records
  - whether the procedure resulted in a successful central-line placement.
  - whether the performer was a member of the PICC/IV team.

Modeling Changes

- In the Procedure Report, removed the Estimated Blood Loss Observation (…5.2.2.7.12) and the Non-autologous Transplant Observation (…5.6.25). These templates are no longer used in the IG.
- In the BSI Report for NICU locations, updated the Risk Factors Section to record only two Risk Factors: birth weight and central line code that includes umbilical catheter. This report no longer records umbilical catheter separately.
- In the CLIP Report, updated the Central Line Insertion Practice clinical statement (…5.6.100) for changes in the data reported.
- In the CLIP Report, in the Procedure Details Clinical Statement in a CLIP Report (templateId 2.16.840.1.113883.10.20.5.6.100), allowed statusCode 'aborted' to indicate that the central-line placement was not successful.
- In the LIO Report, the requirement for recording a prior discharge within three months (templateId `2.16.840.1.113883.10.20.5.5.16`) no longer depends on the organism being monitored
- In the EOID Report, changed the record of vascular access site where an infection indicator is observed, from device participant to `targetSiteCode` (…5.6.92).

Table 88: Changes to templateIds

Old templateId	New templateId	Name
2.16.840.1.113883.10.20.5.4.22	2.16.840.1.113883.10.20.5.4.23	HAI Report

Old templateId	New templateId	Name
2.16.840.1.113883.10.20.5.22	2.16.840.1.113883.10.20.5.30	Procedure Report
2.16.840.1.113883.10.20.5.5.14	2.16.840.1.113883.10.20.5.5.31	Details Section in a Procedure Report
2.16.840.1.113883.10.20.5.6.33	2.16.840.1.113883.10.20.5.6.97	Details Clinical Statement in a Procedure Report
2.16.840.1.113883.10.20.5.5.22	2.16.840.1.113883.10.20.5.5.30	Risk Factors Section in a Procedure Report
(new)	2.16.840.1.113883.10.20.5.6.98	PICC/IV Team
(new)	2.16.840.1.113883.10.20.5.6.99	Contraindicated Observation
2.16.840.1.113883.10.20.5.6.58	2.16.840.1.113883.10.20.5.6.100	Procedure Details Clinical Statement in a CLIP Report
2.16.840.1.113883.10.20.5.6.42	2.16.840.1.113883.10.20.5.6.101	Skin Preparation Clinical Statement

Vocabulary Changes

In NICU and ICU Summary Reports, replaced the existing code 1833-3 Number of Central Line Days with the new code 1854-9 Number of Central Line Days. The new code explicitly includes temporary and permanent lines and umbilical catheters.

In the Infection Risk Factors value set in BSI, replaced the existing code 1001-7 Umbilical catheter with the new code 1006-6 Central line including umbilical catheter.

In the CLIP Report, the value set for role of performer 2.16.840.1.114222.4.11.3181 no longer includes PICC team or IV team.

Table 89: Additions to Value Sets

Code	Code System	Print Name
NHSNHealthcareServiceLocations Value Set 2.16.840.1.113883.13.19		
1220-3	cdcNHSN	Locations for HOSP-LTAC: LTAC ICU
1221-1	cdcNHSN	Locations for HOSP-LTAC: LTAC Ward
1222-9	cdcNHSN	Locations for HOSP-LTAC: LTAC Pediatric ICU
1214-6	cdcNHSN	Locations for HOSP-LTAC: LTAC Pediatric Ward
1217-9	cdcNHSN	Locations for HOSP-REHAB: REHAB Ward
1218-7	cdcNHSN	Locations for HOSP-REHAB: REHAB Pediatric Ward
1262-1	cdcNHSN	OUT-PATIENT LOCATIONS: Commnity Locations: Home Care – Dialysis
NHSNInfectionRiskFactorsCode 2.16.840.1.113883.13.6		
1006-6	cdcNHSN	Central line including umbilical catheter
NHSNSignificantPathogenCode 2.16.840.1.114222.4.11.3194		
2016-4	cdcNHSN	CephR-Klebsiella (CEPHRKLEB)
2017-2	cdcNHSN	CRE-Klebsiella (CREKLEB)
2018-0	cdcNHSN	CRE-Ecoli (CREECOLI)

Table 90: Deletions from Value Sets

Code	Code System	Print Name
NHSNRoleOfPerformerCode Value Set 2.16.840.1.114222.4.11.3181		
2212-9	cdcNHSN	PICC Team
4100-4	cdcNHSN	IV team
NHSNHealthcareServiceLocations Value Set 2.16.840.1.113883.13.19		
1090-0	cdcNHSN	INPATIENT LOCATIONS: Specialty Care Areas (SCA)
1213-8	cdcNHSN	INPATIENT LOCATIONS: Long-term Care
NHSNInfectionRiskFactorsCode 2.16.840.1.113883.13.6		
1001-7	cdcNHSN	Umbilical catheter

Table 91: New Value Sets

Value Set OID	Print Name
2.16.840.1.114222.4.11.6042	NHSNVascularAccessSiteCode

Table 92: Additions to Single-value Bindings

Code	Code System	Print Name
1854-9	cdcNHSN	Number of Central Line Days (including temporary central lines, permanent central lines, and umbilical catheters)
2321-8	cdcNHSN	Site of non-tunneled central line
2322-6	cdcNHSN	Site of tunneled central line
410536001	SNOMED	Contraindicated

Other Changes

Refactored the arrangement of constraints between the generic header templates and the report-specific templates, for ease of use. No change to modeling.

Created a separate section for the population-summary reports and refactored the presentation of them for ease of use. No change to modeling.

Divided constraints that had multi-step XPaths into multiple constraints, each recording only one XPath step. No change to the modeling.

Updated all abbreviations of templateIds in non-normative text in this document to full templateId.

Several text clarifications and corrections to technical typos

- Changed the example of Height Observation to use meters, not centimeters. Removed the description note that NHSN requires the value to be a whole number.
- In the AU report, updated the discussion of how to use the summary templates to reduce repetition of data in instances.

- Noted that `encompassingEncounter` can contain an id to record a visit id.
- Noted and illustrated how to record a vendor id, email, and name in author.
- Removed a duplicate constraint in templateId ...5.6.81.
- Clarified the example code in Infection Contributed to Death Observation.
- Clarified how to record access placement date (yyyymm) in a Vascular Access Type Observation.
- Combined CONF:10288 and CONF:10289 into a single statement of alternatives (@negationInd or @nullFlavor).
- In EOID Report, corrected the nullFlavor for admission date from NI (No information) to NA (Not applicable).
- In Specimen Collection Encounter (LIO), added missing conformance statements specifying @classCode ENC and @moodCode EVN.
- Added CONF:16989 to include missing @negationInd and @nullFlavor constraints
- Corrected typo in CONF:4587 to read: In a NICU Report, the Summary Encounter **SHALL** contain [1..1] **participant** (CONF:4587)
- Updated narrative text in CONF:4572 for clarification.

APPENDIX E — EXAMPLE INSTANCE IDENTIFIERS (NON-NORMATIVE)

As discussed in Development of This Specification and Example Instance Identifiers, much of the development of this DSTU was driven by a pilot project in July 2007. The pilot project assigned example OIDs to a fictional facility and vendor to illustrate the numbering schemes for which facilities and vendors are responsible. In practice, these identifiers will be assigned by facilities and software applications within those facilities participating in the NHSN.

All example OIDs in this IG and in the accompanying sample files begin with `2.16.840.1.113883.3.117.1.1.5.` and are documented below for reference.

Each OID-owner such as a facility or vendor controls the structure of the OIDs it assigns under its root, and is responsible for ensuring that each identifier it issues is globally unique. A vendor must, for example, ensure that there is no duplication amongst the `setIds` issued by its various software installations. The example instance identifiers in this guide use the following plan for assigning instance identifiers:

Table 93: Structure of Example OIDs

Usage	OID
a healthcare facility OID	2.16.840.1.113883.3.117.1.1.5.1.1
its patient IDs	2.16.840.1.113883.3.117.1.1.5.1.1.1
its personnel IDs	2.16.840.1.113883.3.117.1.1.5.1.1.2
a vendor OID	2.16.840.1.113883.3.117.1.1.5.2.1
its first software installation	2.16.840.1.113883.3.117.1.1.5.2.1.1
its setIds	2.16.840.1.113883.3.117.1.1.5.2.1.1.1
its document IDs	2.16.840.1.113883.3.117.1.1.5.2.1.1.2
its encounter IDs	2.16.840.1.113883.3.117.1.1.5.2.1.1.3
its procedure IDs	2.16.840.1.113883.3.117.1.1.5.2.1.1.4
its event / incident IDs	2.16.840.1.113883.3.117.1.1.5.2.1.1.5
etc.	

Conformant to that structure, the following example instance identifiers are used in this guide and in the sample files.

Table 94: Values of Example Instance Identifiers Used in This Guide

Facility IDs and Facility-assigned OIDs		
Usage	**OID**	**extension**
a location in a facility	2.16.840.1.113883.3.117.1.1.5.1.1	9W
a patient ID	2.16.840.1.113883.3.117.1.1.5.1.1.1	123456
facility personnel:		
author ID	2.16.840.1.113883.3.117.1.1.5.1.1.2	anAuthorID
legal authenticator ID	2.16.840.1.113883.3.117.1.1.5.1.1.2	aLegalAuthenticatorID
performer (nurse)	2.16.840.1.113883.3.117.1.1.5.1.1.2	24242424
Vendor-software-assigned OIDs		
Usage	**OID**	**extension**
software ID	2.16.840.1.113883.3.117.1.1.5.2.1.1	aSoftwareID
setId	2.16.840.1.113883.3.117.1.1.5.2.1.1.1	31
document ID	2.16.840.1.113883.3.117.1.1.5.2.1.1.2	20202201 93
encounter ID	2.16.840.1.113883.3.117.1.1.5.2.1.1.3	31
procedure ID	2.16.840.1.113883.3.117.1.1.5.2.1.1.4	92
event / incident ID	2.16.840.1.113883.3.117.1.1.5.2.1.1.5	21987654321 11987654321
blood unit from the facility's blood bank	2.16.840.1.113883.3.117.1.1.5.2.1.1.6	1234512123456121

APPENDIX F — VOCABULARY HEURISTICS FOR CODES AND VALUE SETS (NON-NORMATIVE)

The CDC has identified questions and allowable responses for HAI form fields. In many cases these questions and responses have been mapped to local CDC/NHSN codes, and it is the CDC's intention to identify corresponding standard codes. Within the CDC, different groups have done vocabulary mapping work (e.g., with HL7 V2 messages), often with different results, and efforts are underway to not only reconcile internal CDC vocabulary usage, but also reconcile CDC vocabulary usage with HITSP recommendations.

Vocabularies recommended in this guide are primarily standard vocabularies recommended for use in particular domains. In many cases these vocabularies are further constrained into value sets for use within this guide or were previously constrained into value sets by the CDC and maintained in PHIN VADs for use in the Public Health domain.

The incremental strategy for vocabulary reconciliation for codes, code systems, and value sets in this document is as follows.

Code and codeSystem Selection

- Where there is conflicting precedent within the CDC, CDC will advise on the preferred CDC code system.
- Where there is a preferred code system within the CDC that is consistent with HITSP recommendations, existing CDC-cited code systems are used.
- Where there is a preferred code system within the CDC that is not consistent with HITSP recommendations, divergence from HITSP is flagged, and reconciliation between CDC and HITSP is planned (but outside the scope of this document).
- Where there is no established precedent within the CDC, available HITSP recommendations will be followed.
- Where there is no established precedent within the CDC and no HITSP recommendations, precedent in prior CDA Implementation Guides will be followed.
- Where there is no established precedent within the CDC, no HITSP recommendations, and no prior CDA IG precedent:
    - An attempt will be made to map CDC/NHSN local codes to standard codes (e.g., SNOMED, HL7 V3 vocabularies).
    - Where there is no corresponding standard code, the CDC/NHSN local code will be cited. (Submitting local CDC/NHSN codes to SNOMED is outside the scope of this document.)
- If post-coordination of SNOMED terms and codes would be required to capture the CDC/NHSN concept, the local CDC/NHSN code will be used.

Value Set Assignment and Maintenance

- Where there is conflicting precedent within the CDC, CDC will advise on the preferred CDC value set.
- Where there is a preferred CDC value set that is consistent with HITSP recommendations, existing CDC value sets are used.
- Where there is a preferred CDC value set that is not consistent with HITSP recommendations, divergence from HITSP is flagged, and reconciliation between CDC and HITSP is planned (but outside the scope of this document).
- Where there is no established precedent within the CDC, available HITSP recommendations will be followed.
- Where there is no established precedent within the CDC and no HITSP recommendations, then precedent in prior CDA Implementation Guides will be followed.
- Where there is no established precedent within the CDC, no HITSP recommendations, and no prior CDA IG precedent, new value sets will be created, each having a value set OID assigned by the CDC.

APPENDIX G — SUMMARY OF VOCABULARIES (NON-NORMATIVE)

For the user's convenience, this table summarizes the vocabularies (code systems) used in this DSTU.

Table 95: List of Vocabularies

Root OIDs	
codeSystem	**codeSystemName**
2.16.840.1.113883.5.25	HL7 Confidentiality Code
2.16.840.1.113883.5.4	HL7 ActCode
2.16.840.1.113883.5.83	HL7 Observation Interpretation
2.16.840.1.113883.6.259	HL7 HealthcareServiceLocation
2.16.840.1.113883.12.162	HL7 RouteOfAdministration
2.16.840.1.113883.6.1	LOINC
2.16.840.1.113883.6.88	RxNorm
2.16.840.1.113883.6.96	SNOMED CT
2.16.840.1.113883.6.59	CVX
2.16.840.1.113883.6.243	Standard Occupational Classification (SOC)
2.16.840.1.113883.6.101	NUCCProviderCodes
2.16.840.1.113883.6.277	cdcNHSN
2.16.840.1.113883.6.86	UMLS
2.16.840.1.113883.6.18	ISBT-128
2.16.840.1.113883.6.290	ABC Codabar

APPENDIX H — HITSP AND CCD CONSTRAINTS

HITSP Constraints

The NHSN DSTU asserts conformance to the Immunization entry (`templateId 1.3.6.1.4.1.19376.1.5.3.1.4.12`). The reason for not asserting conformance to the entire module is that the use case for NHSN is somewhat different than for HITSP. The difference is NHSN records the reasons for declining an immunization with the offer to immunize (also a `substanceAdministration`), rather than with the immunization itself.

The following table and constraints are copied, for the implementer's convenience, from HITSP C/83.

Table 96: HITSP Table 2.2.2.12.5-3 Medication Information Constraints

Constraint
C83-(226) A CDA Document **SHALL** declare conformance to the Immunization module by including a **`<templateID>`** element with the **root** attribute set to the value 2.16.840.1.113883.3.88.11.83.14
C83-(227) Immunization data elements **SHALL** declare conformance to the IHE Immunization entry by including a **`<templateID>`** element with the `root` attribute set to the value 1.3.6.1.4.1.19376.1.5.3.1.4.12
C83-(228) 3.88.11.83 Immunizations **SHALL** be coded using CVX as specified in HITSP/C80 Section 2.2.1.3.4.1 Vaccines Administered. The code **SHALL** appear in the **`code`** attribute of the **`<code>`** or **`<translation>`** element
C83-(229) The reason for refusal **SHALL** be reported as specified in HITSP/C80 Section 2.2.1.3.4.2 No Immunization Reason

CCD Constraints

HAI reuses several templates from CCD. The following conformance statements are copied, for the implementer's convenience, from CCD. Any discrepancy between this and the original is inadvertent and in all cases, the CCD source takes precedence.

3.15 CCD Encounter Section Template (conf. 453-457)

The template identifier for the encounters section is 2.16.840.1.113883.10.20.1.3.

CONF-453: **CCD SHOULD** contain exactly one and **SHALL NOT** contain more than one Encounters section (templateId 2.16.840.1.113883.10.20.1.3). The Encounters section **SHALL** contain a narrative block, and **SHOULD** contain clinical statements. Clinical statements **SHOULD** include one or more encounter activities (templateId 2.16.840.1.113883.10.20.1.21).

CONF-454: The encounters section **SHALL** contain **Section / code**.

CONF-455: The value for "**Section / code**" **SHALL** be "46240-8" "History of encounters" 2.16.840.1.113883.6.1 LOINC **STATIC**.

CONF-456: The encounters section **SHALL** contain **Section / title.**

CONF-457: **Section / title SHOULD** be valued with a case-insensitive language-insensitive text string containing "encounters".

(See also CCD Encounter Activity Template and CCD Encounter Location Template below.)

3.15.2.1 CCD Encounter Activity Template (conf. 458-470)

The template identifier for an encounter activity is 2.16.840.1.113883.10.20.1.21.

CONF-458: An encounter activity (templateId 2.16.840.1.113883.10.20.1.21) **SHALL** be represented with **Encounter**.

CONF-459: The value for "**Encounter / @classCode**" in an encounter activity **SHALL** be "ENC" 2.16.840.1.113883.5.6 ActClass **STATIC**.

CONF-460: The value for "**Encounter / @moodCode**" in an encounter activity **SHALL** be "EVN" 2.16.840.1.113883.5.1001 ActMood **STATIC**.

CONF-461: An encounter activity **SHALL** contain at least one **Encounter / id**.

CONF-462: An encounter activity **SHOULD** contain exactly one **Encounter / code**.

CONF-463: The value for "**Encounter / code**" in an encounter activity **SHOULD** be selected from ValueSet 2.16.840.1.113883.1.11.13955 EncounterCode 2.16.840.1.113883.5.4 ActCode **DYNAMIC**.

CONF-464: An encounter activity **MAY** contain exactly one **Encounter / effectiveTime**, to indicate date, time, and/or duration of an encounter.

CONF-465: An encounter activity **MAY** contain one or more **Encounter / entryRelationship**, whose value for "**entryRelationship / @typeCode**" **SHALL** be "RSON" "Has reason" 2.16.840.1.113883.5.1002 ActRelationshipType **STATIC**, where the target of the relationship represents the indication for the activity.

CONF-466: An encounter activity **MAY** contain one or more **Encounter / performer**, used to define the practioners involved in an encounter.

CONF-467: Encounter / performer **MAY** contain exactly one **Encounter / performer / assignedEntity / code**, to define the role of the practioner.

CONF-468: An encounter activity **MAY** contain one or more patient instructions (templateId 2.16.840.1.113883.10.20.1.49).

CONF-469: The value for "**Encounter / entryRelationship / @typeCode**" in an encounter activity **MAY** be "SUBJ" "Subject" 2.16.840.1.113883.5.1002 ActRelationshipType **STATIC** to reference an age observation (templateId 2.16.840.1.113883.10.20.1.38).[5]

[5] Note that entryRelationship / inversionInd can be used to distinguish relationship source vs. target.

CONF-470: An encounter activity **SHALL** contain one or more sources of information, as defined in section ***5.2 Source***.

3.15.2.2 CCD Encounter Location Template (conf. 471-479)

The template identifier for a location participation is 2.16.840.1.113883.10.20.1.45.

CONF-471: An encounter activity **MAY** contain one or more location participations.

CONF-472: A location participation (templateId 2.16.840.1.113883.10.20.1.45) **SHALL** be represented with the **participant** participation.

CONF-473: The value for "**participant / @typeCode**" in a location participation **SHALL** be "LOC" 2.16.840.1.113883.5.90 ParticipationType **STATIC**.

CONF-474: A location participation **SHALL** contain exactly one **participant / participantRole**.

CONF-475: The value for "**participant / participantRole / @classCode**" in a location participation **SHALL** be "SDLOC" "Service delivery location" 2.16.840.1.113883.5.110 RoleClass **STATIC**.

CONF-476: Participant / participantRole in a location participation **MAY** contain exactly one **participant / participantRole / code.**

CONF-477: The value for "**participant / participantRole / code**" in a location participation **SHOULD** be selected from ValueSet 2.16.840.1.113883.1.11.17660 ServiceDeliveryLocationRoleType 2.16.840.1.113883.5.111 RoleCode **DYNAMIC**.

CONF-478: Participant / participantRole in a location participation **MAY** contain exactly one participant / participantRole / playingEntity.

CONF-479: The value for "**participant / participantRole / playingEntity / @classCode**" in a location participation **SHALL** be "PLC" "Place" 2.16.840.1.113883.5.41 EntityClass **STATIC**.

3.9.2.1.1 CCD Medication Activity Template (conf. 304-315)

CONF-304: A medication activity (templateId 2.16.840.1.113883.10.20.1.24) **SHALL** be represented with **SubstanceAdministration**.

CONF-305: The value for "**SubstanceAdministration / @moodCode**" in a medication activity **SHALL** be "EVN" or "INT" 2.16.840.1.113883.5.1001 ActMood **STATIC**.

CONF-306: A medication activity **SHALL** contain at least one **SubstanceAdministration / id**.

CONF-307: A medication activity **SHOULD** contain exactly one SubstanceAdministration / statusCode.

CONF-308: A medication activity **SHOULD** contain one or more **SubstanceAdministration / effectiveTime** elements, used to indicate the actual or intended start and stop date of a medication, and the frequency of administration. (See section ***5.4.1 Dates and Times*** for additional details about time representation).

CONF-309: A medication activity **SHOULD** contain exactly one SubstanceAdministration / routeCode.

CONF-310: The value for "**SubstanceAdministration / routeCode**" in a medication activity **SHOULD** be selected from the HL7 RouteOfAdministration (2.16.840.1.113883.5.112) code system.

CONF-311: A medication activity **SHOULD** contain exactly one SubstanceAdministration / doseQuantity or SubstanceAdministration / rateQuantity.

CONF-312: A medication activity **MAY** contain exactly one **SubstanceAdministration / maxDoseQuantity**, which represents a maximum dose limit.

CONF-313: A medication activity **MAY** contain one or more **SubstanceAdministration / performer**, to indicate the person administering a substance.

CONF-314: A medication activity **MAY** have one or more associated consents, represented in the CCD Header as **ClinicalDocument / authorization / consent**.

CONF-315: A medication activity **SHALL** contain one or more sources of information, as defined in section 5.2 Source.

3.8.2.4.1.1 CCD Reaction Observation Template (conf. 282-286)

CONF-282: A reaction observation (templateId 2.16.840.1.113883.10.20.1.54) **SHALL** be represented with **Observation**.

CONF-283: The value for "**Observation / @classCode**" in a reaction observation **SHALL** be "OBS" 2.16.840.1.113883.5.6 ActClass **STATIC**.

CONF-284: The value for "**Observation / @moodCode**" in a reaction observation **SHALL** be "EVN" 2.16.840.1.113883.5.1001 ActMood **STATIC**.

CONF-285: A reaction observation **SHALL** include exactly one **Observation / statusCode**.

CONF-286: The value for "**Observation / statusCode**" in a reaction observation **SHALL** be "completed" 2.16.840.1.113883.5.14 ActStatus **STATIC**.

3.9.2.4 CCD Representation of a Product Template (conf. 354-370)

The template identifier for a product is 2.16.840.1.113883.10.20.1.53.

The template identifier for a product instance is 2.16.840.1.113883.10.20.1.52.

CONF-354: A medication activity **SHALL** contain exactly one **SubstanceAdministration / consumable**, the target of which is a product template.

CONF-355: A supply activity **MAY** contain exactly one **Supply / product**, the target of which is a product template.

CONF-356: A product (templateId 2.16.840.1.113883.10.20.1.53) **SHALL** be represented with the **ManufacturedProduct** class.

CONF-357: A ManufacturedProduct in a product template **SHALL** contain exactly one **manufacturedProduct / manufacturedMaterial**.

CONF-358: A manufacturedMaterial in a product template **SHALL** contain exactly one **manufacturedMaterial / code**.

CONF-359: The value for "**manufacturedMaterial / code**" in a product template **SHOULD** be selected from the RxNorm (2.16.840.1.113883.6.88) code system for medications, and from the CDC Vaccine Code (2.16.840.1.113883.6.59) code system for immunizations[6], or **MAY** be selected from ValueSet 2.16.840.1.113883.1.11.20.8 MedicationTypeCode **STATIC** 20061017.

CONF-360: The value for "**manufacturedMaterial / code**" in a product template **MAY** contain a precoordinated product strength, product form, or product concentration (e.g. "metoprolol 25mg tablet", "amoxicillin 400mg/5mL suspension").

CONF-361: If **manufacturedMaterial / code** contains a precoordinated unit dose (e.g. "metoprolol 25mg tablet"), then **SubstanceAdministration / doseQuantity SHALL** be a unitless number that indicates the number of products given per administration.

CONF-362: If **manufacturedMaterial / code** does not contain a precoordinated unit dose (e.g. "metoprolol product"), then **SubstanceAdministration / doseQuantity SHALL** be a physical quantity that indicates the amount of product given per administration.

CONF-363: A **manufacturedMaterial** in a product template **SHALL** contain exactly one **Material / code / originalText**, which represents the generic name of the product.

CONF-364: A **manufacturedMaterial** in a product template **MAY** contain exactly one **Material / name**, which represents the brand name of the product.

ASTM CCR defines an optional product size element which can be used to describe the physical characteristics of a product. CDA R2 has no corresponding field, but can uniquely identify a given manufacturer's product, thereby enabling a complete lookup of any detail related to the product.

CONF-365: A **ManufacturedProduct** in a product template **MAY** contain exactly one **manufacturedProduct / manufacturerOrganization**, which represents the manufacturer of the **Material**.

CONF-366: A **ManufacturedProduct** in a product template **MAY** contain one or more **manufacturedProduct / id**, which uniquely represent a particular kind of product.

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[6]A table of CDC Vaccine Codes can be found at http://www.cdc.gov/nip/registry/st_terr/tech/stds/hl7-cvx.htm.

CONF-367: If **ManufacturedProduct** in a product template contains **manufacturedProduct / id**, then **ManufacturedProduct SHOULD** also contain **manufacturedProduct / manufacturerOrganization**.

CONF-368: A medication activity **MAY** contain one or more product instance templates (templateId 2.16.840.1.113883.10.20.1.52) (see section ***3.14.2.2 Procedure related products***), to identify a particular product instance.

CONF-369: A supply activity **MAY** contain one or more product instance templates (templateId 2.16.840.1.113883.10.20.1.52) (see section ***3.14.2.2 Procedure related products***), to identify a particular product instance.

CONF-370: Supply / participant / participantRole / id **SHOULD** be set to equal a [Act | Observation | Procedure] / participant / participantRole / id (see section ***3.14.2.2 Procedure related products***) to indicate that the Supply and the Procedure are referring to the same product instance.

3.8.2.4.1.2 CCD Severity Observation Template (conf. 287-295)

CONF-287:A severity observation (templateId 2.16.840.1.113883.10.20.1.55) **SHALL** be represented with **Observation**.

CONF-288: The value for "**entryRelationship / @typeCode**" in a relationship between a reaction observation and severity observation **SHALL** be "SUBJ" "Has subject" 2.16.840.1.113883.5.1002 ActRelationshipType **STATIC**.

CONF-289: The value for "**Observation / @classCode**" in a severity observation **SHALL** be "OBS" 2.16.840.1.113883.5.6 ActClass **STATIC**.

CONF-290: The value for "**Observation / @moodCode**" in a severity observation **SHALL** be "EVN" 2.16.840.1.113883.5.1001 ActMood **STATIC**.

CONF-291: A severity observation **SHALL** include exactly one **Observation / statusCode**.

CONF-292: The value for "**Observation / statusCode**" in a severity observation **SHALL** be "completed" 2.16.840.1.113883.5.14 ActStatus **STATIC**.

CONF-293: A severity observation **SHALL** contain exactly one **Observation / code**.

CONF-294: The value for "**Observation / code**" in a severity observation **SHALL** be "SEV" "Severity observation" 2.16.840.1.113883.5.4 ActCode **STATIC**.

CONF-295: A severity observation **SHALL** contain exactly one **Observation / value**.