



Florida Department of Health

Bureau of Epidemiology

Guide to Importing Data Into the National Healthcare Safety Network: Summary Denominator Reports

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Version Control

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1. Introduction

The purpose of this help document, developed by the Florida Department of Health (FDOH), is to assist facilities with creating the Clinical Document Architecture (CDA) files needed for importing the Denominator reports into the National Healthcare Safety Network (NHSN). This document will use CDA to refer to an XML file that follows the CDA format which is the required file type and format for importing data into the NHSN system. CDA is a set of constraints on the HL7 Reference Informational Model (RIM) that are defined in the CDA Release 2 (CDA R2) Refined Message Information Model (RMIM) to further define and restrict the sequence and cardinality of CDA objects and the vocabulary sets for coded elements. NHSN is a web-based system maintained by the Centers for Disease Control (CDC) where facilities can report healthcare-associated infections (HAI) for quality improvement or in compliance with Centers for Medicare and Medicaid (CMS) Hospital Inpatient Quality Reporting Program.

The directions in this document are taken from the CDC HL7 Implementation Guide for CDA Release 2 NHSN Healthcare Associated Infection (HAI) Reports, Release 5 (U.S. Realm). Summarization of the CDC HL7 Implementation Guide document will help direct the developer to the sections needed for the specific report being discussed in this document. The section and table numbers used within this document have been labeled and numbered as they are in the CDC [HL7 Implementation Guide for CDA Release 2: NHSN Healthcare Associated Infection \(HAI\) Reports, Release 5](#) so as to make the references between the two documents straightforward.

Based on the facility location type that is being tracked in the monthly report plan a different format of the CDA denominator file would need to be used. Each facility type location must report different type summary data in order for the HAI rates to be calculated. At this time only one denominator format is accepted by NHSN as an import file. All other reports types must be manually entered. As new reports are implemented by NHSN, examples will be added to this list.

- An example of the Denominator for Intensive Care Unit (ICU)/Other Locations (not NICU or SCAP) population summary CDA file is available at [Denominator - ICU Population Summary XML Example](#).

1.1 Audience

The primary target audience for this document is developers of software systems who want to enable their system to create files with their facility's HAI data that can be imported into the NHSN. A secondary audience is Infection Preventionists (IP) who will be working with their software system developers to generate these files.

1.2 Schedule of Events

Each IP and software system development group will have to set up a schedule for when and how often data will be added to the NHSN system. Since data can be imported at any time, one facility may decide to import daily, while another facility may decide to only import weekly. When a schedule of events is determined, the IT group can assist in setting up a scheduled job that will create the CDA file so the assigned group can import the file into NHSN.

1.3 Other Help Locations

If you need additional details that are not available in this document, there are several help documents available for reference on the CDC website and the Florida Department of Health website. Below is a list of the other help locations and documents:

- For questions concerning this document, please contact June Leverette at HAI_Program@doh.state.fl.us.
- CDC Release 5 document: [HL7 Implementation Guide for CDA Release 2: NHSN Healthcare Associated Infection \(HAI\) Reports; Release 5](#).
- Example of an ICU Denominator Population Summary CDA file at [Denominator- ICU Population Summary XML Example](#).
- The CDC NHSN website can be accessed at <http://www.cdc.gov/nhsn/index.html>.
- If the help documents do not provide the information you need, you can always contact NHSN by emailing nhsn@cdc.gov or thru their web site at <http://www.cdc.gov/nhsn/contact.html>.

1.4 Things to Note when Creating a CDA File

Below is a list of additional information that may be helpful in clarifying some issues that may arise when trying to create a CDA file.

- Currently only the Intensive Care Unit (ICU)/Other Locations (not NICU or SCA) Summary Denominator report is supported by the CDA import function.
- The Neonatal Intensive Care Unit (NICU) /Denominator report is expected to be supported by the CDA import function in March 2011.
- If the facility is reporting on multiple location site types during the same month, each site location type would need to have a summary denominator report imported into NHSN. An example of when two denominator reports would need to be imported might be if the facility is reporting on the Intensive Care Unit (ICU)/Other Locations and also reporting on the Neonatal Intensive Care Unit (NICU) section during the same month.
- Before a CDA file can be created, the facility OID number must be known to the group that will create the import file. To see if the facility OID has been registered with NHSN review the section on OIDs in the "[FDOH Guide to Importing Data into NHSN: Initial Setup](#)" document located on the FDOH HAI website. The facility OID will be extended to create the unique numbering schemes needed to create the CDA files. The scheme of OID numbers will include the vendor or IT Group number.
- Tables referenced within this document are in the appendices of the CDC [HL7 Implementation Guide for CDA Release 2: HAI Reports Release 5](#) document.
- Numerator and Denominator reports are two separate reports and therefore two separate CDA files. A Numerator report is the individual file with the patient level data. The Denominator report is a summary file that provides patient days and central line days for a given location, month and year. These two reports stand on their own but both reports are required for calculating HAI rates.

2. Use of Implementation Guide

The implementation guide section contains information that is important in understanding this FDOH document. The information in this FDOH document comes directly from the CDC [HL7 Implementation Guide for CDA Release 2: NHSN Healthcare Associated Infection \(HAI\) Reports, Release 5](#) document, which should be referenced if more information is needed.

2.1 (1.6.1 Keywords)

The following keywords in this document are to be interpreted as:

- **SHALL**: an absolute requirement, but allows for NULL values via an additional conformance statement
- **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

2.2 (1.6.2 Constraints)

The CDA conformance statements are shown in figure 1 below with each constraint uniquely identified by an identifier at or near the end of the constraint (e.g., "CONF: 605"). Note that the identifiers are persistent not sequential.

Figure 1 (Figure 1: Constraints format example)

Immunocompromised Observation
[observation: templateId 2.16.840.1.113883.10.20.5.6.19]

[description of the template]

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

The conformance verb keyword at the start of a constraint (**SHALL**, **SHOULD**, **MAY**, etc.) indicates business conformance and 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

2.3 (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 import documents. As with all CDA documents, the ClinicalDocument/id uniquely identifies a document instance (an electronic file) and the incremented version numbers identify subsequent versions of the document.

NHSN assigns each participating vendor a root Object Identifier (OID) and the vendor is responsible for controlling the structure of OIDs assigned under its root.

- To find out if your facility has already been assigned an OID you will need to log into the NHSN system. From the Navigation menu select the “Facility > Facility Info” and the OID should be displayed in the Object Identifier field.
- If your facility has not already been assigned an OID follow the directions in the [FDOH Guide to Importing Data into HNSH: Initial Setup](#) to receive an OID for the facility. 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 1 (Table 79: 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 non-patient 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 encompassing 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

Conformant to that structure, the following example instance identifiers are used in this guide and in the sample files.

Table 2 (Table 80: 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
an author ID	2.16.840.1.113883.3.117.1.1.5.1.1.2	anAuthorID
a legal authenticator ID	2.16.840.1.113883.3.117.1.1.5.1.1.2	aLegalAuthenti catorID
Vendor IDs and Vendor-assigned OIDs		
Usage	OID	extension
a setId	2.16.840.1.113883.3.117.1.1.5.2.1.1.1	31
a document ID	2.16.840.1.113883.3.117.1.1.5.2.1.1.2	20202201
an encompassingEncounter ID	2.16.840.1.113883.3.117.1.1.5.2.1.1.3	31
a procedure ID	2.16.840.1.113883.3.117.1.1.5.2.1.1.4	92

2.4 (1.8 Supporting Tool)

IT groups checking the CDA file they have generated for errors in the file may find the use of the Schematron schemas helpful. Please refer to the CDC [HL7 Implementation Guide for CDA Release 2, Release 5](#) for the detail and location of the Schematron technology and for the location of the CDA Validator, which is available as an online application that can be used to validate the CDA document's conformance.

3. (3.1 Summary of TemplatedId Used Across Report Types)

Each CDA file that will be uploaded into the NSHN system must contain certain information. Below are the report-specific requirements for the Denominator Reports. These requirements specify the document-level templatedId value that identifies the report type, the preferred report title, and the sections required in that report type.

Population Summary Denominator Report covers the following NHSN forms:

- Intensive Care Unit (ICU)/Other Locations (not NICU or SCA) Denominator
- Influenza Vaccination Method A Denominator
- Influenza Vaccination Method B Denominator
- Neonatal Intensive Care Unit (NICU) Denominator
- Specialty Care Area (SCA) Denominator
- Multi Drug Prevention Process and Outcome Measures Monthly Monitoring (POM)
- Blood Product Incidents Reporting – Summary Data (Hemovigilance Module)
- Blood Product Incidents Monthly Reporting Denominators (Hemovigilance Module)

Table 3 (Table 5: Sequence of Sections / Templates within Report Types)

Italics indicate conditional requirements. All other items are required, except in the instance of an “or” that indicates a choice between sets of required items.

HAI Implementation Guide (2.16.840.1.113883.10.20.5.4.20)	
Document	Section and Clinical Statements Libraries
Other Reports	
Population Summary Report (...20.5.20)	Summary Data Section (...20.5.5.21) <ul style="list-style-type: none"> • Summary Encounter (...20.5.6.60) <ul style="list-style-type: none"> ○ Summary Data Observations (...20.5.6.59)

4. (2 NHSN HAI Generic Constraints)

Section five briefly describes the CDA constraints common across all HAI Denominator report types.

The individual report-specific constraints are defined in the [report-specific constraints](#) above and the body of the CDF file is defined in this NHSN HAI Generic Constraints section and the [generic constraints](#) section below. If additional information is needed about the NHSN HAI generic constraints please refer to Section 2 of the HL7 Implementation Guide for CDA Release 2: NHSN Healthcare Associated Infection (HAI) Reports, Release 5 (US Realm).

4.1 (2.1 HealthcareAssociated Infection Report)

[ClinicalDocument: templateId 2.16.840.1.113883.10.20.5.4.20]

The ClinicalDocument template records constraints on all NHSN HAI Reports (generic constraints). Additional constraints are noted in the specialization templates for single-patient and population-summary reports, and in the templates for specific report types. For the templates for this report review [Section 3](#) of this document.

4.2 (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.

4.3 (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.

For all templates specified in this document, the templateId is a required element.

1. In a document instance, a templated structure **SHALL** contain a templateId to assert conformance to this Implementation Guide. (CONF: 4503).
2. A templateId element **SHALL** be present representing conformance to the constraints for a specific report type. (CONF:4504).
3. **SHALL NOT** contain [1..1] templateId/@extension (CONF:4505)
This specification is for the U.S. realm.
4. **SHALL** contain [1..1] realmCode/@code="US" **STATIC** (CONF:4506)

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 2 (Figure 5: 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="2.16.840.1.113883.10.20.5.4.20" />

  <!-- Conformant to the HAI Constraints for BSI Numerator Report -->
  <templateId root="2.16.840.1.113883.10.20.5.7" />

  ...
</ClinicalDocument>
```

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

5. **SHALL** contain [1..1] `code/@code="51897-7" Healthcare Associated Infection Report (CodeSystem: 2.16.840.1.113883.6.1 LOINC) STATIC (CONF:4507)`
6. **SHALL** contain [1..1] `title (CONF:4508)`

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

7. **SHALL** contain [1..1] `effectiveTime (CONF:4509)`
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.
8. **SHALL** contain [1..1] `confidentialityCode/@code="N" Normal (CodeSystem: 2.16.840.1.113883.5.25 HL7 Confidentiality Code) STATIC (CONF:4510).`
9. **SHALL** contain [1..1] `languageCode/@code="en-US" STATIC (CONF:4511).`
10. **SHALL** contain [1..1] `setId (CONF:4512)`
11. **SHALL** contain [1..1] `versionNumber (CONF:4513)`
12. 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:4514).

Figure 3 (Figure 6: 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>
```

4.4 (2.2.3 Header Constraints, HAI Population-summary Reports)

[ClinicalDocument: templateId 2.16.840.1.113883.10.20.5.4.4]

This template records the constraints specific to HAI population-summary reports.

The first statement requires that a population-summary report conform to the HAI Generic Requirements.

In the `recordTarget` element, which is required by CDA, since there is no individual patient, the `patientRole/id` element is given a nullFlavor.

In `documentationOf/serviceEvent`, the `code` element records the kind of information being reported, which corresponds to the NHSN form type. The codes for reporting summary data to NHSN are shown in the table below. The `effectiveTime` element records the first and last days of the period being reported.

The subject of a population-summary report is a group rather than an individual patient. This is expressed using a `participant` with the SBJ (subject) type code and the SNOMED CT code for "group". (When based on CDA R3 this design will leverage changes in the approach of the underlying RIM to the representation of groups.)

Another `participant` element represents the facility sending the report. (This is not recorded within `encompassingEncounter` because, for population-summary reports, there is no single encounter: the report is about a group of patients in a particular time period.) The in-facility unit and type, if reported, are recorded in the Summary Encounter.

1. Conforms to Healthcare Associated Infection Report Template (`templateId: 2.16.840.1.113883.10.20.5.4.20`).
2. **SHALL** contain [1..1] `recordTarget/patientRole/id` (CONF:4344).
 - a. This `recordTarget/patientRole/id` **SHALL** contain `@nullFlavor` (CONF:4345).
3. The author **SHALL** represent the software forming the message. (CONF:4346).
4. **SHALL** contain [1..1] `documentationOf/serviceEvent` (CONF:4347).
 - a. This `documentationOf/serviceEvent` **SHALL** contain [1..1] `@classCode="CASE"` (CONF:4348).
 - b. This `documentationOf/serviceEvent` **SHALL** contain [1..1] `code/@code` (CodeSystem: 2.16.840.1.113883.6.277 `cdcNHSN`) (CONF:4364).
 - c. This `documentationOf/serviceEvent` **SHALL** contain [1..1] `effectiveTime` (CONF:4349).
 - i. This `effectiveTime` **SHALL** contain [1..1] `low` (CONF:4350).
 - ii. 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`) **STATIC** (CONF:4353).
 - b. **SHALL** contain [1..1] `@contextControlCode="OP"` (CodeSystem: 2.16.840.1.113883.5.1057 `HL7 Context Control Code`) **STATIC** (CONF:4354).
 - c. **SHALL** contain [1..1] `associatedEntity` (CONF:4355).
 - i. This `associatedEntity` **SHALL** contain [1..1] `@classCode="PRS"` (CodeSystem: 2.16.840.1.113883.5.41 `HL7EntityClass`) **STATIC** (CONF:4356).
 - ii. This `associatedEntity` **SHALL** contain [1..1] `code/@code="389109008"` Group (CodeSystem: 2.16.840.1.113883.6.96 `SNOMEDCT`) **STATIC** (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`) **STATIC** (CONF:4359).
 - b. **SHALL** contain [1..1] `@contextControlCode="OP"` (CodeSystem: 2.16.840.1.113883.5.1057 `HL7 Context Control Code`) **STATIC** (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) **STATIC** (CONF:4362).
- ii. This associatedEntity **SHALL** contain [1..1] `id/@root` (CONF:4363).

Table 4: (Table 1: Codes to Identify Type of Summary Data in Population-summary Report Header)

Code	Display Name	Code System	Code System Name
1879-6	Summary data reporting catheter and ventilator use in a ICU	2.16.840.1.113883.6.277	cdcNHSN
1880-4	Summary data reporting catheter and ventilator use in a SCA	2.16.840.1.113883.6.277	cdcNHSN
1881-2	Summary data reporting catheter and ventilator use in a NICU	2.16.840.1.113883.6.277	cdcNHSN
1882-0	Summary data reporting vaccinations - detailed	2.16.840.1.113883.6.277	cdcNHSN
1883-8	Summary data reporting vaccinations - short	2.16.840.1.113883.6.277	cdcNHSN
1884-6	Summary data reporting Active Surveillance Testing	2.16.840.1.113883.6.277	cdcNHSN
1885-3	Summary data reporting blood-product incidents	2.16.840.1.113883.6.277	cdcNHSN
1886-1	Summary data reporting blood-product usage	2.16.840.1.113883.6.277	cdcNHSN

Figure 4: (Figure 2: CDA header – period reported, reporting facility, and group participant, population-summary report example)

```

<ClinicalDocument>
...
  <participant typeCode="LOC" contextControlCode="OP">
    <associatedEntity classCode="SDLOC">
      <!--ID of facility -->
      <id root="2.16.840.1.113883.19.5"/>
    </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>

```

4.5 (2.1.4 The Author, Custodian and Legal Authenticator)

The author, which may be software or may be a person in the role of infection control professional (ICP), is required in all single-patient reports. The CDA Release 2.0 requirement 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]

CDA also requires the custodian be recorded; the NHSN is the custodian of NHSN HAI Reports.

13. **SHALL** contain [1..1] `custodian/assignedCustodian/representedCustodianOrganization/id/@root="2.16.840.1.114222.4.3.2.11"` (CONF:4515).

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.

Figure 5: (Figure 7: CDA header – author, 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>
    <time value="20061219"/>
    <assignedAuthor>
      <id root="2.16.840.1.113883.3.117.1.1.5.1.1.2"
        extension="anAuthorID"/>
    </assignedAuthor>
  </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>
```

4.6 (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 that may be present in the file will not be processed by NHSN.

14. **SHALL** contain [1..1] `component/structuredBody` (CONF:4516)
15. 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:4517).

Figure 6: (Figure 8: 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>
```

4.7 (2.3.1 HAI Section Generic Constraints)

[section: templateId 2.16.840.1.113883.10.20.5.4.3]

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/@code` (CodeSystem: 2.16.840.1.113883.6.1 LOINC) **STATIC** (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 7: (Figure 12: Section example)

```
<section>
  <templateId root="2.16.840.1.113883.10.20.5.5.15"/>
  <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>
```

4.8 (2.3.2 Narrative Block and @typeCode = "DRIV")

The Narrative Block in the CDA file is not detailed in this document because of the almost infinite set of semantic structures that can be developed. It is worth noting that the Narrative Block is required for the CDA file, but it can be left as an empty shell if the facility does not wish to use the section. Many facilities do use the narrative block because it allows the user to have a human view of the

record that can be reviewed by an IP before the file is imported into the NHSN system. The example CDA files noted in this document contains examples of the narrative block.

The CDC has created a generate-narrative file that can be used when generating a narrative block. IT groups that are interested in using the generate-narrative file can request the file and get assistance implementing it with their system by sending an email to Marla Albitz at malbitz@cdc.gov.

5. Constraints for the Population Summary Denominator Report

The following section will help guide IT groups in developing the generic constraints section of the Population Summary Denominator Report CDA file. Only the required sections needed for the Denominator Reports will be noted in this section.

5.1 Common Header Constraints

The common header constraints are explained in [Section 4 \(2 NHSN HAI Generic Constraints\)](#) of this document.

5.2 (3.13 HAI Population Summary Report)

[ClinicalDocument: templateId 2.16.840.1.113883.10.20.5.20]

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.

Two characteristics of population-summary reports are that they deal with a group, rather than an individual and that they report concepts whose definition is specified by the NHSN protocol and that are not expected to see widespread external use; they are reported with NHSN local codes using a simple QA pattern.

This template 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”.
- 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”.
- 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)”.
- POM. The preferred title for the CDA document is “Prevention Process and Outcome Measures Monthly Monitoring (POM)”.
- HIS. The preferred title for the CDA document is “Hemovigilance Incidents Summary Report (HIS)”.
- BPS. The preferred title for the CDA document is the “Blood Products Usage Summary Report (BPS)”.

Although the Population Summary report file includes multiple denominator report types you will need to check the list of denominator report types that can be imported into NHSN as not all report types have been implemented for the import process. The list of reports can be found in [section 1](#) of this document.

1. Conforms to Header Constraints, HAI Population-summary Reports Template (templateId: 2.16.840.1.113883.10.20.5.4.4).
2. **SHALL NOT** contain [1..1]
`componentOf/encompassingEncounter/location/healthCareFacility/id/@extension` (CONF:4365).
3. **SHALL NOT** contain [1..1]
`componentOf/encompassingEncounter/location/healthCareFacility/code` (CONF:4366).
4. **SHALL** contain [1..1] `component/structuredBody` (CONF:4367).
 - a. This component/structuredBody **SHALL** contain [1..1] `component` (CONF:4368).
 - i. This component **SHALL** contain [1..1] **Summary Data Section**
(templateId:2.16.840.1.113883.10.20.5.5.21)
(CONF:4369).

5.3 (4.6 Summary Data Section)

[section: templateId 2.16.840.1.113883.10.20.5.5.21]

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.

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/@code="51900-9"` Summary Data Section (CodeSystem: 2.16.840.1.113883.6.1 LOINC) **STATIC** (CONF:4341).
3. **SHALL** contain [1..*] `entry` (CONF:4342).
 - a. Such entries **SHALL** contain [1..1] **Summary Encounter**
(templateId:2.16.840.1.113883.10.20.5.6.60)
(CONF:4343).

Figure 8: (Figure 20: Summary data section example)

```
<section>
  <templateId root="2.16.840.1.113883.10.20.5.5.21"/>
  <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>
```

5.4 (5.2.64 Summary Encounter)

[encounter: templateId 2.16.840.1.113883.10.20.5.6.60]

The Summary Encounter records a set of summary data, usually for a population such as the patients in a ward in a specified period.

When reporting data for an in-facility location such as a ward, a participant element in the encounter records the unit ID and location type of the in-facility location. When data are reported for an entire facility, this participant element is not required; this is the case for the summary reports for flu immunization, hemovigilance incident, and blood-product usage.

A separate participant element is required if the report contains data for more than one category of population. In that case, each category is represented by a separate Summary Encounter, and a participant element in each Summary Encounter records the distinguishing characteristic of the category.

1. **SHALL** contain [1..1] @classCode="ENC" Encounter (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) **STATIC** (CONF:4319).
2. **SHALL** contain [1..1] @moodCode="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) **STATIC** (CONF:4320).
3. **MAY** contain [0..1] participant (CONF:4321).
4. If the summary-report type code (documentationOf/serviceEvent/code) represents data reported from an in-facility location, this participant element **SHALL** be present. These codes at time of publication are 1879-6 (ICU), 1880-4 (SCA), 1881-2 (NICU), and 1884-6 (POM).
 - a. This participant **SHALL** contain [1..1] @typeCode="LOC" Location (CodeSystem: 2.16.840.1.113883.5.90 HL7ParticipationType) **STATIC** (CONF:4322).
 - b. This participant **SHALL** contain [1..1] participantRole (CONF:4323).
 - i. This participantRole **SHALL** contain [1..1] @classCode="SDLOC" Service Delivery Location (CodeSystem: 2.16.840.1.113883.5.41 HL7EntityClass) **STATIC** (CONF:4324).
 - ii. This participantRole **SHALL** contain [1..1] id (CONF:4325).
 1. This id **SHALL** contain @root (CONF:4326).
 2. This id **SHALL** contain @extension (CONF:4327).

- iii. This participantRole **SHALL** contain [1..1] **playingEntity** (CONF:4328).
 - 1. This playingEntity **SHALL** contain [1..1] **@classCode="PLC" Place** (CodeSystem: 2.16.840.1.113883.5.41 HL7EntityClass) **STATIC** (CONF:4329).
 - 2. This playingEntity **SHALL** contain [1..1] **code/@code**, which **SHALL** be selected from ValueSet 2.16.840.1.113883.13.19 NHSNHealthcareServiceLocationCode **DYNAMIC** (CONF:4330).
- 5. If the report records data for more than one category of population, each category is recorded in a separate Summary Encounter, and each such Summary Encounter **SHALL** contain a participant element recording the distinguishing characteristic of the category. That participant, if present, is recorded as follows: (CONF:4331).
- 6. **MAY** contain [0..1] **participant** (CONF:4332).
 - a. This participant, if present, **SHALL** contain [1..1] **@typeCode="SBJ" Subject** (CodeSystem: 2.16.840.1.113883.5.90 HL7ParticipationType) **STATIC** (CONF:4333).
 - b. This participant, if present, **SHALL** contain [1..1] **@contextControlCode="OP"** (CodeSystem: 2.16.840.1.113883.5.1057 HL7 Context Control Code) **STATIC** (CONF:4334).
 - c. This participant, if present, **SHALL** contain [1..1] **participantRole** (CONF:4335).
 - i. This participantRole **SHALL** contain [1..1] **@classCode="PRS" Person** (CodeSystem: 2.16.840.1.113883.5.41 HL7EntityClass) **STATIC** (CONF:4336).
 - ii. This participantRole **SHALL** contain [1..1] **code/@code**, which **SHALL** be selected from ValueSet 2.16.840.1.114222.4.11.3234 NHSNPopulationCategoryCode **STATIC** 20090625 (CONF:4337).
- 7. **SHALL** contain [1..*] **entryRelationship** (CONF:4338).
 - a. Such entryRelationships **SHALL** contain [1..1] **@typeCode="COMP" Has component** (CodeSystem: 2.16.840.1.113883.5.1002 HL7ActRelationshipType) **STATIC** (CONF:4339).
 - b. Such entryRelationships **SHALL** contain [1..1] **Summary Data Observation** (templateId:2.16.840.1.113883.10.20.5.6.59) (CONF:4340).

Table 5: (Table 63: 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 9: (Figure 94: Summary encounter example (1) – unit ID and type)

```
<encounter classCode="ENC" moodCode="EVN">
  <templateId root="2.16.840.1.113883.10.20.5.6.60"/>

  <!-- the in-facility location ID and type -->
  <participant typeCode="LOC">
    <participantRole classCode="SDLOC">

      <!-- the facility OID scopes the in-facility location ID -->
      <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>

  <!-- The data -->
  <entryRelationship typeCode="COMP">
    <observation classCode="OBS" moodCode="EVN">
      <templateId root="2.16.840.1.113883.10.20.5.6.59"/>
      ...
    </observation>
  </entryRelationship>

  <entryRelationship typeCode="COMP">
    <observation classCode="OBS" moodCode="EVN">
      <templateId root="2.16.840.1.113883.10.20.5.6.59"/>
      ...
    </observation>
  </entryRelationship>
  ...
</encounter>
```

Figure 10: (Figure 95: Summary encounter example (2) – a subgroup)

```
<encounter classCode="ENC" moodCode="EVN">
  <templateId root="2.16.840.1.113883.10.20.5.6.60"/>

  <!-- Unit ID and type -->
  ...

  <!-- Data for a subgroup of the total 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="2.16.840.1.113883.10.20.5.6.59"/>
      ...
    </observation>
  </entryRelationship>

  ...
</encounter>
```

5.5 (5.2.63 Summary Data Observation)

[observation: templateId 2.16.840.1.113883.10.20.5.6.59]

The Summary Data Observation is used in population-summary reports.

The documentationOf/serviceEvent/code in the header identifies the intended content of the report. For example, cdcNHSN code 1879-6 indicates that the data content is "Summary data reporting catheter and ventilator use in an ICU".

NHSN protocol specifies which data to report for each type of content. The data required by NHSN at time of publication, together with the corresponding values for observation/code, are shown in the tables below.

1. **SHALL** contain [1..1] @classCode="OBS" Observation (CodeSystem: 2.16.840.1.113883.5.6 HL7ActClass) **STATIC** (CONF:4309).
2. **SHALL** contain [1..1] @moodCode="EVN" Event (CodeSystem: 2.16.840.1.113883.5.1001 HL7ActMood) **STATIC** (CONF:4310).
3. **SHALL** contain [1..1] code/@code **STATIC** (CONF:4311).
4. **SHALL** contain [1..1] statusCode/@code="completed" (CodeSystem: 2.16.840.1.113883.5.14 HL7ActStatus) **STATIC** (CONF:4312).
5. **SHALL** contain [1..1] value (CONF:4313).
6. 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:4314).

7. If the observation records 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` **STATIC** 20091030, and the observation **SHALL** contain, as `entryRelationships` where the value of `@typeCode` is `COMP`, Summary Data Observations (`templateId 2.16.840.1.113883.10.20.5.6.59`) for the data collected for that class. The specific data required are specified by the NHSN protocol. (CONF:4315).
8. If the observation records 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:4317).
9. If the observation records 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` **STATIC** 20091030. (CONF:4318).
10. A Hemovigilance Incident Summary Report (`documentationOf/serviceEvent/ code/@code 1885-3`) contains Summary Data Observations reporting blood-product incidents. In each such observation, an `entryRelationship` **SHALL** be present where the value of `@typeCode` is `REFR`, containing a Summary Data Observation recording the number of associated adverse reactions (`code/@code 3499-1`). (CONF:4526).

Table 6: (Table 52: Codes for Intensive Care Unit (ICU) Summary Data)

Code	Display Name	Code System	Code System Name
1851-5	Number of Patient Days	2.16.840.1.113883.6.277	cdcNHSN
1833-3	Number of Central Line Days	2.16.840.1.113883.6.277	cdcNHSN
1853-1	Number of Urinary Catheter Days	2.16.840.1.113883.6.277	cdcNHSN
1852-3	Number of Ventilator Days	2.16.840.1.113883.6.277	cdcNHSN

Table 7: (Table 53: 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
3305-0	Number of Temporary Central Line 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
1853-1	Number of Urinary Catheter Days	2.16.840.1.113883.6.277	cdcNHSN
1852-3	Number of Ventilator Days	2.16.840.1.113883.6.277	cdcNHSN

Table 8: (Table 54: 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
1833-3	Number of Central Line Days	2.16.840.1.113883.6.277	cdcNHSN
3307-6	Number of Umbilical Catheter Days	2.16.840.1.113883.6.277	cdcNHSN
1852-3	Number of Ventilator Days	2.16.840.1.113883.6.277	cdcNHSN

Table 9: (Table 55: 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 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
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

Table 10: (Table 56: 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

Table 11: (Table 57: 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
Code to report data required for an outpatient location			
1863-0	Number of encounters	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

Code	Display Name	Code System	Code System Name
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 12: (Table 58: 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 13: (Table 59: NHSN 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 14: (Table 60: NHSN 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

Table 15: (Table 61: 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
For the full list see “NHSN Single-value Bindings: Hemovigilance Incident Types” in the Release 5 document.			

Table 16: (Table 62: 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
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
For the full list see “NHSN Single-value Bindings: Blood Product Usage” in the Release 5 document			

Figure 11: (Figure 91: Summary data observation example (1))

```
<encounter classCode="ENC" moodCode="EVN">
  <templateId root="2.16.840.1.113883.10.20.5.6.60"/>
  <entryRelationship typeCode="COMP">

    <observation classCode="OBS" moodCode="EVN">
      <templateId root="2.16.840.1.113883.10.20.5.6.59"/>
      <code codeSystem="2.16.840.1.113883.6.277"
        codeSystemName="cdcNHSN"
        code="1851-5"
        displayName="Patient Days"/>
      <statusCode code="completed"/>
      <value xsi:type="PQ" unit="d" value="100"/>
    </observation>

  </entryRelationship>
  ...
</encounter>
```

Figure 12: (Figure 92: Summary data observation example (2) – POM (showing AST for MRSA))

```
<entry>

  <!-- Template for Entry - Summary Data -->
  <encounter classCode="ENC" moodCode="EVN">
    <templateId root="2.16.840.1.113883.10.20.5.6.60"/>
    ...

    <!-- Number of inpatient days -->
    ...
    <!-- Number of admissions -->
    ...

    <!-- entryRelationship: the organism monitored was MRSA.
    This observation turn contains entryRelationships with
    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="2.16.840.1.113883.10.20.5.6.59"/>
        <code codeSystem="2.16.840.1.113883.6.277"
          codeSystemName="cdcNHSN"
          code="3193-0"
          displayName="AST Organism Monitored"/>
        <statusCode="completed"/>
        <value xsi:type="CD"
          codeSystem="2.16.840.1.113883.6.96"
          codeSystemName="SNOMED CT"
          code="115329001"
          displayName="MRSA"/>
      </observation>
    </entryRelationship>
  </encounter>
</entry>
```

```

<!-- The observations below are part of
      the observation of what organism was monitored -->

<!-- Timing of monitoring -->
<entryRelationship typeCode="COMP">
  <observation classCode="OBS" moodCode="EVN">
    <templateId root="2.16.840.1.113883.10.20.5.6.59"/>
    ...
  </observation>
</entryRelationship>

<!-- Eligibility for monitoring -->
<entryRelationship typeCode="COMP">
  <observation classCode="OBS" moodCode="EVN">
    <templateId root="2.16.840.1.113883.10.20.5.6.59"/>
    ...
  </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 -->

</encounter>
</entry>

```

Figure 13: (Figure 93: Summary data observation example (3) – hemovigilance incidents summary)

```
<!-- 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="2.16.840.1.113883.10.20.5.6.59"/>
  <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="2.16.840.1.113883.10.20.5.6.59"/>
      <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>
```