



HL7 CDA® R2 Implementation Guide:
NHSN Healthcare Associated Infection (HAI) Reports
Release 4, STU 2 - US Realm
May 2022

HL7 STU Ballot

**Volume 3—Appendix: Antimicrobial Resistance (AR) and
Antimicrobial Use (AU) Subset For Implementers**

Sponsored by:
Structured Documents Work Group
National Healthcare Safety Network (NHSN)

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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.

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1 INTRODUCTION

1.1 Purpose

This appendix is a stand-alone document containing the CDA implementation guidance for Single-Person (Numerator) and Summary (Denominator) Reports dealing with Antimicrobial Resistance (AR) and Antimicrobial Use (AU) data. These reports are the Antimicrobial Resistance Option (ARO) Summary Report (Denominator), the Antimicrobial Use (AUP) Summary Report (Denominator), and the HAI AUR Antimicrobial Resistance Option (ARO) Report (Numerator).

This appendix contains an informative subset of the templates that are contained in Volume 2 and which are cited in Meaningful Use federal regulation. The purpose of the appendix is as a convenience for implementers who are implementing that subset.

The templates contained in this appendix document are exact copies of the AU and AR templates contained in *HL7 Implementation Guide for CDA® Release 2: NHSN Healthcare Associated Infection (HAI) Reports Release 4, STU 2—US Realm, Volume 2 - Templates and Supporting Material*.

This appendix also contains much of the material presented in the *HL7 Implementation Guide for CDA® Release 2: NHSN Healthcare Associated Infection (HAI) Reports Release 4, STU 2—US Realm, Volume 1 - Introductory Material*.

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 Organization of the Appendix

1.3.1 Introductory Material

These chapters provide an overview of Clinical Document Architecture (CDA), recent changes to the standard, and information on how to understand and use the CDA templates provided.

- **Chapter 1—Introduction**
- **Chapter 2—CDA R2 Background** contains selected background material on the CDA Release 2 (CDA R2) base standard to aid the reader in conceptualizing the “templated CDA” approach to implementation guide (IG) development.
- **Chapter 3—Design Considerations** describes design considerations and overarching principles that have been developed and applied across the CDA templates in this guide. Material in this section can be thought of as “heuristics”, as opposed to the formal and testable constraints found in chapters 5 through 7 of this guide.
- **Chapter 4—Using This Implementation Guide** describes the rules and formalisms used to constrain the CDA R2 standard. It describes the formal representation of CDA templates, the mechanism by which templates are bound to vocabulary, and additional information necessary to understand and correctly implement the normative content found in chapters 5 through 7 of this guide.

1.3.2 CDA Templates and Supporting Material

- **Chapter 5—Document-Level Templates** defines the report requirements for HAI CDA documents.
 - The Healthcare Associated Infection 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 population summary reports and for single-person reports differ significantly. HAI defines a generic header template for each of these two sets of requirements. Report-specific templates give additional requirements for each report type in this guide.
- **Chapter 6—Section-Level Templates** defines the generic constraints that apply to all sections along with specific requirements for each section used by the HAI reports in this guide.
- **Chapter 7—Entry-Level Templates** defines clinical statements. Machine processable data are sent in the entry templates. The entry templates are referenced by one or more section templates. Entry-level templates are always contained in section-level templates, and section-level templates are always contained in a document. Requirements for all entries (including organizers) used by the reports in this guide are in alphabetical order.
- **Chapter 8—Template IDs in This Guide** lists the template identifiers used by this guide for HAI reporting to NHSN. These template identifiers are assigned at the document, section, and entry level. Tables list NHSN templates by type and name and by containment.
- **Chapter 9—Value Sets in This Guide** lists all value set names and OIDs used by HAI templates in this guide. Links are provided to external value set sources if appropriate. Additionally, the `hai_voc.xls` spreadsheet is provided as a resource for value-set information.
- **Chapter 10—Code Systems in This Guide** lists all code system names and OIDs used by HAI templates in this guide, both for value sets and single-value bindings.
- **Chapter 11—Changes From Previous Version** details all changes made in templates for this release.
- **Chapter 12—References** lists documents and sources cited by this guide.
- **Appendices** include a list of acronyms and abbreviations, example instance identifiers, and vocabulary heuristics for code systems and value sets.

1.3.3 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 identifiers, the example code in this document and the accompanying sample files use these pilot OIDs. Example patient identifiers 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 \(Non-normative\)](#).

2 CDA R2 BACKGROUND

This IG uses the *HL7 Clinical Document Architecture, Release 2.0 (CDA R2)* as its base standard.¹ 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]. Clinical documents, according to CDA, have the following characteristics:

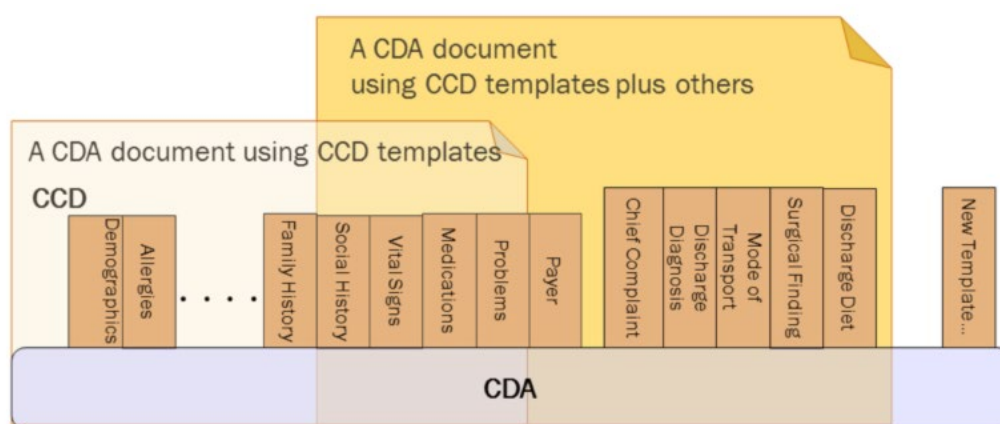
- Persistence
- Stewardship
- Potential for authentication
- Context
- Wholeness
- Human readability

CDA defines a header 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.

2.1 Templated CDA

CDA R2 can be constrained by mechanisms defined in the “Refinement and Localization”² section of the *HL7 Version 3 Interoperability Standards*. The mechanism most commonly used to constrain CDA is referred to as “templated CDA”. In this approach, a library is created containing modular CDA templates such that the templates can be reused across any number of CDA document types, as shown in the following figure.

Figure 1: Templated CDA



Many different kinds of templates may be created. Among them, the most common are:

¹ HL7 CDA R2. http://www.hl7.org/implement/standards/product_brief.cfm?product_id=7

² HL7 V3: *Refinement, Constraint and Localization*.

<http://www.hl7.org/v3ballot/html/infrastructure/conformance/conformance.htm>

- **Document-level templates:** These templates constrain fields in the CDA header, and define containment relationships to CDA sections. For example, a History and Physical document-level template might require that the patient's name be present, and that the document contain a Physical Exam section.
- **Section-level templates:** These templates constrain fields in the CDA section, and define containment relationships to CDA entries. For example, a Physical Exam section-level template might require that the section/code be fixed to a particular LOINC code, and that the section contain a Systolic Blood Pressure observation.
- **Entry-level templates:** These templates constrain the CDA clinical statement model in accordance with real world observations and acts. For example, a Systolic Blood Pressure entry-level template defines how the CDA Observation class is constrained (how to populate observation/code, how to populate observation/value, etc.) to represent the notion of a systolic blood pressure.

A CDA implementation guide (such as this one) includes reference to those templates that are applicable. On the implementation side, a CDA instance populates the template identifier (`templateId`) field where it wants to assert conformance to a given template. On the receiving side, the recipient can then not only test the instance for conformance against the CDA XML schema, but also test the instance for conformance against asserted templates.

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 (<http://www.cdc.gov/nhsn/>) to identify which HAI release NHSN currently supports for a given report.

2.2 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 nhsncda@cdc.gov. CDC uses the list for e-mail notifications of changes, including new data requirements. Changes may apply to this guide and to other documents such as business rules that are needed to implement and support CDA for HAI reporting to NHSN. NHSN CDA related information may be found at <https://www.cdc.gov/nhsn/cdaportal/index.html>.

3 DESIGN CONSIDERATIONS

Design considerations describe overarching principles that have been developed and applied across the CDA templates in this guide. Material in this section can be thought of as “heuristics”, as opposed to the formal and testable constraints found in chapters 5 through 7 of this guide.

3.1 *Rendering Header Information for Human Presentation*

Metadata carried in the header may already be available for rendering from electronic health records (EHRs) or other sources external to the document; therefore, there is no strict requirement to render directly from the document. An example of this would be a doctor using an EHR that already contains the patient’s name, date of birth, current address, and phone number. When a CDA document is rendered within that EHR, those pieces of information may not need to be displayed since they are already known and displayed within the EHR’s user interface.

Good practice recommends that the following be present whenever the document is viewed:

- Document title and document dates
- Service and encounter types, and date ranges as appropriate
- Names of all persons along with their roles, participations, participation date ranges, identifiers, address, and telecommunications information
- Names of selected organizations along with their roles, participations, participation date ranges, identifiers, address, and telecommunications information
- Date of birth for `recordTarget(s)`

3.2 *Unknown and No Known Information*

Information technology solutions store and manage data, but sometimes data are not available. An item may be unknown, not relevant, or not computable or measurable, such as where a patient arrives at an Emergency Department unconscious and with no identification.

In many cases, the CDA standard will stipulate that a piece of information is required (e.g., via a **SHALL** conformance verb). However, in most of these cases, the standard provides an “out”, allowing the sender to indicate that the information isn’t known.

Here, we provide guidance on representing unknown information. Further details can be found in the HL7 V3 Data Types, Release One specification that accompanies the CDA R2 normative standard.

A “@nullFlavor” attribute may be used to indicate that information is unknown. Allowable values for populating the attribute give more details about the reason the information is unknown, as shown in the following example.

Figure 2: nullFlavor Example

```
<!-- CDA requires the consumable element, however NHSN does not
collect further information about the antifungal -->
<consumable>
  <manufacturedProduct>
    <templateId root="2.16.840.1.113883.10.20.22.4.37"/>
    <manufacturedMaterial>
      <code nullFlavor="NI"/>
    </manufacturedMaterial>
  </manufacturedProduct>
</consumable>
```

Use null flavors for unknown, required, or optional attributes, where allowed per the NHSN protocol:

- | | |
|------|--|
| NI | No information. This is the most general and default null flavor. |
| NA | Not applicable. Known to have no proper value (e.g., last menstrual period for a male). |
| UNK | Unknown. A proper value is applicable, but is not known. |
| ASKU | Asked, but not known. Information was sought, but not found (e.g., the patient was asked but did not know). |
| NAV | Temporarily unavailable. The information is not available, but is expected to be available later. |
| NASK | Not asked. The patient was not asked. |
| MSK | There is information on this item available but it has not been provided by the sender due to security, privacy, or other reasons. There may be an alternate mechanism for gaining access to this information. |
| OTH | The actual value is not an element in the value domain of a variable. (e.g., concept not provided by required code system). |

The list above contains those null flavors that are commonly used in clinical documents. For the full list and descriptions, see the `nullFlavor` vocabulary domain in the CDA R2 normative standard.

Unless a `nullFlavor` is explicitly stated in a constraint in the IG, `nullFlavors` are not allowed.

Figure 3: Attribute Required—nullFlavor not allowed

- | |
|---|
| <p>1. SHALL contain exactly one [1..1] <code>code</code> (CONF:15407).</p> <p>a. This <code>code</code> SHALL contain exactly one [1..1] <code>@code="11450-4"</code> Problem List (CodeSystem: LOINC 2.16.840.1.113883.6.1) (CONF:15408).</p> <p>or</p> <p>2. SHALL contain exactly one [1..1] <code>effectiveTime/@value</code> (CONF:5256).</p> |
|---|

Figure 4: Allowed nullFlavors When Element is Required—with XML examples

```
1. SHALL contain at least one [1..*] id
2. SHALL contain exactly one [1..1] code
3. SHALL contain exactly one [1..1] effectiveTime

<entry>
  <observation classCode="OBS" moodCode="EVN">
    <id nullFlavor="NI"/>
    <code nullFlavor="OTH">
      <originalText>New Grading system</originalText>
    </code>
    <statusCode code="completed"/>
    <effectiveTime nullFlavor="UNK"/>
    <value xsi:type="CD" nullFlavor="OTH">
      <originalText>Spiculated mass grade 5</originalText>
    </value>
  </observation>
</entry>
```

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

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

Figure 5: Unknown Medication Example

```
<entry>
  <text>patient was given a medication but I do not know what it was</text>
  <substanceAdministration moodCode="EVN" classCode="SBADM">
    <consumable>
      <manufacturedProduct>
        <manufacturedLabeledDrug>
          <code nullFlavor="NI"/>
        </manufacturedLabeledDrug>
      </manufacturedProduct>
    </consumable>
  </substanceAdministration>
</entry>
```

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

Figure 6: Unknown Medication Use of Anticoagulant Drug Example

```
<entry>
  <substanceAdministration moodCode="EVN" classCode="SBADM" nullFlavor="NI">
    <text>I do not know whether or not patient received an anticoagulant
      drug</text>
    <consumable>
      <manufacturedProduct>
        <manufacturedLabeledDrug>
          <code code="81839001" displayName="anticoagulant drug"
            codeSystem="2.16.840.1.113883.6.96"
            codeSystemName="SNOMED CT"/>
        </manufacturedLabeledDrug>
      </manufacturedProduct>
    </consumable>
  </substanceAdministration>
</entry>
```

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

Figure 7: No Known Medications Example

```
<entry>
  <substanceAdministration moodCode="EVN" classCode="SBADM" negationInd="true">
    <text>No known medications</text>
    <consumable>
      <manufacturedProduct>
        <manufacturedLabeledDrug>
          <code code="410942007" displayName="drug or medication"
            codeSystem="2.16.840.1.113883.6.96"
            codeSystemName="SNOMED CT"/>
        </manufacturedLabeledDrug>
      </manufacturedProduct>
    </consumable>
  </substanceAdministration>
</entry>
```

These next examples illustrate additional nuances of representing unknown information in coded fields.

Figure 8: Value Known—code for value not known

```
<entry>
  <observation classCode="OBS" moodCode="EVN">
    ...
    <value xsi:type="CD" nullFlavor="OTH">
      <originalText>Spiculated mass grade 5</originalText>
    </value>
  </observation>
</entry>
```

Figure 9: Value Completely Unknown

```
<entry>
  <observation classCode="OBS" moodCode="EVN">
    ...
    <value xsi:type="CD" nullFlavor="UNK"/>
  </observation>
</entry>
```

Figure 10: Value Known—code in required code system not known but code from another code system is known

```
<entry>
  <observation classCode="OBS" moodCode="EVN">
    ...
    <value xsi:type="CD" nullFlavor="OTH">
      <originalText>Spiculated mass grade 5</originalText>
      <translation code="129742005" displayName="spiculated lesion"
        codeSystem="2.16.840.1.113883.6.96"
        codeSystemName="SNOMED CT"/>
    </value>
  </observation>
</entry>
```

3.3 Negating Clinical Statements

Usually, clinical statements in a CDA document assert positive statements. A procedure element represents a procedure that took place and an observation represents an observation about a patient condition or a laboratory result. In this implementation guide, when `negationInd` is set to true, it is understood that it negates the act as described by the act's descriptive properties (including `act.code`, `procedure.effectiveTime`, `observation.value`, etc.) and any of the act's components, rather than at the level of a specific value in the act. The inert properties such as `act.id`, `act.moodCode`, and `act.confidentialityCode` are not negated and always have the same meaning. In other words, when an act is negated, it indicates that the event as specified did not occur. For example, if the clinical statement is asserting that a wrong procedure has been performed on a certain date and its `negationInd` is set to true, the whole clinical statement is negated, including any attributes such as the assertion and the `effectiveTime`. This clinical statement indicates that we are not asserting that this event occurred on this date—there is no assertion that a wrong procedure was performed on this date. For further details and examples, see the definition of `Act.negationInd` in the HL7 Reference Information Model (RIM), Version 2.07 (the version of the HL7 RIM from which CDA, Release 2 is derived) and the discussion of *Negation Indicators in RIM Classes* in *Core Principles and Properties of V3 Models*.

3.4 Summary Document ServiceEvent Codes

For all the summary reports, the `documentationOf/serviceEvent/code` element records the type of summary data reported. This corresponds to the NHSN form type. This pattern is similar to that used in C-CDA (all releases) (e.g., Operative Note).

4 USING THIS IMPLEMENTATION GUIDE

This chapter describes the rules and formalisms used to constrain the CDA R2 standard. It describes the formal representation of CDA templates, the mechanism by which templates are bound to vocabulary, and additional information necessary to understand and correctly implement the normative content found in chapters 5 through 7 of this guide.

4.1 Levels of Constraint

The CDA standard describes conformance requirements in terms of three general levels corresponding to three different, incremental types of conformance statements:

- Level 1 requirements impose constraints upon the CDA Header. The body of a Level 1 document may be XML or an alternate allowed format. If XML, it must be CDA-conformant markup.
- Level 2 requirements specify constraints at the section level of a CDA XML document: most critically, the section code and the cardinality of the sections themselves, whether optional or required.
- Level 3 requirements specify constraints at the entry level within a section. A specification is considered “Level 3” if it requires any entry-level templates.

Note that these levels are rough indications of what a recipient can expect in terms of machine-processable coding and content reuse. They do not reflect the level or type of clinical content, and many additional levels of reusability could be defined.

The section libraries for each document type list the required and optional sections.

4.2 Conformance Conventions Used in This Guide

4.2.1 Templates and Conformance Statements

Conformance statements within this implementation guide are presented as constraints from Trifolia Workbench, a template repository. An algorithm converts constraints recorded in Trifolia to a printable presentation. Each constraint is uniquely identified by an identifier at or near the end of the constraint (e.g., CONF:86-7345). The digits in the conformance number before the hyphen identify which IG the template belongs to and the number after the hyphen is unique to the owning IG. Together, these two numbers uniquely identify each constraint. These identifiers are persistent but not sequential. Conformance numbers in this guide associated with a conformance statement that is carried forward from a previous version of this guide will carry the same conformance number from the previous version. This is true even if slightly edited. If a conformance statement is entirely new, it will have a new conformance number.

Bracketed information following each template title indicates the template type (section, observation, act, procedure, etc.), the identifier `oid` or identifier `urn`, and whether the template is [open or closed](#). The identifier `oid` is the `templateId/@root` value; all `templateIds` have an `@root` value. Newer and/or versioned templates also have an `@extension` value, which is a date identifying the version of this template; such templates are identified by `urn` and the HL7 version (`urn:hl7ii`). The `urn` identifier includes both the `@root`

and @extension value for the templateId (for example, identifier urn:hl7ii:2.16.840.1.113883.10.20.5.5.41:2014-06-09).

Each section and entry template in this guide includes a context table. The "Contained By" column indicates which templates use this template, and if the template is optional or required in the containing template. The "Contains" column indicates any templates that the template uses.

Figure 11: Context Tables

XXX: Allergy Problem Act (V2) Contexts

Contained By:	Contains:
Allergies Section (entries optional) (V2) (optional)	Allergy - Intolerance Observation (V2)
Allergies Section (entries required) (V2) (required)	Author Participation

Each template also includes a constraint overview table to summarize the constraints in the template.

Figure 12: Constraints Overview Table Example

XPath	Card.	Verb	Data Type	CONF#	Fixed Value
observation[identifier: oid:2.16.840.1.113883.10.20.22.4.31]					
@classCode	1..1	SHALL		XXXX	2.16.840.1.113883.5.6 (HL7ActClass) = OBS
@moodCode	1..1	SHALL		XXXX	2.16.840.1.113883.5.1001 (ActMood) = EVN
code	1..1	SHALL		XXXX	
@code	1..1	SHALL		XXXX	2.16.840.1.113883.6.96 (SNOMED CT) = 445518008
value	1..1	SHALL	PQ	XXXX	
@unit	1..1	SHALL	CS	XXXX	2.16.840.1.113883.11.20.9.21 (AgePQ_UCUM)
templateId	1..1	SHALL		XXXX	
@root	1..1	SHALL		XXXX	2.16.840.1.113883.10.20.22.4.31
statusCode	1..1	SHALL		XXXX	
@code	1..1	SHALL		XXXX	2.16.840.1.113883.5.14 (ActStatus) = completed

The following figure shows a typical template's set of constraints presented in this guide. The next chapters describe specific aspects of conformance statements—open vs. closed statements, conformance verbs, cardinality, vocabulary conformance, containment relationships, and null flavors. The expression “such that it” means, you (**SHALL/SHOULD/MAY**) have one of those things that look like that, but you can also have another one of those things that look different. The example below states that you must have templateId with a root of 2.16.840.1.113883.10.20.22.4.31 but you can also have other template IDs.

Figure 13: Constraints Format Example

Age Observation

[observation: identifier oid:2.16.840.1.113883.10.20.22.4.31 (open)]

1. **SHALL** contain exactly one [1..1] **@classCode**="OBS" Observation (CodeSystem: HL7ActClass 2.16.840.1.113883.5.6 **STATIC**) (CONF:XXXX).
2. **SHALL** contain exactly one [1..1] **@moodCode**="EVN" Event (CodeSystem: ActMood 2.16.840.1.113883.5.1001 **STATIC**) (CONF: XXXX).
3. **SHALL** contain exactly one [1..1] **templateId** (CONF:XXXX) such that it
 - a. **SHALL** contain exactly one [1..1] **@root**="2.16.840.1.113883.10.20.22.4.31" (CONF: XXXX).
4. **SHALL** contain exactly one [1..1] **code** (CONF:7615).
 - a. This code **SHALL** contain exactly one [1..1] **@code**="445518008" Age At Onset (CodeSystem: SNOMED CT 2.16.840.1.113883.6.96 **STATIC**) (CONF: XXXX).
5. **SHALL** contain exactly one [1..1] **statusCode** (CONF: XXXX).
 - a. This statusCode **SHALL** contain exactly one [1..1] **@code**="completed" Completed (CodeSystem: ActStatus 2.16.840.1.113883.5.14 **STATIC**) (CONF: XXXX).
6. **SHALL** contain exactly one [1..1] **value** with **@xsi:type**="PQ" (CONF:XXXX).
 - a. This value **SHALL** contain exactly one [1..1] **@unit**, which **SHALL** be selected from ValueSet [AgePQ UCUM](#) 2.16.840.1.113883.11.20.9.21 **DYNAMIC** (CONF: XXXX).

4.2.2 Template Versioning

A new version of an existing implementation guide reuses templates from the previous version. During the ballot phase or update phase, templates carry the designation “Published” to indicate the template is unchanged from the previous version or “Draft” to indicate a new or revised template. Substantial revisions to previously published templates are always indicated by “(Vn)” in all cases: ballot-phase, update-phase, and published guides.

If there are no substantive changes to a template that has been successfully published, the template will carry the same **templateId/@root** (identifier oid) and **templateId/@extension** as in the previous implementation guide (in the case of older templates, the **@extension** attribute will not be present). During a new ballot or update phase, “Published” is appended to the main heading for the template to indicate that the template cannot be commented on in the ballot or update. The “Published” designation is removed on final publication versions.

A revised version of a previously published template keeps the same **templateId/@root** as the previous version, but it is assigned a new **templateId/@extension**. The notation “(Vn)” (V2,

V3, etc.) is also added to the template name. Versions are not necessarily forward or backward compatible. A versioning may be due to substantive changes in the template and/or the fact that a contained template has changed. The “(Vn)” designation is persistent; it appears with that template when it is used in subsequent guides. During a new ballot or update phase, “Draft” is appended to the main heading for the template to indicate that it may be voted on in the ballot or commented on in the update; the “Draft” designation is removed on final publication versions.

A revised version of a template is explicitly linked to the prior version. When a new version appears for the first time in an IG, a detailed change log is automatically generated, a detailed change log is automatically generated. All such changes for a given IG are shown in Chapter 12 “Changes From Previous Version”.

The following figure shows an example of a versioned template: HAI AUR Antimicrobial Resistance Option (ARO) Report (oid:2.16.840.1.113883.10.20.5.31) has versioned to HAI AUR Antimicrobial Resistance Option (ARO) Report (V2) (urn:hl7ii:2.16.840.1.113883.10.20.5.31:2014-06-09).

Figure 14: Versioned Template Change Log Example

Change	Old	New
Name	HAI AUR Antimicrobial Resistance Option (ARO) Report	HAI AUR Antimicrobial Resistance Option (ARO) Report (V2)
Oid	oid:2.16.840.1.113883.10.20.5.31	urn:hl7ii:2.16.840.1.113883.10.20.5.31:2014-06-09
CONF #: 1129-30474 Added		SHALL contain exactly one [1..1] @extension="2014-06-09" (CONF:1129-30474).
CONF #: 1129-21153 Modified	SHALL contain exactly one [1..1] Findings Section in an ARO Report (identifier: oid:2.16.840.1.113883.10.20.5.5.32)	SHALL contain exactly one [1..1] Findings Section in an ARO Report (V2) (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.5.32:2014-06-09)

4.2.3 Open and Closed Templates

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.

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 NGSN.

4.2.4 Conformance Verbs (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.³

- **SHALL**: an absolute requirement
- **SHALL NOT**: an absolute prohibition against inclusion
- **SHOULD/SHOULD NOT**: best practice or recommendation. There may be valid reasons to ignore an item, but the full implications must be understood and carefully weighed before choosing a different course
- **MAY/NEED NOT**: truly optional; can be included or omitted as the author decides with no implications

The keyword "**SHALL**" allows the use of `nullFlavor` unless the requirement is on an attribute or the use of `nullFlavor` is explicitly precluded.

4.2.5 Cardinality

The cardinality indicator (0..1, 1..1, 1..*, etc.) specifies the allowable occurrences within a document instance. The cardinality indicators are interpreted with the following format "m...n" where m represents the least and n the most:

- 0..1 zero or one
- 1..1 exactly one
- 1..* at least one
- 0..* zero or more
- 1..n at least one and not more than n

When a constraint has subordinate clauses, the scope of the cardinality of the parent constraint must be clear. In the next figure, the constraint says exactly one participant is to be present. The subordinate constraint specifies some additional characteristics of that participant.

Figure 15: Constraints Format—only one allowed

- | |
|---|
| <ol style="list-style-type: none">1. SHALL contain exactly one [1..1] participant (CONF:2777).<ol style="list-style-type: none">a. This participant SHALL contain exactly one [1..1] @typeCode="LOC" (CodeSystem: 2.16.840.1.113883.5.90 HL7ParticipationType) (CONF:2230). |
|---|

In the next figure, the constraint says only one participant "like this" is to be present. Other participant elements are not precluded by this constraint.

³ HL7 Version 3 Publishing Facilitator's Guide. <http://www.hl7.org/v3ballot/html/help/pfg/pfg.htm>

Figure 16: Constraints Format—only one like this allowed

- | |
|--|
| <ol style="list-style-type: none">1. SHALL contain exactly one [1..1] participant (CONF:2777) such that it<ol style="list-style-type: none">a. SHALL contain exactly one [1..1] @typeCode="LOC" (CodeSystem: 2.16.840.1.113883.5.90 HL7ParticipationType) (CONF:2230). |
|--|

4.2.6 Optional and Required with Cardinality

The terms *optional* and *required* describe the *lower* bound of cardinality as follows:

Optional means that the number of allowable occurrences of an element may be 0; the cardinality will be expressed as [0..1] or [0..*] or similar. In these cases, the element may not be present in the instance.

Required means that the number of allowable occurrences of an element must be at least 1; the cardinality will be expressed as [m..n] where $m \geq 1$ and $n \geq m$ for example [1..1] or [1..*]. In these cases, the element must be present in the instance. If an element is required, but is not known (and would otherwise be omitted if it were optional), it must be represented by a null flavor. See "[Unknown and No Known Information](#)".

4.2.7 Vocabulary Conformance

The templates in this document use terms from several code systems. These 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.

Note that value-set identifiers (e.g., ValueSet 2.16.840.1.113883.1.11.78 Observation Interpretation (HL7) **DYNAMIC**) do not appear in CDA submissions; they tie the conformance requirements of an implementation guide to the appropriate code system for validation.

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. 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, as follows.

Figure 17: Binding to a Single Code

- | |
|---|
| <ol style="list-style-type: none">2. SHALL contain exactly one [1..1] code (CONF:15403).<ol style="list-style-type: none">a) This code SHALL contain exactly one [1..1] @code="11450-4" Problem List (CONF:15408).b) This code SHALL contain exactly one [1..1] @codeSystem="2.16.840.1.113883.6.1" (CodeSystem: LOINC 2.16.840.1.113883.6.1 STATIC) (CONF: 31141). |
|---|

The notation conveys the actual code (11450-4), the code's `displayName` (Problem List), the `OID` of the `codeSystem` from which the code is drawn (2.16.840.1.113883.6.1), and the `codeSystemName` (LOINC).

HL7 Data Types Release 1 requires the `codeSystem` attribute unless the underlying data type is “Coded Simple” or “CS”, in which case it is prohibited. The `displayName` and the `codeSystemName` are optional, but recommended, in all cases.

The above example would be properly expressed as follows.

Figure 18: XML Expression of a Single-code Binding

```
<code code="11450-4" codeSystem="2.16.840.1.113883.6.1"/>

<!-- or -->

<code code="11450-4" codeSystem="2.16.840.1.113883.6.1"
      displayName="Problem List"
      codeSystemName="LOINC"/>
```

A full discussion of the representation of vocabulary is outside the scope of this document; for more information, see the HL7 V3 Normative Edition 2010⁴ sections on Abstract Data Types and XML Data Types R1.

Value set tables are presented below the first template that uses that value set; links are provided in subsequent templates that use the same value set. The value set tables include the value set identifier, a description, a link (where appropriate), and a list of codes in the value set. Ellipses in the last row of value-set members shown indicate that the list is an excerpt and the complete source must be accessed to see all members. Where the table is an excerpt and no link is provided, the full set of values are contained in the `hai_voc.xls` spreadsheet included with this package.

⁴ HL7 Version 3 Interoperability Standards. <http://www.hl7.org/memonly/downloads/v3edition.cfm> - V32010

Figure 19: Example Value Set Table

Value Set: Referral Types 2.16.840.1.113883.11.20.9.56 A value set of SNOMED CT codes descending from "3457005" patient referral (procedure). Value Set Source: https://vsac.nlm.nih.gov			
Code	Code System	Code System OID	Print Name
44383000	SNOMED CT	2.16.840.1.113883.6.96	Patient referral for consultation
391034007	SNOMED CT	2.16.840.1.113883.6.96	Refer for falls assessment (procedure)
86395003	SNOMED CT	2.16.840.1.113883.6.96	Patient referral for family planning (procedure)
306106002	SNOMED CT	2.16.840.1.113883.6.96	Referral to intensive care service (procedure)
306140002	SNOMED CT	2.16.840.1.113883.6.96	Referral to clinical oncology service (procedure)
396150002	SNOMED CT	2.16.840.1.113883.6.96	Referral for substance abuse (procedure)
...			

4.2.8 Data Types

All data types used in a CDA document are described in the CDA R2 normative standard. All attributes of a data type are allowed unless explicitly prohibited by this specification.

4.2.9 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 facility 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 identifiers and facility-generated procedure identifiers.

4.3 XML Conventions Used in This Guide

4.3.1 XPath Notation

Instead of the traditional dotted notation used by HL7 to represent RIM classes, this document uses XML Path Language (XPath) notation⁵ in conformance statements and elsewhere to identify the Extensible Markup Language (XML) elements and attributes within the CDA document instance to which various constraints are applied. The implicit context of these

⁵ W3C, *XML Path Language*. <http://www.w3.org/TR/xpath/>

expressions is the root of the document. This notation provides a mechanism that will be familiar to developers for identifying parts of an XML document.

XPath statements appear in this document in a monospace font.

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

Figure 20: XML Document Example

```
<author>
  <assignedAuthor>
    ...
    <code codeSystem='2.16.840.1.113883.6.96'
      codeSystemName='SNOMED CT'
      code='17561000'
      displayName='Cardiologist' />
    ...
  </assignedAuthor>
</author>
```

In the above example, the `code` attribute of the `code` could be selected with the XPath expression in the next figure.

Figure 21: XPath Expression Example

```
author/assignedAuthor/code/@code
```

4.3.2 XML Examples and Sample Documents

Extensible Mark-up Language (XML) examples appear in figures in this document in this monospace font. Portions of the XML content may be omitted from the content for brevity, marked by an ellipsis (...) as shown in the example below.

Figure 22: ClinicalDocument Example

```
<ClinicalDocument xmlns="urn:h17-org:v3">
  ...
</ClinicalDocument>
```

Within the narrative, XML element (`code`, `assignedAuthor`, etc.) and attribute (`SNOMED CT`, `17561000`, etc.) names also appear in this monospace font.

4.4 Supporting Tools

4.4.1 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.

Schematron is “a language for making assertions about patterns found in XML documents.” The schemas provided for CDA and for this package support two-stage validation. First, the CDA schema `CDA.xsd` validates the basic structural and semantic requirements of any CDA

instance. Second, the IG-specific Schematron schema validates the specific requirements of this package.

Validation services are provided through the NHSN import mechanism and by Lantana Group's CDA Validator (<https://www.lantanagroup.com/validator/>). The CDA Validator is an online application that validates a CDA document's conformance to several standards and implementation guides; it includes the Schematron files described above.

4.4.2 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. 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.

4.4.3 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.

5 DOCUMENT-LEVEL TEMPLATES

Table 1: Required and Optional Sections for Each Document Type

Document Type	Required Sections	Optional Sections
Antimicrobial Resistance Option (ARO) Summary Report (V3) urn:hl7ii:2.16.840.1.113883.10.20.5.46:2019-04-01	Summary Data Section (ARO) (V3)	Report No Events Section NHSN Comment Section
Antimicrobial Use (AUP) Summary Report (V2) urn:hl7ii:2.16.840.1.113883.10.20.5.44:2015-04-01	Summary Data Section (AUP) (V2)	N/A
HAI AUR Antimicrobial Resistance Option (ARO) Report (V6) urn:hl7ii:2.16.840.1.113883.10.20.5.31:2022-04-01	Findings Section in an ARO Report (V4)	N/A
HAI Population Summary Report Generic Constraints urn:oid:2.16.840.1.113883.10.20.5.4.28	N/A	N/A
HAI Single-Person Report Generic Constraints (V2) urn:hl7ii:2.16.840.1.113883.10.20.5.4.27:2022-04-01	NHSN Social History Section	N/A
Healthcare Associated Infection Report urn:oid:2.16.840.1.113883.10.20.5.4.25	N/A	N/A

5.1 Healthcare Associated Infection Report

[ClinicalDocument: identifier urn:oid:2.16.840.1.113883.10.20.5.4.25 (open)]

Published as part of NHSN Healthcare Associated Infection (HAI) Reports
Release 1 - US Realm

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 not presented as HAI-specific constraints.

Note: The section on “Template Ids in this Guide” includes a containment table showing all the entries within each report type.

Table 2: Healthcare Associated Infection Report Constraints Overview

XPath	Card.	Verb	Data Type	CONF#	Value
ClinicalDocument (identifier: urn:oid:2.16.840.1.113883.10.20.5.4.25)					
realmCode	1..1	SHALL		86-18431	
@code	1..1	SHALL	CD	86-18432	US
typeId	1..1	SHALL		86-18463	
@root	1..1	SHALL		86-18464	2.16.840.1.113883.1.3
@extension	1..1	SHALL		86-18465	POCD_HD000040
templateId	1..1	SHALL		86-18460	
@root	1..1	SHALL		86-18461	2.16.840.1.113883.10.20.5.4.25
@extension	0..0	SHALL NOT		86-18462	
id	1..1	SHALL		86-18466	
@root	0..1	MAY		86-18467	
@extension	0..1	MAY		86-18468	
code	1..1	SHALL		86-18433	
@code	1..1	SHALL		86-18434	51897-7
@codeSystem	1..1	SHALL		86-27413	urn:oid:2.16.840.1.113883.6.1 (LOINC)
title	1..1	SHALL		86-18435	
effectiveTime	1..1	SHALL		86-18436	
confidentialityCode	1..1	SHALL		86-18437	
@code	1..1	SHALL	CD	86-18438	urn:oid:2.16.840.1.113883.5.25 (HL7Confidentiality) = N
languageCode	1..1	SHALL		86-18439	
@code	1..1	SHALL		86-18440	en-US
setId	1..1	SHALL		86-18441	
versionNumber	1..1	SHALL		86-18442	
recordTarget	1..*	SHALL		86-18472	
author	1..*	SHALL		86-18473	
custodian	1..1	SHALL		86-18443	
assignedCustodian	1..1	SHALL		86-18444	
representedCustodianOrganization	1..1	SHALL		86-18445	
id	1..1	SHALL		86-18446	
@root	1..1	SHALL		86-18447	2.16.840.1.114222.4.3.2.11
legalAuthenticator	0..1	SHOULD		86-18474	
relatedDocument	0..*	MAY		86-18469	
@typeCode	1..1	SHALL		86-18470	urn:oid:2.16.840.1.113883.5.1002 (HL7ActRelationshipType) = RPLC

XPath	Card.	Verb	Data Type	CONF#	Value
parentDocument	1..1	SHALL		86-28401	
id	1..*	SHALL		86-28402	
component	1..1	SHALL		86-18448	
structuredBody	1..1	SHALL		86-18449	
component	1..*	SHALL		86-18475	

1. **SHALL** contain exactly one [1..1] **realmCode** (CONF:86-18431).
 - a. This realmCode **SHALL** contain exactly one [1..1] **@code="US"** (CONF:86-18432).
2. **SHALL** contain exactly one [1..1] **typeId** (CONF:86-18463).
 - a. This typeId **SHALL** contain exactly one [1..1] **@root="2.16.840.1.113883.1.3"** (CONF:86-18464).
 - b. This typeId **SHALL** contain exactly one [1..1] **@extension="POCD_HD000040"** (CONF:86-18465).
3. **SHALL** contain exactly one [1..1] **templateId** (CONF:86-18460) such that it
 - a. **SHALL** contain exactly one [1..1] **@root="2.16.840.1.113883.10.20.5.4.25"** (CONF:86-18461).
 - b. **SHALL NOT** contain [0..0] **@extension** (CONF:86-18462).

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.

4. **SHALL** contain exactly one [1..1] **id** (CONF:86-18466).
 - a. This id **MAY** contain zero or one [0..1] **@root** (CONF:86-18467).
 - b. This id **MAY** contain zero or one [0..1] **@extension** (CONF:86-18468).
5. **SHALL** contain exactly one [1..1] **code** (CONF:86-18433).
 - a. This code **SHALL** contain exactly one [1..1] **@code="51897-7"** Healthcare Associated Infection Report (CONF:86-18434).
 - b. This code **SHALL** contain exactly one [1..1] **@codeSystem** (CodeSystem: LOINC urn:oid:2.16.840.1.113883.6.1) (CONF:86-27413).

The preferred title content for each report type is given with the constraints for each report type.

6. **SHALL** contain exactly one [1..1] **title** (CONF:86-18435).
7. **SHALL** contain exactly one [1..1] **effectiveTime** (CONF:86-18436).

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 exactly one [1..1] **confidentialityCode** (CONF:86-18437).
 - a. This confidentialityCode **SHALL** contain exactly one [1..1] @code="N" Normal (CodeSystem: HL7Confidentiality urn:oid:2.16.840.1.113883.5.25 **STATIC**) (CONF:86-18438).
9. **SHALL** contain exactly one [1..1] **languageCode** (CONF:86-18439).
 - a. This languageCode **SHALL** contain exactly one [1..1] @code="en-US" (CONF:86-18440).
10. **SHALL** contain exactly one [1..1] **setId** (CONF:86-18441).
11. **SHALL** contain exactly one [1..1] **versionNumber** (CONF:86-18442).

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

12. **SHALL** contain at least one [1..*] **recordTarget** (CONF:86-18472).

In a single-person 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.

When the report author is vendor software, it can record the Synthetic Data Set (SDS) Validation Id, or, if not participating in SDS, a software installation id. It can also record the vendor software name, the version and release of the software, and the vendor name. For further guidance, see the example at the end of this template.

13. **SHALL** contain at least one [1..*] **author** (CONF:86-18473).

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

14. **SHALL** contain exactly one [1..1] **custodian** (CONF:86-18443).
 - a. This custodian **SHALL** contain exactly one [1..1] **assignedCustodian** (CONF:86-18444).
 - i. This assignedCustodian **SHALL** contain exactly one [1..1] **representedCustodianOrganization** (CONF:86-18445).
 1. This representedCustodianOrganization **SHALL** contain exactly one [1..1] **id** (CONF:86-18446).
 - a. This id **SHALL** contain exactly one [1..1] @root="2.16.840.1.114222.4.3.2.11" (CONF:86-18447).

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.

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

15. **SHOULD** contain zero or one [0..1] **legalAuthenticator** (CONF:86-18474).

16. **MAY** contain zero or more [0..*] **relatedDocument** (CONF:86-18469).

- a. The relatedDocument, if present, **SHALL** contain exactly one [1..1] **@typeCode="RPLC"** replace (CodeSystem: HL7ActRelationshipType urn:oid:2.16.840.1.113883.5.1002 **STATIC**) (CONF:86-18470).
- b. The relatedDocument, if present, **SHALL** contain exactly one [1..1] **parentDocument** (CONF:86-28401).
 - i. This parentDocument **SHALL** contain at least one [1..*] **id** (CONF:86-28402).
 1. The value of id **SHALL** be populated with the ClinicalDocument/id of the document being replaced (CONF:86-28403).
- c. If versionNumber/@value is greater than 1, a relatedDocument element **SHALL** be present (CONF:86-18471).

17. **SHALL** contain exactly one [1..1] **component** (CONF:86-18448).

- a. This component **SHALL** contain exactly one [1..1] **structuredBody** (CONF:86-18449).
 - i. This structuredBody **SHALL** contain at least one [1..*] **component** (CONF:86-18475).
 - ii. 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:86-18450).

Figure 23: Software Author Example

```
<author>
  <!-- The time the document was authored -->
  <time value="20080701" />
  <assignedAuthor>
    <!-- root=vendor OID; extension may be the Synthetic Data Set (SDS)
    Validation ID assigned by NHSN AUR subject matter expert (SME);
    if not participating in SDS, vendor may use a software ID -->
    <id root="2.111.111.111.10008" extension="SDS validation ID" />
    <assignedAuthoringDevice>
      <!-- Optional-Vendor software name -->
      <manufacturerModelName>vendor software name</manufacturerModelName>
      <!-- Optional-version and release of the software-->
      <softwareName>vendor software version</softwareName>
    </assignedAuthoringDevice>
    <!-- Optional-Vendor Name -->
    <representedOrganization>
      <name>vendor name</name>
    </representedOrganization>
  </assignedAuthor>
</author>
```

5.1.1 HAI Population Summary Report Generic Constraints

[ClinicalDocument: identifier urn:oid:2.16.840.1.113883.10.20.5.4.28 (open)]

Published as part of NHSN Healthcare Associated Infection (HAI) Reports
Release 1 - US Realm

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

These report types are used to record many different data sets. The basic structure of the body templates for this report type are:

- A Summary Data Section:

- o A Summary Encounter records the location to which the data pertain.

- o Various Summary Data Observations record data as code-value pairs.

A population-summary report must conform to the Healthcare Associated Infection Report above. In addition:

- The patient identifier (required by CDA) is recorded with a nullFlavor.
- A participant element records that the subject of the report is a group.
- A second participant element records the reporting facility. (The in-facility unit identifier and type to which the data pertain are recorded in the Summary Encounter Section of the document body.)
- In the documentationOf/serviceEvent element,
 - o The effectiveTime element records the first and last days of the period reported.
 - o The code element records the type of summary data reported. This corresponds to the NHSN form type.

The data set being reported is identified by a code in the CDA header; for example, the cdcNHSN concept “1887-9” identifies the data set “Summary data reporting Antimicrobial Usage”. The codes for these data sets are listed in value set NHSNPopulationSummaryReportTypeCode (2.16.840.1.114222.4.11.3595).

Note that a few data sets are stratified. For example, the NICU (Neonatal Intensive Care Unit) 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 Use report, the antimicrobial information is represented as a participant. The requirements for each data set are provided in the relevant 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.

Key encounter data:

- Facility identifier 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.

Note: The section on “Template Ids in this Guide” includes a containment table showing all the entries within each report type.

Table 3: HAI Population Summary Report Generic Constraints Constraints Overview

XPath	Card.	Verb	Data Type	CONF#	Value
ClinicalDocument (identifier: urn:oid:2.16.840.1.113883.10.20.5.4.28)					
templateId	1..1	SHALL		86-22431	
@root	1..1	SHALL		86-22432	2.16.840.1.113883.10.20.5.4.28
recordTarget	1..1	SHALL		86-22433	
patientRole	1..1	SHALL		86-22434	
id	1..1	SHALL		86-22435	
@nullFlavor	1..1	SHALL		86-22436	NA
participant	1..1	SHALL		86-22437	
@typeCode	1..1	SHALL		86-22438	urn:oid:2.16.840.1.113883.5.90 (HL7ParticipationType) = SBJ
@contextControlCode	1..1	SHALL	CS	86-22439	urn:oid:2.16.840.1.113883.5.1057 (HL7ContextControl) = OP
associatedEntity	1..1	SHALL		86-22440	
@classCode	1..1	SHALL		86-22441	urn:oid:2.16.840.1.113883.5.41 (HL7EntityClass) = PRS
code	1..1	SHALL		86-22442	
@code	1..1	SHALL		86-22443	urn:oid:2.16.840.1.113883.6.96 (SNOMED CT) = 389109008
participant	1..1	SHALL		86-22444	
@typeCode	1..1	SHALL		86-22445	urn:oid:2.16.840.1.113883.5.90 (HL7ParticipationType) = LOC
associatedEntity	1..1	SHALL		86-22447	
@classCode	1..1	SHALL		86-22448	urn:oid:2.16.840.1.113883.5.110 (HL7RoleClass) = SDLOC
id	1..1	SHALL		86-22449	
@root	1..1	SHALL		86-22450	
documentationOf	1..1	SHALL		86-22451	
serviceEvent	1..1	SHALL		86-22452	
@classCode	1..1	SHALL		86-22453	urn:oid:2.16.840.1.113883.5.6 (HL7ActClass) = CASE
code	1..1	SHALL		86-22454	urn:oid:2.16.840.1.114222.4.11.3595 (NHSNPopulationSummaryReportTypeCode)
effectiveTime	1..1	SHALL		86-22456	
low	1..1	SHALL		86-22457	
high	1..1	SHALL		86-22458	

1. Conforms to [Healthcare Associated Infection Report](#) template (identifier: urn:oid:2.16.840.1.113883.10.20.5.4.25).
 2. **SHALL** contain exactly one [1..1] **templateId** (CONF:86-22431) such that it
 - a. **SHALL** contain exactly one [1..1] **@root**="2.16.840.1.113883.10.20.5.4.28" (CONF:86-22432).
 3. **SHALL** contain exactly one [1..1] **recordTarget** (CONF:86-22433).
 - a. This recordTarget **SHALL** contain exactly one [1..1] **patientRole** (CONF:86-22434).
 - i. This patientRole **SHALL** contain exactly one [1..1] **id** (CONF:86-22435).
 1. This id **SHALL** contain exactly one [1..1] **@nullFlavor**="NA" not applicable (CONF:86-22436).
 4. **SHALL** contain exactly one [1..1] **participant** (CONF:86-22437) such that it
 - a. **SHALL** contain exactly one [1..1] **@typeCode**="SBJ" Subject (CodeSystem: HL7ParticipationType urn:oid:2.16.840.1.113883.5.90 **STATIC**) (CONF:86-22438).
 - b. **SHALL** contain exactly one [1..1] **@contextControlCode**="OP" (CodeSystem: HL7ContextControl urn:oid:2.16.840.1.113883.5.1057 **STATIC**) (CONF:86-22439).
 - c. **SHALL** contain exactly one [1..1] **associatedEntity** (CONF:86-22440).
 - i. This associatedEntity **SHALL** contain exactly one [1..1] **@classCode**="PRS" Person (CodeSystem: HL7EntityClass urn:oid:2.16.840.1.113883.5.41 **STATIC**) (CONF:86-22441).
 - ii. This associatedEntity **SHALL** contain exactly one [1..1] **code** (CONF:86-22442).
 1. This code **SHALL** contain exactly one [1..1] **@code**="389109008" Group (CodeSystem: SNOMED CT urn:oid:2.16.840.1.113883.6.96 **STATIC**) (CONF:86-22443).
 5. **SHALL** contain exactly one [1..1] **participant** (CONF:86-22444) such that it
 - a. **SHALL** contain exactly one [1..1] **@typeCode**="LOC" Location (CodeSystem: HL7ParticipationType urn:oid:2.16.840.1.113883.5.90 **STATIC**) (CONF:86-22445).
 - b. **SHALL** contain exactly one [1..1] **associatedEntity** (CONF:86-22447).
 - i. This associatedEntity **SHALL** contain exactly one [1..1] **@classCode**="SDLOC" Service delivery location (CodeSystem: HL7RoleClass urn:oid:2.16.840.1.113883.5.110 **STATIC**) (CONF:86-22448).
 - ii. This associatedEntity **SHALL** contain exactly one [1..1] **id** (CONF:86-22449).
- The value of @root must be the NHSN assigned Facility OID.
1. This id **SHALL** contain exactly one [1..1] **@root** (CONF:86-22450).
6. **SHALL** contain exactly one [1..1] **documentationOf** (CONF:86-22451).
 - a. This documentationOf **SHALL** contain exactly one [1..1] **serviceEvent** (CONF:86-22452).
 - i. This serviceEvent **SHALL** contain exactly one [1..1] **@classCode**="CASE" (CodeSystem: HL7ActClass urn:oid:2.16.840.1.113883.5.6 **STATIC**) (CONF:86-22453).

- ii. This serviceEvent **SHALL** contain exactly one [1..1] **code**, which **SHALL** be selected from ValueSet [NHSNPopulationSummaryReportTypeCode](#) urn:oid:2.16.840.1.114222.4.11.3595 **DYNAMIC** (CONF:86-22454).
 - iii. This serviceEvent **SHALL** contain exactly one [1..1] **effectiveTime** (CONF:86-22456).
 - 1. This effectiveTime **SHALL** contain exactly one [1..1] **low** (CONF:86-22457).
 - 2. This effectiveTime **SHALL** contain exactly one [1..1] **high** (CONF:86-22458).
7. The author **SHALL** represent the software forming the message (CONF:86-22459).

Table 4: NHSNPopulationSummaryReportTypeCode

Value Set: NHSNPopulationSummaryReportTypeCode urn:oid:2.16.840.1.114222.4.11.3595 (Clinical Focus: NHSN surveillance reporting: This value set contains codes describing the type of population summary report.), (Data Element Scope: A code describing the population category associated with the data being reported.), (Inclusion Criteria:), (Exclusion Criteria:) This value set was imported on 9/16/2020 with a version of Latest. Value Set Source: https://vsac.nlm.nih.gov/valueset/2.16.840.1.114222.4.11.3595/expansion			
Code	Code System	Code System OID	Print Name
1657-6	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Summary data reporting outpatient procedure component events at a facility
1879-6	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Summary data reporting catheter and ventilator use in a ICU/other
1880-4	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Summary data reporting catheter and ventilator use in a SCA
1881-2	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Summary data reporting catheter and ventilator use in a NICU
1884-6	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Summary data reporting active surveillance testing (AST)
1887-9	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Summary data reporting antimicrobial usage
1891-1	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Summary data reporting MDRO and CDI LabID Event for LTCF
2316-8	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Summary data reporting vascular access types for chronic hemodialysis patients
2410-9	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Summary data reporting antimicrobial resistance patterns at a facility
2543-7	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Hemovigilance module - monthly reporting denominator
...			

5.1.2 Antimicrobial Resistance Option (ARO) Summary Report (V3)

[ClinicalDocument: identifier urn:hl7ii:2.16.840.1.113883.10.20.5.46:2019-04-01 (closed)]

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Release 3, STU 4 - US Realm

Table 5: Antimicrobial Resistance Option (ARO) Summary Report (V3) Contexts

Contained By:	Contains:
	NHSN Comment Section (optional) Report No Events Section (optional) Summary Data Section (ARO) (V3) (required)

Note: The section on “Template Ids in this Guide” includes a containment table showing all the entries within each report type.

The preferred title for the CDA document is “Denominator for Antimicrobial Resistance Option (ARO)”. The tables below show the data required at the time of publication.

The ARO Report extends the simple pattern for Summary Encounter. Required data elements are recorded as entries within the Summary Encounter, with a specified location based on the protocol.

Table 6: Antimicrobial Resistance Option (ARO) Summary Report (V3) Constraints Overview

XPath	Card.	Verb	Data Type	CONF#	Value
ClinicalDocument (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.46:2019-04-01)					
templateId	1..1	SHALL		4395-28301	
@root	1..1	SHALL		4395-28302	2.16.840.1.113883.10.20.5.7.3.4
templateId	1..1	SHALL		4395-22969	
@root	1..1	SHALL		4395-2970	2.16.840.1.113883.10.20.5.46
@extension	1..1	SHALL		4395-30544	2019-04-01
title	1..1	SHALL		4395-22971	
documentationOf	1..1	SHALL		4395-22972	
serviceEvent	1..1	SHALL		4395-22973	
code	1..1	SHALL		4395-22974	
@code	1..1	SHALL		4395-22975	2410-9

XPath	Card.	Verb	Data Type	CONF#	Value
@codeSystem	1..1	SHALL		4395-22976	urn:oid:2.16.840.1.113883.6.277 (cdcNHSN) = 2.16.840.1.113883.6.277
component	1..1	SHALL		4395-22977	
structuredBody	1..1	SHALL		4395-22978	
component	1..1	SHALL		4395-22979	
section	1..1	SHALL		4395-22980	Summary Data Section (ARO) (V3) (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.5.52:2019-04-01)
component	0..1	MAY		4395-30545	
section	1..1	SHALL		4395-30546	Report No Events Section (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.5.62:2018-04-01)
component	0..1	MAY		4395-30547	
section	1..1	SHALL		4395-30548	NHSN Comment Section (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.5.61:2017-04-01)

1. Conforms to [HAI Population Summary Report Generic Constraints](#) template (identifier: urn:oid:2.16.840.1.113883.10.20.5.4.28).

This template id represents the IG in which this template is published.

2. **SHALL** contain exactly one [1..1] **templateId** (CONF:4395-28301) such that it
 - a. **SHALL** contain exactly one [1..1] **@root**="2.16.840.1.113883.10.20.5.7.3.4" (CONF:4395-28302).
3. **SHALL** contain exactly one [1..1] **templateId** (CONF:4395-22969) such that it
 - a. **SHALL** contain exactly one [1..1] **@root**="2.16.840.1.113883.10.20.5.46" (CONF:4395-2970).
 - b. **SHALL** contain exactly one [1..1] **@extension**="2019-04-01" (CONF:4395-30544).

Preferred document title: "Denominator for Antimicrobial Resistance Option (ARO)".

4. **SHALL** contain exactly one [1..1] **title** (CONF:4395-22971).
5. **SHALL** contain exactly one [1..1] **documentationOf** (CONF:4395-22972).
 - a. This documentationOf **SHALL** contain exactly one [1..1] **serviceEvent** (CONF:4395-22973).
 - i. This serviceEvent **SHALL** contain exactly one [1..1] **code** (CONF:4395-22974).

1. This code **SHALL** contain exactly one [1..1] **@code**="2410-9" Summary data reporting antimicrobial resistance patterns at a facility (CONF:4395-22975).
 2. This code **SHALL** contain exactly one [1..1] **@codeSystem**="2.16.840.1.113883.6.277" (CodeSystem: cdcNHSN urn:oid:2.16.840.1.113883.6.277) (CONF:4395-22976).
6. **SHALL** contain exactly one [1..1] **component** (CONF:4395-22977).
- a. This component **SHALL** contain exactly one [1..1] **structuredBody** (CONF:4395-22978).
 - i. This structuredBody **SHALL** contain exactly one [1..1] **component** (CONF:4395-22979) such that it
 1. **SHALL** contain exactly one [1..1] [Summary Data Section \(ARO\) \(V3\)](#) (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.5.52:2019-04-01) (CONF:4395-22980).
 - ii. This structuredBody **MAY** contain zero or one [0..1] **component** (CONF:4395-30545) such that it
 1. **SHALL** contain exactly one [1..1] [Report No Events Section](#) (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.5.62:2018-04-01) (CONF:4395-30546).
 - iii. This structuredBody **MAY** contain zero or one [0..1] **component** (CONF:4395-30547) such that it
 1. **SHALL** contain exactly one [1..1] [NHSN Comment Section](#) (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.5.61:2017-04-01) (CONF:4395-30548).

5.1.3 Antimicrobial Use (AUP) Summary Report (V2)

[ClinicalDocument: identifier urn:hl7ii:2.16.840.1.113883.10.20.5.44:2015-04-01 (closed)]

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Release 2 - US Realm

Table 7: Antimicrobial Use (AUP) Summary Report (V2) Contexts

Contained By:	Contains:
	Summary Data Section (AUP) (V2) (required)

Note: The section on “Template Ids in this Guide” includes a containment table showing all the entries within each report type.

The required title for the CDA document is the “Antimicrobial Use, Pharmacy Option (AUP) Summary Report”.

NHSN reporting requires:

- Patient presence:

- o If the reporting location is a single unit such as a ward, Number of Patient-Present Days, or
- o 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,
 - o Number of Therapy Days for the antimicrobial (this is not a simple total of the stratified data; consult the NHSN protocol for the calculation)
 - o Number of Therapy Days for the antimicrobial stratified by route of actual administration (four observations, one for each route)

Table 8: Antimicrobial Use (AUP) Summary Report (V2) Constraints Overview

XPath	Card.	Verb	Data Type	CONF#	Value
ClinicalDocument (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.44:2015-04-01)					
templateId	1..1	SHALL		1181-28303	
@root	1..1	SHALL		1181-28304	2.16.840.1.113883.10.20.5.7.2
templateId	1..1	SHALL		1181-22898	
@root	1..1	SHALL		1181-22899	2.16.840.1.113883.10.20.5.44
@extension	1..1	SHALL		1181-30543	2015-04-01
title	1..1	SHALL		1181-22900	Antimicrobial Use, Pharmacy Option (AUP) Summary Report
documentationOf	1..1	SHALL		1181-22901	
serviceEvent	1..1	SHALL		1181-22902	
code	1..1	SHALL		1181-22903	
@code	1..1	SHALL		1181-22904	1887-9
@codeSystem	1..1	SHALL		1181-22905	urn:oid:2.16.840.1.113883.6.277 (cdcNHSN) = 2.16.840.1.113883.6.277
component	1..1	SHALL		1181-22906	
structuredBody	1..1	SHALL		1181-22907	
component	1..1	SHALL		1181-22908	
section	1..1	SHALL		1181-22909	Summary Data Section (AUP) (V2) (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.5.51:2015-04-01)

1. Conforms to [HAI Population Summary Report Generic Constraints](#) template (identifier: urn:oid:2.16.840.1.113883.10.20.5.4.28).

This template id represents the IG in which this template is published.

2. **SHALL** contain exactly one [1..1] **templateId** (CONF:1181-28303) such that it
 - a. **SHALL** contain exactly one [1..1] **@root**="2.16.840.1.113883.10.20.5.7.2" (CONF:1181-28304).
3. **SHALL** contain exactly one [1..1] **templateId** (CONF:1181-22898) such that it
 - a. **SHALL** contain exactly one [1..1] **@root**="2.16.840.1.113883.10.20.5.44" (CONF:1181-22899).
 - b. **SHALL** contain exactly one [1..1] **@extension**="2015-04-01" (CONF:1181-30543).
4. **SHALL** contain exactly one [1..1] **title**="Antimicrobial Use, Pharmacy Option (AUP) Summary Report" (CONF:1181-22900).
5. **SHALL** contain exactly one [1..1] **documentationOf** (CONF:1181-22901).
 - a. This documentationOf **SHALL** contain exactly one [1..1] **serviceEvent** (CONF:1181-22902).
 - i. This serviceEvent **SHALL** contain exactly one [1..1] **code** (CONF:1181-22903).
 1. This code **SHALL** contain exactly one [1..1] **@code**="1887-9" Summary data reporting antimicrobial usage (CONF:1181-22904).
 2. This code **SHALL** contain exactly one [1..1] **@codeSystem**="2.16.840.1.113883.6.277" (CodeSystem: cdcNHSN urn:oid:2.16.840.1.113883.6.277) (CONF:1181-22905).
6. **SHALL** contain exactly one [1..1] **component** (CONF:1181-22906).
 - a. This component **SHALL** contain exactly one [1..1] **structuredBody** (CONF:1181-22907).
 - i. This structuredBody **SHALL** contain exactly one [1..1] **component** (CONF:1181-22908).
 1. This component **SHALL** contain exactly one [1..1] [Summary Data Section \(AUP\) \(V2\)](#) (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.5.51:2015-04-01) (CONF:1181-22909).

5.1.4 HAI Single-Person Report Generic Constraints (V2)

[ClinicalDocument: identifier urn:hl7ii:2.16.840.1.113883.10.20.5.4.27:2022-04-01 (open)]

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Table 9: HAI Single-Person Report Generic Constraints (V2) Contexts

Contained By:	Contains:
	NHSN Social History Section (required)

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

A single-person report must conform to the Healthcare Associated Infection Report template. In addition, key data about the patient are 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). If there isn't an available "other" identifier, then there should not be an id present for that type of identifier.
- The patient name is optional; consult the NHSN reporting protocol and requirements.
- Patient gender and birthdate are required.

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

The NHSN Social History section contains the Birth Sex Observation (required) and the Gender Identity Observation (optional).

Note: The section on "Template Ids in this Guide" includes a containment table showing all the entries within each report type.

Table 10: HAI Single-Person Report Generic Constraints (V2) Constraints Overview

XPath	Card.	Verb	Data Type	CONF#	Value
ClinicalDocument (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.4.27:2022-04-01)					
templateId	1..1	SHALL		4523-22415	
@root	1..1	SHALL		4523-22416	2.16.840.1.113883.10.20.5.4.27
@extension	1..1	SHALL		4523-30795	2022-04-01
recordTarget	1..1	SHALL		4523-22417	
patientRole	1..1	SHALL		4523-22418	
id	1..*	SHALL		4523-22419	
@root	1..1	SHALL		4523-22420	
@extension	1..1	SHALL		4523-22421	
patient	1..1	SHALL		4523-22422	
name	0..1	MAY		4523-22423	
administrativeGenderCode	1..1	SHALL		4523-22424	
@code	1..1	SHALL		4523-22425	urn:oid:2.16.840.1.113883.1.11.1 (Administrative Gender (HL7 V3))

birthTime	1..1	SHALL		4523-22426	
@value	1..1	SHALL		4523-22427	
raceCode	0..1	MAY		4523-22428	urn:oid:2.16.840.1.113883.3.2074.1.1.3 (Race Category Excluding Nulls)
ethnicGroupCode	0..1	MAY		4523-22429	urn:oid:2.16.840.1.114222.4.11.837 (Ethnicity)
component	1..1	SHALL		4523-22431	
structuredBody	1..1	SHALL		4523-22432	
component	1..*	SHALL		4523-22433	
section	1..1	SHALL		4523-22434	NHSN Social History Section (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.5.81:2022-04-01)

1. Conforms to [Healthcare Associated Infection Report](#) template (identifier: urn:oid:2.16.840.1.113883.10.20.5.4.25).
2. **SHALL** contain exactly one [1..1] **templateId** (CONF:4523-22415) such that it
 - a. **SHALL** contain exactly one [1..1] **@root**="2.16.840.1.113883.10.20.5.4.27" (CONF:4523-22416).
 - b. **SHALL** contain exactly one [1..1] **@extension**="2022-04-01" (CONF:4523-30795).
3. **SHALL** contain exactly one [1..1] **recordTarget** (CONF:4523-22417).
 - a. This recordTarget **SHALL** contain exactly one [1..1] **patientRole** (CONF:4523-22418).
 - i. This patientRole **SHALL** contain at least one [1..*] **id** (CONF:4523-22419).
Note: 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). If there isn't an available "other" identifier, then there should not be an id present for that type of identifier.
 1. Such ids **SHALL** contain exactly one [1..1] **@root** (CONF:4523-22420).
 2. Such ids **SHALL** contain exactly one [1..1] **@extension** (CONF:4523-22421).
 - ii. This patientRole **SHALL** contain exactly one [1..1] **patient** (CONF:4523-22422).

In the name element, the sub-elements should be in the following order: family, given, and optionally a second given representing the middle name(s). A name element is not allowed to contain mixed content.

1. This patient **MAY** contain zero or one [0..1] **name** (CONF:4523-22423).

2. This patient **SHALL** contain exactly one [1..1] **administrativeGenderCode** (CONF:4523-22424).
 - a. This administrativeGenderCode **SHALL** contain exactly one [1..1] @code, which **SHALL** be selected from ValueSet [Administrative Gender \(HL7 V3\)](#) urn:oid:2.16.840.1.113883.1.11.1 **DYNAMIC** (CONF:4523-22425).
3. This patient **SHALL** contain exactly one [1..1] **birthTime** (CONF:4523-22426).
 - a. This birthTime **SHALL** contain exactly one [1..1] @value (CONF:4523-22427).
4. This patient **MAY** contain zero or one [0..1] **raceCode**, which **SHALL** be selected from ValueSet [Race Category Excluding Nulls](#) urn:oid:2.16.840.1.113883.3.2074.1.1.3 **DYNAMIC** (CONF:4523-22428).
5. This patient **MAY** contain zero or one [0..1] **ethnicGroupCode** (ValueSet: [Ethnicity](#) urn:oid:2.16.840.1.114222.4.11.837 **DYNAMIC**) (CONF:4523-22429).
4. **SHALL** contain exactly one [1..1] **component** (CONF:4523-22431).
 - a. This component **SHALL** contain exactly one [1..1] **structuredBody** (CONF:4523-22432).
 - i. This structuredBody **SHALL** contain at least one [1..*] **component** (CONF:4523-22433) such that it
 1. **SHALL** contain exactly one [1..1] [NHSN Social History Section](#) (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.5.81:2022-04-01) (CONF:4523-22434).
5. The ClinicalDocument/author **MAY** be software or **MAY** be a person in the role of infection control professional (ICP) (CONF:4523-22430).

Table 11: Administrative Gender (HL7 V3)

Value Set: Administrative Gender (HL7 V3) urn:oid:2.16.840.1.113883.1.11.1 (Clinical Focus: The gender of a person used for administrative purposes (as opposed to clinical gender)),(Data Element Scope:),(Inclusion Criteria: All codes in the HL7 V3 AdministrativeGender code system),(Exclusion Criteria:) This value set was imported on 9/29/2020 with a version of Latest. Value Set Source: https://vsac.nlm.nih.gov/valueset/2.16.840.1.113883.1.11.1/expansion			
Code	Code System	Code System OID	Print Name
F	Administrative Gender	urn:oid:2.16.840.1.113883.5.1	Female
M	Administrative Gender	urn:oid:2.16.840.1.113883.5.1	Male
UN	Administrative Gender	urn:oid:2.16.840.1.113883.5.1	Undifferentiated

Table 12: Race Category Excluding Nulls

<p>Value Set: Race Category Excluding Nulls urn:oid:2.16.840.1.113883.3.2074.1.1.3</p> <p>(Clinical Focus: The top-level "Race" concepts as defined by US Office of Management and Budget (OMB), excluding "Other race". All "Race" concepts in the Race and Ethnicity - CDC code system roll-up to one of these codes.), (Data Element Scope: Demographic categorization of a person's race (can be multiple).), (Inclusion Criteria: Direct children of the "1000-9 Race" concept in the Race and Ethnicity Code system.), (Exclusion Criteria: Specifically exclude "2131-1 Other Race" and any descendant of the concepts defined in the inclusion criteria.)</p> <p>This value set was imported on 6/18/2020 with a version of Latest.</p> <p>Value Set Source:</p> <p>https://vsac.nlm.nih.gov/valueset/2.16.840.1.113883.3.2074.1.1.3/expansion</p>			
Code	Code System	Code System OID	Print Name
1002-5	Race & Ethnicity - CDC	urn:oid:2.16.840.1.113883.6.238	American Indian or Alaska Native
2028-9	Race & Ethnicity - CDC	urn:oid:2.16.840.1.113883.6.238	Asian
2054-5	Race & Ethnicity - CDC	urn:oid:2.16.840.1.113883.6.238	Black or African American
2076-8	Race & Ethnicity - CDC	urn:oid:2.16.840.1.113883.6.238	Native Hawaiian or Other Pacific Islander
2106-3	Race & Ethnicity - CDC	urn:oid:2.16.840.1.113883.6.238	White

Table 13: Ethnicity

<p>Value Set: Ethnicity urn:oid:2.16.840.1.114222.4.11.837</p> <p>(Clinical Focus:), (Data Element Scope:), (Inclusion Criteria:), (Exclusion Criteria:)</p> <p>This value set was imported on 10/14/2020 with a version of Latest.</p> <p>Value Set Source:</p> <p>https://vsac.nlm.nih.gov/valueset/2.16.840.1.114222.4.11.837/expansion</p>			
Code	Code System	Code System OID	Print Name
2135-2	Race & Ethnicity - CDC	urn:oid:2.16.840.1.113883.6.238	Hispanic or Latino
2186-5	Race & Ethnicity - CDC	urn:oid:2.16.840.1.113883.6.238	Not Hispanic or Latino

5.1.5 HAI AUR Antimicrobial Resistance Option (ARO) Report (V6)

[ClinicalDocument: identifier urn:hl7ii:2.16.840.1.113883.10.20.5.31:2022-04-01 (closed)]

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Table 14: HAI AUR Antimicrobial Resistance Option (ARO) Report (V6) Contexts

Contained By:	Contains:
	Findings Section in an ARO Report (V4) (required)

Note: The section on “Template Ids in this Guide” includes a containment table showing all the entries within each report type.

This report records the antimicrobial susceptibility testing results for one pathogen isolate from an individual inpatient subject. Each report records a single organism.

Preferred document title: “Antimicrobial Resistance Option (ARO) Report”

Key encounter data:

- The encounter type (inpatient or outpatient) is required.
- An admission date is required.
- The facility identifier is required. Unit identifier and unit type are not recorded in the header.

Other dates and locations:

- Date of specimen collection is recorded in the effectiveTime element of the Specimen Collection Procedure (V2) template.

Table 15: HAI AUR Antimicrobial Resistance Option (ARO) Report (V6) Constraints Overview

XPath	Card.	Verb	Data Type	CONF#	Value
ClinicalDocument (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.31:2022-04-01)					
templateId	1..1	SHALL		4523-30540	
@root	1..1	SHALL		4523-30541	2.16.840.1.113883.10.20.5.7.4.2
templateId	1..1	SHALL		4523-21951	
@root	1..1	SHALL		4523-21952	2.16.840.1.113883.10.20.5.31
@extension	1..1	SHALL		4523-30542	2022-04-01
title	1..1	SHALL		4523-30794	
componentOf	1..1	SHALL		4523-21139	
encompassingEncounter	1..1	SHALL		4523-21140	
code	1..1	SHALL		4523-21141	urn:oid:2.16.840.1.113883.13.1 (NHSNEncounterTypeCode)

XPath	Card.	Verb	Data Type	CONF#	Value
effectiveTime	1..1	SHALL		4523-21143	
low	1..1	SHALL		4523-21144	
@value	1..1	SHALL		4523-21145	
location	1..1	SHALL		4523-21146	
healthCareFacility	1..1	SHALL		4523-21147	
id	1..1	SHALL		4523-21148	
@root	1..1	SHALL		4523-21149	
component	1..1	SHALL		4523-21150	
structuredBody	1..1	SHALL		4523-21151	
component	1..1	SHALL		4523-21152	
section	1..1	SHALL		4523-21153	Findings Section in an ARO Report (V4) (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.5.32:2020-04-01)

1. Conforms to [HAI Single-Person Report Generic Constraints \(V2\)](#) template (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.4.27:2022-04-01).

This template id represents the IG in which this template is published.

2. **SHALL** contain exactly one [1..1] **templateId** (CONF:4523-30540) such that it
 - a. **SHALL** contain exactly one [1..1] **@root**="2.16.840.1.113883.10.20.5.7.4.2" (CONF:4523-30541).
3. **SHALL** contain exactly one [1..1] **templateId** (CONF:4523-21951) such that it
 - a. **SHALL** contain exactly one [1..1] **@root**="2.16.840.1.113883.10.20.5.31" (CONF:4523-21952).
 - b. **SHALL** contain exactly one [1..1] **@extension**="2022-04-01" (CONF:4523-30542).

Preferred document title: "Antimicrobial Resistance Option (ARO) Report"

4. **SHALL** contain exactly one [1..1] **title** (CONF:4523-30794).
5. **SHALL** contain exactly one [1..1] **componentOf** (CONF:4523-21139).
 - a. This componentOf **SHALL** contain exactly one [1..1] **encompassingEncounter** (CONF:4523-21140).
 - i. This encompassingEncounter **SHALL** contain exactly one [1..1] **code**, which **SHALL** be selected from ValueSet [NHSN Encounter Type Code](#) urn:oid:2.16.840.1.113883.13.1 **DYNAMIC** (CONF:4523-21141).

- ii. This encompassingEncounter **SHALL** contain exactly one [1..1] **effectiveTime** (CONF:4523-21143).
 - 1. This effectiveTime **SHALL** contain exactly one [1..1] **low** (CONF:4523-21144).
 - a. This low **SHALL** contain exactly one [1..1] **@value** (CONF:4523-21145).
Note: Admission Date
 - 2. The value of the admission date **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:4523-23358).
- iii. This encompassingEncounter **SHALL** contain exactly one [1..1] **location** (CONF:4523-21146).
 - 1. This location **SHALL** contain exactly one [1..1] **healthCareFacility** (CONF:4523-21147).
 - a. This healthCareFacility **SHALL** contain exactly one [1..1] **id** (CONF:4523-21148).

The value of @root must be the NHSN assigned Facility OID.

- i. This id **SHALL** contain exactly one [1..1] **@root** (CONF:4523-21149).
- 6. **SHALL** contain exactly one [1..1] **component** (CONF:4523-21150).
 - a. This component **SHALL** contain exactly one [1..1] **structuredBody** (CONF:4523-21151).
 - i. This structuredBody **SHALL** contain exactly one [1..1] **component** (CONF:4523-21152) such that it
 - 1. **SHALL** contain exactly one [1..1] [Findings Section in an ARO Report \(V4\)](#) (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.5.32:2020-04-01) (CONF:4523-21153).

Table 16: NHSNEncounterTypeCode

Value Set: NHSNEncounterTypeCode urn:oid:2.16.840.1.113883.13.1 (Clinical Focus:),(Data Element Scope:),(Inclusion Criteria:),(Exclusion Criteria:)			
This value set was imported on 10/14/2020 with a version of Latest. Value Set Source: https://vsac.nlm.nih.gov/valueset/2.16.840.1.113883.13.1/expansion			
Code	Code System	Code System OID	Print Name
AMB	HL7ActCode	urn:oid:2.16.840.1.113883.5.4	ambulatory
IMP	HL7ActCode	urn:oid:2.16.840.1.113883.5.4	inpatient encounter

6 SECTION-LEVEL TEMPLATES

6.1 HAI Section Generic Constraints

[section: identifier urn:oid:2.16.840.1.113883.10.20.5.4.26 (closed)]

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This template records the constraints that apply to all sections specified in the NHSN HAI Implementation Guide.

Table 17: HAI Section Generic Constraints Constraints Overview

XPath	Card.	Verb	Data Type	CONF#	Value
section (identifier: urn:oid:2.16.840.1.113883.10.20.5.4.26)					
templateId	1..1	SHALL		86-21958	
@root	1..1	SHALL		86-21959	2.16.840.1.113883.10.20.5.4.26
code	1..1	SHALL		86-21953	
@code	1..1	SHALL		86-21954	urn:oid:2.16.840.1.113883.6.1 (LOINC)
title	1..1	SHALL		86-21955	
text	1..1	SHALL		86-21956	
entry	1..*	SHALL		86-21957	

1. **SHALL** contain exactly one [1..1] **templateId** (CONF:86-21958) such that it
 - a. **SHALL** contain exactly one [1..1] **@root**="2.16.840.1.113883.10.20.5.4.26" (CONF:86-21959).
2. **SHALL** contain exactly one [1..1] **code** (CONF:86-21953).
 - a. This code **SHALL** contain exactly one [1..1] **@code** (CodeSystem: LOINC urn:oid:2.16.840.1.113883.6.1 **STATIC**) (CONF:86-21954).
3. **SHALL** contain exactly one [1..1] **title** (CONF:86-21955).
4. **SHALL** contain exactly one [1..1] **text** (CONF:86-21956).
5. **SHALL** contain at least one [1..*] **entry** (CONF:86-21957).

6.1.1 Findings Section in an ARO Report (V4)

[section: identifier urn:hl7ii:2.16.840.1.113883.10.20.5.5.32:2020-04-01 (closed)]

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Table 18: Findings Section in an ARO Report (V4) Contexts

Contained By:	Contains:
HAI AUR Antimicrobial Resistance Option (ARO) Report (V6) (required)	Specimen Collection Procedure (ARO) (V4) (required)

The Findings Section in an ARO Report records the details concerning one pathogen isolate and its related antimicrobial susceptibility testing results.

Table 19: Findings Section in an ARO Report (V4) Constraints Overview

XPath	Card.	Verb	Data Type	CONF#	Value
section (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.5.32:2020-04-01)					
templateId	1..1	SHALL		4459-21128	
@root	1..1	SHALL		4459-21129	2.16.840.1.113883.10.20.5.5.32
@extension	1..1	SHALL		4459-30475	2020-04-01
code	1..1	SHALL		4459-21132	
@code	1..1	SHALL		4459-21133	18769-0
@codeSystem	1..1	SHALL		4459-30601	urn:oid:2.16.840.1.113883.6.1 (LOINC) = 2.16.840.1.113883.6.1
entry	1..1	SHALL		4459-21136	
procedure	1..1	SHALL		4459-30473	Specimen Collection Procedure (ARO) (V4) (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.188:2020-04-01)

1. Conforms to [HAI Section Generic Constraints](#) template (identifier: urn:oid:2.16.840.1.113883.10.20.5.4.26).
2. **SHALL** contain exactly one [1..1] **templateId** (CONF:4459-21128) such that it
 - a. **SHALL** contain exactly one [1..1] **@root**="2.16.840.1.113883.10.20.5.5.32" (CONF:4459-21129).
 - b. **SHALL** contain exactly one [1..1] **@extension**="2020-04-01" (CONF:4459-30475).
3. **SHALL** contain exactly one [1..1] **code** (CONF:4459-21132).

- a. This code **SHALL** contain exactly one [1..1] @code="18769-0" Findings Section (CONF:4459-21133).
- b. This code **SHALL** contain exactly one [1..1] @codeSystem="2.16.840.1.113883.6.1" (CodeSystem: LOINC urn:oid:2.16.840.1.113883.6.1) (CONF:4459-30601).
4. **SHALL** contain exactly one [1..1] entry (CONF:4459-21136).
 - a. This entry **SHALL** contain exactly one [1..1] [Specimen Collection Procedure \(ARO\) \(V4\)](#) (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.188:2020-04-01) (CONF:4459-30473).

Figure 24: Findings Section in an ARO Report (V4) Example

```
<section>
  <!-- [HAI R1] HAI Section Generic Constraints -->
  <templateId root="2.16.840.1.113883.10.20.5.4.26" />
  <!-- [HAI R3N1] Findings Section in an ARO Report (V4) -->
  <templateId root="2.16.840.1.113883.10.20.5.5.32" extension="2020-04-01" />
  <code codeSystem="2.16.840.1.113883.6.1"
        codeSystemName="LOINC"
        code="18769-0"
        displayName="Findings section" />
  <title>Findings</title>
  <text>
    ...
  </text>
  <entry typeCode="DRIV">
    <procedure classCode="PROC" moodCode="EVN">
      <!-- [HAI R3N1] Specimen Collection Procedure (ARO) (V4) -->
      <templateId root="2.16.840.1.113883.10.20.5.6.188" extension="2020-04-01" />
      ...
    </procedure>
  </entry>
</section>
```

6.1.2 NHSN Comment Section

[section: identifier urn:hl7ii:2.16.840.1.113883.10.20.5.5.61:2017-04-01 (closed)]

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Table 20: NHSN Comment Section Contexts

Contained By:	Contains:
Antimicrobial Resistance Option (ARO) Summary Report (V3) (optional)	NHSN Comment (required)

The NHSN Comment Section contains the NHSN Comment template. This section is not specific to any one report and contains comments that are relevant to the whole report (it is not specific to any section of a report).

Table 21: NHSN Comment Section Constraints Overview

XPath	Card.	Verb	Data Type	CONF#	Value
section (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.5.61:2017-04-01)					
templateId	1..1	SHALL		3311-172	
@root	1..1	SHALL		3311-180	2.16.840.1.113883.10.20.5.5.61
@extension	1..1	SHALL		3311-181	2017-04-01
code	1..1	SHALL		3311-173	
@code	1..1	SHALL		3311-182	86468-6
@codeSystem	1..1	SHALL		3311-183	urn:oid:2.16.840.1.113883.6.1 (LOINC) = 2.16.840.1.113883.6.1
entry	1..1	SHALL		3311-179	
act	1..1	SHALL		3311-184	NHSN Comment (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.243:2017-04-01)

1. Conforms to [HAI Section Generic Constraints](#) template (identifier: urn:oid:2.16.840.1.113883.10.20.5.4.26).
2. **SHALL** contain exactly one [1..1] **templateId** (CONF:3311-172) such that it
 - a. **SHALL** contain exactly one [1..1] **@root**="2.16.840.1.113883.10.20.5.5.61" (CONF:3311-180).
 - b. **SHALL** contain exactly one [1..1] **@extension**="2017-04-01" (CONF:3311-181).
3. **SHALL** contain exactly one [1..1] **code** (CONF:3311-173).
 - a. This code **SHALL** contain exactly one [1..1] **@code**="86468-6" Report Comment Section (CONF:3311-182).
 - b. This code **SHALL** contain exactly one [1..1] **@codeSystem**="2.16.840.1.113883.6.1" (CodeSystem: LOINC urn:oid:2.16.840.1.113883.6.1) (CONF:3311-183).
4. **SHALL** contain exactly one [1..1] **entry** (CONF:3311-179) such that it
 - a. **SHALL** contain exactly one [1..1] [NHSN Comment](#) (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.243:2017-04-01) (CONF:3311-184).

Figure 25: NHSN Comment Section Example

```
<section>
  <!-- HAI Section Generic Constraints -->
  <templateId root="2.16.840.1.113883.10.20.5.4.26" />
  <!-- [HAI R3D2] NHSN Comment Section -->
  <templateId root="2.16.840.1.113883.10.20.5.5.61" extension="2017-04-01" />
  <code code="86468-6"
    displayName="Report comment section"
    codeSystem="2.16.840.1.113883.6.1"
    codeSystemName="LOINC" />
  <title>Comment</title>
  <text>...</text>
  <entry typeCode="DRIV">
    <act classCode="ACT" moodCode="EVN">
      <!-- [HAI R3D2] Comment -->
      <templateId root="2.16.840.1.113883.10.20.5.6.243" extension="2017-04-01" />
      ...
    </act>
  </entry>
</section>
```

6.1.3 NHSN Social History Section

[section: identifier urn:hl7ii:2.16.840.1.113883.10.20.5.5.81:2022-04-01
(open)]

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2 - US Realm

Table 22: NHSN Social History Section Contexts

Contained By:	Contains:
HAI Single-Person Report Generic Constraints (V2) (required)	Birth Sex Observation (required) Gender Identity Observation (V3) (optional)

This section contains social history templates Birth Sex and Gender Identity.

Table 23: NHSN Social History Section Constraints Overview

XPath	Card.	Verb	Data Type	CONF#	Value
section (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.5.81:2022-04-01)					
templateId	1..1	SHALL		4523-3	
@root	1..1	SHALL		4523-17	2.16.840.1.113883.10.20.5.5.81
@extension	1..1	SHALL		4523-18	2022-04-01
code	1..1	SHALL		4523-4	
@code	1..1	SHALL		4523-19	29762-2
@codeSystem	1..1	SHALL		4523-20	urn:oid:2.16.840.1.113883.6.1 (LOINC) = 2.16.840.1.113883.6.1
entry	1..1	SHALL		4523-9	
observation	1..1	SHALL		4523-10	Birth Sex Observation (identifier: urn:hl7ii:2.16.840.1.113883.10.20.22.4.200:2016-06-01)
entry	0..*	SHOULD		4523-11	
observation	1..1	SHALL		4523-12	Gender Identity Observation (V3) (identifier: urn:hl7ii:2.16.840.1.113883.10.20.34.3.45:2022-06-01)

1. Conforms to [HAI Section Generic Constraints](#) template (identifier: urn:oid:2.16.840.1.113883.10.20.5.4.26).
2. **SHALL** contain exactly one [1..1] **templateId** (CONF:4523-3) such that it
 - a. **SHALL** contain exactly one [1..1] **@root**="2.16.840.1.113883.10.20.5.5.81" (CONF:4523-17).
 - b. **SHALL** contain exactly one [1..1] **@extension**="2022-04-01" (CONF:4523-18).
3. **SHALL** contain exactly one [1..1] **code** (CONF:4523-4).
 - a. This code **SHALL** contain exactly one [1..1] **@code**="29762-2" Social History (CONF:4523-19).
 - b. This code **SHALL** contain exactly one [1..1] **@codeSystem**="2.16.840.1.113883.6.1" (CodeSystem: LOINC urn:oid:2.16.840.1.113883.6.1) (CONF:4523-20).
4. **SHALL** contain exactly one [1..1] **entry** (CONF:4523-9) such that it
 - a. **SHALL** contain exactly one [1..1] [Birth Sex Observation](#) (identifier: urn:hl7ii:2.16.840.1.113883.10.20.22.4.200:2016-06-01) (CONF:4523-10).
5. **SHOULD** contain zero or more [0..*] **entry** (CONF:4523-11) such that it
 - a. **SHALL** contain exactly one [1..1] [Gender Identity Observation \(V3\)](#) (identifier: urn:hl7ii:2.16.840.1.113883.10.20.34.3.45:2022-06-01) (CONF:4523-12).

Figure 26: NHSN Social History Section Example

```

<component>
  <section>
    <templateId root="2.16.840.1.113883.10.20.5.5.81" extension="2022-04-01" />
    <code code="29762-2" codeSystem="2.16.840.1.113883.6.1" displayName="Social
History" />
    <title>NHSN Social History</title>
    <text>
      . . .
    </text>
    <entry>
      <observation classCode="OBS" moodCode="EVN">
        <!-- [C-CDA CG] Birth Sex Observation -->
        <templateId root="2.16.840.1.113883.10.20.22.4.200" extension="2016-06-01"
      />
      ...
    </observation>
    </entry>
    <entry>
      <observation classCode="OBS" moodCode="EVN">
        <!-- [C-CDA CG] Gender Identity Observation (V3) -->
        <templateId root="2.16.840.1.113883.10.20.34.3.45" extension="2022-06-01"
      />
      ...
    </observation>
    </entry>
  </section>
</component>

```

6.1.4 Report No Events Section

[section: identifier urn:hl7ii:2.16.840.1.113883.10.20.5.5.62:2018-04-01
(closed)]

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Table 24: Report No Events Section Contexts

Contained By:	Contains:
Antimicrobial Resistance Option (ARO) Summary Report [V3] (optional)	Report No Events (required)

The Report No Events Section contains the Report No Events template. This section is available for use in any report. If this section is present in a report it must contain at least one entry.

Table 25: Report No Events Section Constraints Overview

XPath	Card.	Verb	Data Type	CONF#	Value
section (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.5.62:2018-04-01)					
templateId	1..1	SHALL		3357-30604	
@root	1..1	SHALL		3357-30608	2.16.840.1.113883.10.20.5.5.62
@extension	1..1	SHALL		3357-30609	2018-04-01
code	1..1	SHALL		3357-30605	
@code	1..1	SHALL		3357-30610	90252-8
@codeSystem	1..1	SHALL		3357-30611	urn:oid:2.16.840.1.113883.6.1 (LOINC) = 2.16.840.1.113883.6.1
entry	1..*	SHALL		3357-30606	
act	1..1	SHALL		3357-30910	Report No Events (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.249:2018-04-01)

1. Conforms to [HAI Section Generic Constraints](#) template (identifier: urn:oid:2.16.840.1.113883.10.20.5.4.26).
2. **SHALL** contain exactly one [1..1] **templateId** (CONF:3357-30604) such that it
 - a. **SHALL** contain exactly one [1..1] **@root**="2.16.840.1.113883.10.20.5.5.62" (CONF:3357-30608).
 - b. **SHALL** contain exactly one [1..1] **@extension**="2018-04-01" (CONF:3357-30609).
3. **SHALL** contain exactly one [1..1] **code** (CONF:3357-30605).
 - a. This code **SHALL** contain exactly one [1..1] **@code**="90252-8" Report No Events section (CONF:3357-30610).
 - b. This code **SHALL** contain exactly one [1..1] **@codeSystem**="2.16.840.1.113883.6.1" (CodeSystem: LOINC urn:oid:2.16.840.1.113883.6.1) (CONF:3357-30611).
4. **SHALL** contain at least one [1..*] **entry** (CONF:3357-30606) such that it
 - a. **SHALL** contain exactly one [1..1] [Report No Events](#) (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.249:2018-04-01) (CONF:3357-30910).

Figure 27: Report No Events Section Example

```
<section>
  <!-- HAI Section Generic Constraints -->
  <templateId root="2.16.840.1.113883.10.20.5.4.26" />
  <!-- [HAI R3D3] Report No Events Section -->
  <templateId root="2.16.840.1.113883.10.20.5.5.62" extension="2018-04-01" />
  <code codeSystem="2.16.840.1.113883.6.1"
    codeSystemName="LOINC"
    code="90252-8"
    displayName="Report No Events Section" />
  <title>Report No Events</title>
  <text>
    <table>
      <tbody>
        <tr>
          <td>Report no infection surveillance events - Methicillin-resistant
Staphylococcus aureus</td>
        </tr>
      </tbody>
    </table>
  </text>
  <entry typeCode="DRIV">
    <act classCode="ACT" moodCode="EVN">
      <!-- [HAI R3D3] Report No Events-->
      <templateId root="2.16.840.1.113883.10.20.5.6.249" extension="2018" />
      ...
    </act>
  </entry>
  ...
</section>
```

6.1.5 Summary Data Section (ARO) (V3)

[section: identifier urn:hl7ii:2.16.840.1.113883.10.20.5.5.52:2019-04-01
(closed)]

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Table 26: Summary Data Section (ARO) (V3) Contexts

Contained By:	Contains:
Antimicrobial Resistance Option (ARO) Summary Report (V3) (required)	Summary Encounter (ARO) (V3) (required)

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 whatever the data reported.

The Summary Data Section (ARO) extends its generic equivalent, but is specific to the Antimicrobial Resistance Option (ARO) Summary Report.

Table 27: Summary Data Section (ARO) (V3) Constraints Overview

XPath	Card.	Verb	Data Type	CONF#	Value
section (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.5.52:2019-04-01)					
templateId	1..1	SHALL		4395-23070	
@root	1..1	SHALL		4395-23071	2.16.840.1.113883.10.20.5.5.52
@extension	1..1	SHALL		4395-30920	2019-04-01
code	1..1	SHALL		4395-23072	
@code	1..1	SHALL		4395-23073	51900-9
@codeSystem	1..1	SHALL		4395-28366	urn:oid:2.16.840.1.113883.6.1 (LOINC) = 2.16.840.1.113883.6.1
entry	1..*	SHALL		4395-23074	
encounter	1..1	SHALL		4395-23075	Summary Encounter (ARO) (V3) (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.199:2019-04-01)

1. Conforms to [HAI Section Generic Constraints](#) template (identifier: urn:oid:2.16.840.1.113883.10.20.5.4.26).
2. **SHALL** contain exactly one [1..1] **templateId** (CONF:4395-23070) such that it
 - a. **SHALL** contain exactly one [1..1] **@root**="2.16.840.1.113883.10.20.5.5.52" (CONF:4395-23071).
 - b. **SHALL** contain exactly one [1..1] **@extension**="2019-04-01" (CONF:4395-30920).
3. **SHALL** contain exactly one [1..1] **code** (CONF:4395-23072).
 - a. This code **SHALL** contain exactly one [1..1] **@code**="51900-9" Summary Data Section (CONF:4395-23073).
 - b. This code **SHALL** contain exactly one [1..1] **@codeSystem**="2.16.840.1.113883.6.1" (CodeSystem: LOINC urn:oid:2.16.840.1.113883.6.1) (CONF:4395-28366).
4. **SHALL** contain at least one [1..*] **entry** (CONF:4395-23074).
 - a. Such entries **SHALL** contain exactly one [1..1] [Summary Encounter \(ARO\) \(V3\)](#) (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.199:2019-04-01) (CONF:4395-23075).

Figure 28: Summary Data Section (ARO) (V3) Example

```
<section>
  <!-- HAI Generic Section template -->
  < templateId root="2.16.840.1.113883.10.20.5.4.26"/>
  <!-- HAI Summary Data Section (ARO) template (V3) -->
  <templateId root="2.16.840.1.113883.10.20.5.5.52"
    extension="2019-04-01"/>
  <code codeSystem="2.16.840.1.113883.6.1"
    codeSystemName="LOINC"
    code="51900-9"
    displayName="Summary Data Section"/>
  ...
  <entry>
    <encounter classCode="ENC" moodCode="EVN">
      <!-- HAI Summary Encounter (ARO) (V3) template -->
      <templateId root="2.16.840.1.113883.10.20.5.6.199"
        extension="2019-04-01"/>
      ...
    </encounter>
  </entry>
</section>
```

6.1.6 Summary Data Section (AUP) (V2)

[section: identifier urn:hl7ii:2.16.840.1.113883.10.20.5.5.51:2015-04-01
(closed)]

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Table 28: Summary Data Section (AUP) (V2) Contexts

Contained By:	Contains:
Antimicrobial Use (AUP) Summary Report (V2) (required)	Summary Encounter Patient Presence (AUP) (V2) (required) Summary Encounter (AUP) (V2) (required)

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 whatever the data reported.

The Summary Data Section (AUP) extends its generic equivalent but is specific to the Antimicrobial Use (AUP) Summary Report.

Table 29: Summary Data Section (AUP) (V2) Constraints Overview

XPath	Card.	Verb	Data Type	CONF#	Value
section (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.5.51:2015-04-01)					
templateId	1..1	SHALL		1181-23013	
@root	1..1	SHALL		1181-23014	2.16.840.1.113883.10.20.5.5.51
@extension	1..1	SHALL		1181-30565	2015-04-01
code	1..1	SHALL		1181-23015	
@code	1..1	SHALL		1181-23016	51900-9
@codeSystem	1..1	SHALL		1181-28367	urn:oid:2.16.840.1.113883.6.1 (LOINC) = 2.16.840.1.113883.6.1
entry	1..1	SHALL		1181-23017	
encounter	1..1	SHALL		1181-23018	Summary Encounter Patient Presence (AUP) (V2) (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.197:2015-04-01)
entry	1..*	SHALL		1181-23046	
encounter	1..1	SHALL		1181-23047	Summary Encounter (AUP) (V2) (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.198:2015-04-01)

1. Conforms to [HAI Section Generic Constraints](#) template (identifier: urn:oid:2.16.840.1.113883.10.20.5.4.26).
2. **SHALL** contain exactly one [1..1] **templateId** (CONF:1181-23013) such that it
 - a. **SHALL** contain exactly one [1..1] **@root**="2.16.840.1.113883.10.20.5.5.51" (CONF:1181-23014).
 - b. **SHALL** contain exactly one [1..1] **@extension**="2015-04-01" (CONF:1181-30565).
3. **SHALL** contain exactly one [1..1] **code** (CONF:1181-23015).
 - a. This code **SHALL** contain exactly one [1..1] **@code**="51900-9" Summary Data Section (CONF:1181-23016).
 - b. This code **SHALL** contain exactly one [1..1] **@codeSystem**="2.16.840.1.113883.6.1" (CodeSystem: LOINC urn:oid:2.16.840.1.113883.6.1) (CONF:1181-28367).
4. **SHALL** contain exactly one [1..1] **entry** (CONF:1181-23017) such that it
 - a. **SHALL** contain exactly one [1..1] [Summary Encounter Patient Presence \(AUP\) \(V2\)](#) (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.197:2015-04-01) (CONF:1181-23018).

5. **SHALL** contain at least one [1..*] **entry** (CONF:1181-23046) such that it
 - a. **SHALL** contain exactly one [1..1] Summary Encounter (AUP) (V2) (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.198:2015-04-01) (CONF:1181-23047).

Figure 29: Summary Data Section (AUP) (V2)

```

<section>
  <!-- HAI Generic Section template -->
  < templateId root="2.16.840.1.113883.10.20.5.4.26"/>
  <!-- HAI Summary Data Section (AUP) (V2) template -->
  <templateId root="2.16.840.1.113883.10.20.5.5.51"
    extension="2015-01-04"/>
  <code codeSystem="2.16.840.1.113883.6.1"
    codeSystemName="LOINC"
    code="51900-9"
    displayName="Summary Data Section"/>
  ...
  <entry>
    <encounter classCode="ENC" moodCode="EVN">
      <!-- HAI Summary Encounter Patient Presence (AUP) (V2) template -->
      <templateId root="2.16.840.1.113883.10.20.5.6.197"
        extension="2015-01-04"/>
      ...
    </encounter>
  </entry>
  <entry>
    <encounter classCode="ENC" moodCode="EVN">
      <!-- HAI Summary Encounter (AUP) (V2) template -->
      <templateId root="2.16.840.1.113883.10.20.5.6.198"
        extension="2015-01-04"/>
      ...
    </encounter>
  </entry>

  <entry>
    <encounter>
      ...
    </encounter>
  </entry>
</section>

```

7 ENTRY-LEVEL TEMPLATES

7.1 Antimicrobial Susceptibility Final Interpretation Result

[observation: identifier urn:oid:2.16.840.1.113883.10.20.5.6.175 (closed)]

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Table 30: Antimicrobial Susceptibility Final Interpretation Result Contexts

Contained By:	Contains:
Antimicrobial Susceptibility Tests Organizer (V3) (required)	

This clinical statement represents the final susceptibility result of a cluster of antimicrobial susceptibility tests performed on one pathogen-drug combination. Although several tests performed on one pathogen using the same antimicrobial agent may yield conflicting results, this clinical statement provides the final and definitive susceptibility testing result.

Table 31: Antimicrobial Susceptibility Final Interpretation Result Constraints Overview

XPath	Card.	Verb	Data Type	CONF#	Value
observation (identifier: urn:oid:2.16.840.1.113883.10.20.5.6.175)					
@classCode	1..1	SHALL		86-21067	urn:oid:2.16.840.1.113883.5.6 (HL7ActClass) = OBS
@moodCode	1..1	SHALL		86-21068	urn:oid:2.16.840.1.113883.5.1001 (HL7ActMood) = EVN
templateId	1..1	SHALL		86-28203	
@root	1..1	SHALL		86-28204	2.16.840.1.113883.10.20.22.4.2
templateId	1..1	SHALL		86-21071	
@root	1..1	SHALL		86-21072	2.16.840.1.113883.10.20.5.6.175
id	1..1	SHALL		86-21069	
@nullFlavor	1..1	SHALL		86-21070	NA
code	1..1	SHALL		86-21075	
@code	1..1	SHALL		86-28099	365705006
@codeSystem	1..1	SHALL		86-28100	urn:oid:2.16.840.1.113883.6.96 (SNOMED CT) = 2.16.840.1.113883.6.96
statusCode	1..1	SHALL		86-21076	
@code	1..1	SHALL		86-21077	urn:oid:2.16.840.1.113883.5.14 (HL7ActStatus) = completed
effectiveTime	1..1	SHALL		86-21078	
@nullFlavor	1..1	SHALL		86-22630	NA
value	1..1	SHALL	CD	86-21079	urn:oid:2.16.840.1.113883.13.13 (NHSNDrugSusceptibilityFindingCode)

1. Conforms to Result Observation template (identifier: urn:oid:2.16.840.1.113883.10.20.22.4.2).
2. **SHALL** contain exactly one [1..1] **@classCode**="OBS" (CodeSystem: HL7ActClass urn:oid:2.16.840.1.113883.5.6) (CONF:86-21067).
3. **SHALL** contain exactly one [1..1] **@moodCode**="EVN" (CodeSystem: HL7ActMood urn:oid:2.16.840.1.113883.5.1001) (CONF:86-21068).
4. **SHALL** contain exactly one [1..1] **templateId** (CONF:86-28203) such that it
 - a. **SHALL** contain exactly one [1..1] **@root**="2.16.840.1.113883.10.20.22.4.2" (CONF:86-28204).
5. **SHALL** contain exactly one [1..1] **templateId** (CONF:86-21071) such that it
 - a. **SHALL** contain exactly one [1..1] **@root**="2.16.840.1.113883.10.20.5.6.175" (CONF:86-21072).
6. **SHALL** contain exactly one [1..1] **id** (CONF:86-21069).

- a. This id **SHALL** contain exactly one [1..1] @nullFlavor="NA" (CONF:86-21070).
7. **SHALL** contain exactly one [1..1] code (CONF:86-21075).
 - a. This code **SHALL** contain exactly one [1..1] @code="365705006" Final Interpretation Result (CONF:86-28099).
 - b. This code **SHALL** contain exactly one [1..1] @codeSystem="2.16.840.1.113883.6.96" (CodeSystem: SNOMED CT urn:oid:2.16.840.1.113883.6.96) (CONF:86-28100).
8. **SHALL** contain exactly one [1..1] statusCode (CONF:86-21076).
 - a. This statusCode **SHALL** contain exactly one [1..1] @code="completed" Completed (CodeSystem: HL7ActStatus urn:oid:2.16.840.1.113883.5.14) (CONF:86-21077).
9. **SHALL** contain exactly one [1..1] effectiveTime (CONF:86-21078).
 - a. This effectiveTime **SHALL** contain exactly one [1..1] @nullFlavor="NA" (CONF:86-22630).
10. **SHALL** contain exactly one [1..1] value with @xsi:type="CD", where the code **SHALL** be selected from ValueSet [NHSNDrugSusceptibilityFindingCode](#) urn:oid:2.16.840.1.113883.13.13 **DYNAMIC** (CONF:86-21079).

Table 32: NHSNDrugSusceptibilityFindingCode

Value Set: NHSNDrugSusceptibilityFindingCode urn:oid:2.16.840.1.113883.13.13 (Clinical Focus: NHSN surveillance reporting: This value set contains codes describing the drug susceptibility finding.),(Data Element Scope: A coded observation value representing the type of drug susceptibility finding.),(Inclusion Criteria:),(Exclusion Criteria:)			
This value set was imported on 9/15/2020 with a version of Latest. Value Set Source: https://vsac.nlm.nih.gov/valueset/2.16.840.1.113883.13.13/expansion			
Code	Code System	Code System OID	Print Name
I	ObservationInterpretation	urn:oid:2.16.840.1.113883.5.83	Intermediate
NS	ObservationInterpretation	urn:oid:2.16.840.1.113883.5.83	Non-susceptible
R	ObservationInterpretation	urn:oid:2.16.840.1.113883.5.83	Resistant
S	ObservationInterpretation	urn:oid:2.16.840.1.113883.5.83	Susceptible
SDD	ObservationInterpretation	urn:oid:2.16.840.1.113883.5.83	Susceptible-dose dependent

Figure 30: Antimicrobial Susceptibility Final Interpretation Result Example

```
<!-- This observation specifies the Final Interpretation Result -->
<observation classCode="OBS" moodCode="EVN">
  <!-- Antimicrobial Susceptibility Final Interpretation Result -->
  <templateId root="2.16.840.1.113883.10.20.5.6.175" />
  <!-- Consolidated CDA Result Observation template -->
  <templateId root="2.16.840.1.113883.10.20.22.4.2" />
  <id nullFlavor="NA" />
  <code code="365705006"
        displayName="Final Interpretation Result"
        codeSystem="2.16.840.1.113883.6.96"
        codeSystemName="SNOMED CT" />
  <statusCode code="completed" />
  <effectiveTime nullFlavor="NA" />
  <value xsi:type="CD" codeSystem="2.16.840.1.113883.5.83"
        codeSystemName="HL7 Observation Interpretation"
        code="R"
        displayName="Resistant" />
</observation>
```

7.2 Antimicrobial Susceptibility Isolate Participant (V2)

[participant: identifier urn:hl7ii:2.16.840.1.113883.10.20.5.6.202:2020-04-01
(closed)]

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Table 33: Antimicrobial Susceptibility Isolate Participant (V2) Contexts

Contained By:	Contains:
Isolate Susceptibility Tests Organizer (V4) (required)	

This template identifies an isolate for the purpose of antimicrobial susceptibility testing.

Table 34: Antimicrobial Susceptibility Isolate Participant (V2) Constraints Overview

XPath	Card.	Verb	Data Type	CONF#	Value
participant (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.202:2020-04-01)					
@typeCode	1..1	SHALL		4459-27150	SBJ
templateId	1..1	SHALL		4459-27137	
@root	1..1	SHALL		4459-27138	2.16.840.1.113883.10.20.5.6.202
@extension	1..1	SHALL		4459-30799	2020-04-01
participantRole	1..1	SHALL		4459-27151	
@classCode	1..1	SHALL		4459-27152	ISLT
id	1..*	SHALL		4459-27153	
playingEntity	1..1	SHALL		4459-27154	
code	1..1	SHALL		4459-27155	urn:oid:2.16.840.1.113762.1.4.1190.6 (NHSNPathogenCodeARO)

1. **SHALL** contain exactly one [1..1] **@typeCode**="SBJ" (CONF:4459-27150).
2. **SHALL** contain exactly one [1..1] **templateId** (CONF:4459-27137) such that it
 - a. **SHALL** contain exactly one [1..1] **@root**="2.16.840.1.113883.10.20.5.6.202" (CONF:4459-27138).
 - b. **SHALL** contain exactly one [1..1] **@extension**="2020-04-01" (CONF:4459-30799).
3. **SHALL** contain exactly one [1..1] **participantRole** (CONF:4459-27151).
 - a. This participantRole **SHALL** contain exactly one [1..1] **@classCode**="ISLT" (CONF:4459-27152).

This is the unique isolate identifier

- b. This participantRole **SHALL** contain at least one [1..*] **id** (CONF:4459-27153).
- c. This participantRole **SHALL** contain exactly one [1..1] **playingEntity** (CONF:4459-27154).
 - i. This playingEntity **SHALL** contain exactly one [1..1] **code**, which **SHALL** be selected from ValueSet [NHSNPathogenCodeARO](#)
urn:oid:2.16.840.1.113762.1.4.1190.6 **DYNAMIC** (CONF:4459-27155).

Table 35: NHSNPathogenCodeARO

Value Set: NHSNPathogenCodeARO urn:oid:2.16.840.1.113762.1.4.1190.6 (Clinical Focus: NHSN Surveillance - Antibiotic Resistance Option),(Data Element Scope: Pathogens eligible for NHSN ARO reporting),(Inclusion Criteria:),(Exclusion Criteria:) This value set was imported on 6/1/2021 with a version of Latest. Value Set Source: https://vsac.nlm.nih.gov/valueset/2.16.840.1.113762.1.4.1190.6/expansion			
Code	Code System	Code System OID	Print Name
10262005	SNOMED CT	urn:oid:2.16.840.1.113883.6.96	Enterococcus malodoratus (organism)
103429008	SNOMED CT	urn:oid:2.16.840.1.113883.6.96	Enterohemorrhagic Escherichia coli, serotype O157:H7 (organism)
103436009	SNOMED CT	urn:oid:2.16.840.1.113883.6.96	Enterococcus pseudoavium (organism)
103437000	SNOMED CT	urn:oid:2.16.840.1.113883.6.96	Enterococcus raffinosus (organism)
103438005	SNOMED CT	urn:oid:2.16.840.1.113883.6.96	Enterococcus saccharolyticus (organism)
112283007	SNOMED CT	urn:oid:2.16.840.1.113883.6.96	Escherichia coli (organism)
113376007	SNOMED CT	urn:oid:2.16.840.1.113883.6.96	Acinetobacter calcoaceticus- Acinetobacter baumannii complex (organism)
113381003	SNOMED CT	urn:oid:2.16.840.1.113883.6.96	Acinetobacter radioresistens (organism)
113697002	SNOMED CT	urn:oid:2.16.840.1.113883.6.96	Stenotrophomonas maltophilia (organism)
113722005	SNOMED CT	urn:oid:2.16.840.1.113883.6.96	Enterococcus cecorum (organism)
...			

Figure 31: Antimicrobial Susceptibility Isolate Participant (V2) Example

```
<participant typeCode="SBJ">
  <!-- [HAI R3N1] Antimicrobial Susceptibility Isolate Participant (V2) template -->
  <templateId root="2.16.840.1.113883.10.20.5.6.202" extension="2020-04-01" />
  <participantRole classCode="ISLT">
    <!-- Isolate identifier - unique for each isolate in that year -->
    <id root="8d7ebcf7-528e-48e8-9e04-350b11b591d1" extension="125698523"/>
    <playingEntity>
      <code code="3092008"
        displayName="Staphylococcus aureus"
        codeSystem="2.16.840.1.113883.6.96"
        codeSystemName="SNOMED CT"/>
    </playingEntity>
  </participantRole>
</participant>
```

7.3 Antimicrobial Susceptibility Result Observation (V3)

[observation: identifier urn:hl7ii:2.16.840.1.113883.10.20.5.6.186:2016-08-01
(closed)]

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Table 36: Antimicrobial Susceptibility Result Observation (V3) Contexts

Contained By:	Contains:
Antimicrobial Susceptibility Result Organizer (V3) (required)	

This clinical statement represents the result of one discrete susceptibility test. The type of test is recorded in the code element. The test method is recorded in the methodCode. The susceptibility result of that test is recorded in the interpretationCode element. The numeric result of that test is recorded in the value element as an inequality. The numeric component is recorded in the value/.../@value attribute. The unit of measure is recorded in the value/.../@unit attribute. The inequality is recorded in the value/low and value/high and value/center elements. For example:

Greater than 0.5 mg/ul

Greater than or equal to 0.9 mg/ul

Less than 0.7 mg/ul

Less than or equal to 0.4 mg/ul

Exactly equal to 0.2 mg/ul

Table 37: Antimicrobial Susceptibility Result Observation (V3) Constraints Overview

XPath	Card.	Verb	Data Type	CONF#	Value
observation (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.186:2016-08-01)					
@classCode	1..1	SHALL		3247-22632	urn:oid:2.16.840.1.113883.5.6 (HL7ActClass) = OBS
@moodCode	1..1	SHALL		3247-22633	urn:oid:2.16.840.1.113883.5.1001 (HL7ActMood) = EVN
@negationInd	1..1	SHALL		3247-22699	
templateId	1..1	SHALL		3247-30551	
@root	1..1	SHALL		3247-30552	2.16.840.1.113883.10.20.22.4.2
templateId	1..1	SHALL		3247-22634	
@root	1..1	SHALL		3247-22635	2.16.840.1.113883.10.20.5.6.186
@extension	1..1	SHALL		3247-30553	2016-08-01
id	1..1	SHALL		3247-22636	
@nullFlavor	1..1	SHALL		3247-22637	NA
code	1..1	SHALL		3247-22638	urn:oid:2.16.840.1.113883.13.15 (NHSNDrugSusceptibilityTests Code)
statusCode	1..1	SHALL		3247-22639	
@code	1..1	SHALL		3247-22640	completed
effectiveTime	1..1	SHALL		3247-22641	
@nullFlavor	1..1	SHALL		3247-22642	NA
value	1..1	SHALL	IVL_PQ	3247-22643	
low	0..1	MAY		3247-22644	
@value	0..1	MAY		3247-23095	
@unit	0..1	MAY		3247-23096	
@inclusive	0..1	MAY	BL	3247-22645	

XPath	Card.	Verb	Data Type	CONF#	Value
high	0..1	MAY		3247-22646	
@value	0..1	MAY		3247-23097	
@unit	0..1	MAY		3247-23098	
@inclusive	0..1	MAY		3247-22647	
center	0..1	MAY		3247-22648	
@value	0..1	MAY		3247-23099	
@unit	0..1	MAY		3247-23100	
@nullFlavor	0..1	MAY		3247-23366	
interpretationCode	1..1	SHALL		3247-23101	urn:oid:2.16.840.1.113883.13.13 (NHSNDrugSusceptibilityFindingCode)
methodCode	1..1	SHALL		3247-30599	
@code	1..1	SHALL		3247-30602	urn:oid:2.16.840.1.113883.10.20.5.9.4 (NHSNDrugSusceptibilityTestMethod)
@codeSystem	1..1	SHALL		3247-30603	

1. Conforms to Result Observation template (identifier: urn:oid:2.16.840.1.113883.10.20.22.4.2).
2. **SHALL** contain exactly one [1..1] @classCode="OBS" (CodeSystem: HL7ActClass urn:oid:2.16.840.1.113883.5.6) (CONF:3247-22632).
3. **SHALL** contain exactly one [1..1] @moodCode="EVN" (CodeSystem: HL7ActMood urn:oid:2.16.840.1.113883.5.1001) (CONF:3247-22633).
4. **SHALL** contain exactly one [1..1] @negationInd (CONF:3247-22699).
5. **SHALL** contain exactly one [1..1] templateId (CONF:3247-30551) such that it
 - a. **SHALL** contain exactly one [1..1] @root="2.16.840.1.113883.10.20.22.4.2" (CONF:3247-30552).
6. **SHALL** contain exactly one [1..1] templateId (CONF:3247-22634) such that it
 - a. **SHALL** contain exactly one [1..1] @root="2.16.840.1.113883.10.20.5.6.186" (CONF:3247-22635).
 - b. **SHALL** contain exactly one [1..1] @extension="2016-08-01" (CONF:3247-30553).
7. **SHALL** contain exactly one [1..1] id (CONF:3247-22636).

- a. This id **SHALL** contain exactly one [1..1] @nullFlavor="NA" (CONF:3247-22637).
8. **SHALL** contain exactly one [1..1] **code**, which **SHOULD** be selected from ValueSet [NHSNDrugSusceptibilityTestsCode](#) urn:oid:2.16.840.1.113883.13.15 **DYNAMIC** (CONF:3247-22638).
9. **SHALL** contain exactly one [1..1] **statusCode** (CONF:3247-22639).
 - a. This statusCode **SHALL** contain exactly one [1..1] @code="completed" (CONF:3247-22640).
10. **SHALL** contain exactly one [1..1] **effectiveTime** (CONF:3247-22641).
 - a. This effectiveTime **SHALL** contain exactly one [1..1] @nullFlavor="NA" (CONF:3247-22642).
11. **SHALL** contain exactly one [1..1] **value** with @xsi:type="IVL_PQ" (CONF:3247-22643).
 - a. This value **MAY** contain zero or one [0..1] **low** (CONF:3247-22644).
 - i. The low, if present, **MAY** contain zero or one [0..1] @value (CONF:3247-23095).
 - ii. The low, if present, **MAY** contain zero or one [0..1] @unit (CONF:3247-23096).
 - iii. The low, if present, **MAY** contain zero or one [0..1] @inclusive (CONF:3247-22645).
 - b. This value **MAY** contain zero or one [0..1] **high** (CONF:3247-22646).
 - i. The high, if present, **MAY** contain zero or one [0..1] @value (CONF:3247-23097).
 - ii. The high, if present, **MAY** contain zero or one [0..1] @unit (CONF:3247-23098).
 - iii. The high, if present, **MAY** contain zero or one [0..1] @inclusive (CONF:3247-22647).
 - c. This value **MAY** contain zero or one [0..1] **center** (CONF:3247-22648).
 - i. The center, if present, **MAY** contain zero or one [0..1] @value (CONF:3247-23099).
 - ii. The center, if present, **MAY** contain zero or one [0..1] @unit (CONF:3247-23100).
 - d. This value **MAY** contain zero or one [0..1] @nullFlavor (CONF:3247-23366).
12. **SHALL** contain exactly one [1..1] **interpretationCode**, which **SHOULD** be selected from ValueSet [NHSNDrugSusceptibilityFindingCode](#) urn:oid:2.16.840.1.113883.13.13 **DYNAMIC** (CONF:3247-23101).
13. **SHALL** contain exactly one [1..1] **methodCode** (CONF:3247-30599).
 - a. This methodCode **SHALL** contain exactly one [1..1] @code, which **SHALL** be selected from ValueSet [NHSNDrugSusceptibilityTestMethod](#) urn:oid:2.16.840.1.113883.10.20.5.9.4 **DYNAMIC** (CONF:3247-30602).
 - b. This methodCode **SHALL** contain exactly one [1..1] @codeSystem (CONF:3247-30603).

Table 38: NHSNDrugSusceptibilityTestsCode

Value Set: NHSNDrugSusceptibilityTestsCode urn:oid:2.16.840.1.113883.13.15 (Clinical Focus: NHSN surveillance reporting: This value set contains codes describing the drug susceptibility test.),(Data Element Scope: Code identifying the type of drug susceptibility observation.),(Inclusion Criteria:),(Exclusion Criteria:) This value set was imported on 10/14/2020 with a version of Latest. Value Set Source: https://vsac.nlm.nih.gov/valueset/2.16.840.1.113883.13.15/expansion			
Code	Code System	Code System OID	Print Name
18855-7	LOINC	urn:oid:2.16.840.1.113883.6.1	5-Fluorocytosine [Susceptibility]
18860-7	LOINC	urn:oid:2.16.840.1.113883.6.1	Amikacin [Susceptibility]
18861-5	LOINC	urn:oid:2.16.840.1.113883.6.1	Amoxicillin [Susceptibility]
18862-3	LOINC	urn:oid:2.16.840.1.113883.6.1	Amoxicillin+Clavulanate [Susceptibility]
18864-9	LOINC	urn:oid:2.16.840.1.113883.6.1	Ampicillin [Susceptibility]
18865-6	LOINC	urn:oid:2.16.840.1.113883.6.1	Ampicillin+Sulbactam [Susceptibility]
18866-4	LOINC	urn:oid:2.16.840.1.113883.6.1	Azithromycin [Susceptibility]
18868-0	LOINC	urn:oid:2.16.840.1.113883.6.1	Aztreonam [Susceptibility]
18878-9	LOINC	urn:oid:2.16.840.1.113883.6.1	ceFAZolin [Susceptibility]
18879-7	LOINC	urn:oid:2.16.840.1.113883.6.1	Cefepime [Susceptibility]
...			

Table 39: NHSNDrugSusceptibilityTestMethod

Value Set: NHSNDrugSusceptibilityTestMethod urn:oid:2.16.840.1.113883.10.20.5.9.4 (Clinical Focus: NHSN surveillance reporting: This value set contains codes describing the drug susceptibility test method.),(Data Element Scope: Code identifying the type of drug susceptibility observation.),(Inclusion Criteria:),(Exclusion Criteria:) This value set was imported on 10/14/2020 with a version of Latest. Value Set Source: https://vsac.nlm.nih.gov/valueset/2.16.840.1.113883.10.20.5.9.4/expansion			
Code	Code System	Code System OID	Print Name
49589-5	LOINC	urn:oid:2.16.840.1.113883.6.1	Bacterial susceptibility panel by Gradient strip
50545-3	LOINC	urn:oid:2.16.840.1.113883.6.1	Bacterial susceptibility panel by Minimum inhibitory concentration (MIC)
50546-1	LOINC	urn:oid:2.16.840.1.113883.6.1	Bacterial susceptibility panel by Disk diffusion (KB)

Figure 32: Antimicrobial Susceptibility Result Observation (V3)

<pre><observation classCode="OBS" moodCode="EVN" negationInd="false"> <!-- [C-CDA R1.1] Result Observation --> <templateId root="2.16.840.1.113883.10.20.22.4.2" /> <!-- [HAI R3D1.1] Antimicrobial Susceptibility Result Observation (V3) --> <templateId root="2.16.840.1.113883.10.20.5.6.186" extension="2016-08-01" /> <id nullFlavor="NA" /> <code code="18907-6" displayName="Clarithro Susc Islt" codeSystemName="LOINC" codeSystem="2.16.840.1.113883.6.1" /> <statusCode code="completed" /> <effectiveTime nullFlavor="NA" /> <value xsi:type="IVL_PQ"> <low value="5.0" unit="ug/ml" /> </value> <interpretationCode codeSystem="2.16.840.1.113883.5.83" codeSystemName="HL7 Observation Interpretation" code="R" displayName="Resistant" /> <methodCode codeSystem="2.16.840.1.113883.6.1" codeSystemName="LOINC" code="49589-5" displayName="Bacterial susceptibility panel by Gradient strip (E-test)" /> </observation></pre>

Figure 33: Antimicrobial Susceptibility Result Observation (V3) - Not Done

```
<observation classCode="OBS" moodCode="EVN" negationInd="true">
  <!-- [C-CDA R1.1] Result Observation -->
  <templateId root="2.16.840.1.113883.10.20.22.4.2" />

  <!-- [HAI R3D1.1] Antimicrobial Susceptibility Result Observation (V3) -->
  <templateId root="2.16.840.1.113883.10.20.5.6.186" extension="2016-08-01" />

  <id nullFlavor="NA" />
  <code code="18907-6"
    displayName="Clarithro Susc Islt"
    codeSystemName="LOINC"
    codeSystem="2.16.840.1.113883.6.1" />
  <statusCode code="completed" />
  <effectiveTime nullFlavor="NA" />
  <value xsi:type="IVL_PQ" nullFlavor="NA" />
  <interpretationCode nullFlavor="NA" />
  <methodCode codeSystem="2.16.840.1.113883.6.1"
    codeSystemName="LOINC"
    code="50546-1"
    displayName="Bacterial susceptibility panel by Disk diffusion (KB)" />
</observation>
```

7.4 Antimicrobial Susceptibility Result Organizer (V3)

[organizer: identifier urn:hl7ii:2.16.840.1.113883.10.20.5.6.200:2016-08-01
(closed)]

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Table 40: Antimicrobial Susceptibility Result Organizer (V3) Contexts

Contained By:	Contains:
Antimicrobial Susceptibility Tests Organizer (V3) (required)	Antimicrobial Susceptibility Result Observation (V3) (required)

This organizer groups a battery of antimicrobial susceptibility tests. Each drug tested must have an observation for each method in the value set NHSNDrugSusceptibilityTestMethod.

Table 41: Antimicrobial Susceptibility Result Organizer (V3) Constraints Overview

XPath	Card.	Verb	Data Type	CONF#	Value
organizer (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.200:2016-08-01)					
@classCode	1..1	SHALL		3247-27103	urn:oid:2.16.840.1.113883.5.6 (HL7ActClass) = BATTERY
@moodCode	1..1	SHALL		3247-27104	urn:oid:2.16.840.1.113883.5.1001 (HL7ActMood) = EVN
templateId	1..1	SHALL		3247-30554	
@root	1..1	SHALL		3247-28208	2.16.840.1.113883.10.20.22.4.1
templateId	1..1	SHALL		3247-27105	
@root	1..1	SHALL		3247-27106	2.16.840.1.113883.10.20.5.6.200
@extension	1..1	SHALL		3247-30555	2016-08-01
id	1..1	SHALL		3247-27107	
@nullFlavor	1..1	SHALL		3247-30591	urn:oid:2.16.840.1.113883.5.1008 (HL7NullFlavor) = NA
code	1..1	SHALL		3247-27108	
@code	1..1	SHALL		3247-28101	18725-2
@codeSystem	1..1	SHALL		3247-28102	urn:oid:2.16.840.1.113883.6.1 (LOINC) = 2.16.840.1.113883.6.1
statusCode	1..1	SHALL		3247-27109	
@code	1..1	SHALL		3247-27110	urn:oid:2.16.840.1.113883.5.14 (HL7ActStatus) = completed
component	1..*	SHALL		3247-27111	
observation	1..1	SHALL		3247-27112	Antimicrobial Susceptibility Result Observation (V3) (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.186:2016-08-01)

1. Conforms to Result Organizer template (identifier: urn:oid:2.16.840.1.113883.10.20.22.4.1).
2. **SHALL** contain exactly one [1..1] @classCode="BATTERY" (CodeSystem: HL7ActClass urn:oid:2.16.840.1.113883.5.6) (CONF:3247-27103).
3. **SHALL** contain exactly one [1..1] @moodCode="EVN" (CodeSystem: HL7ActMood urn:oid:2.16.840.1.113883.5.1001) (CONF:3247-27104).

4. **SHALL** contain exactly one [1..1] **templateId** (CONF:3247-30554) such that it
 - a. **SHALL** contain exactly one [1..1] **@root**="2.16.840.1.113883.10.20.22.4.1" (CONF:3247-28208).
5. **SHALL** contain exactly one [1..1] **templateId** (CONF:3247-27105) such that it
 - a. **SHALL** contain exactly one [1..1] **@root**="2.16.840.1.113883.10.20.5.6.200" (CONF:3247-27106).
 - b. **SHALL** contain exactly one [1..1] **@extension**="2016-08-01" (CONF:3247-30555).
6. **SHALL** contain exactly one [1..1] **id** (CONF:3247-27107).
 - a. This id **SHALL** contain exactly one [1..1] **@nullFlavor**="NA" (CodeSystem: HL7NullFlavor urn:oid:2.16.840.1.113883.5.1008) (CONF:3247-30591).
7. **SHALL** contain exactly one [1..1] **code** (CONF:3247-27108).
 - a. This code **SHALL** contain exactly one [1..1] **@code**="18725-2" Microbiology Studies (CONF:3247-28101).
 - b. This code **SHALL** contain exactly one [1..1] **@codeSystem**="2.16.840.1.113883.6.1" (CodeSystem: LOINC urn:oid:2.16.840.1.113883.6.1) (CONF:3247-28102).
8. **SHALL** contain exactly one [1..1] **statusCode** (CONF:3247-27109).
 - a. This statusCode **SHALL** contain exactly one [1..1] **@code**="completed" (CodeSystem: HL7ActStatus urn:oid:2.16.840.1.113883.5.14) (CONF:3247-27110).

Each drug tested must have an observation for each method in the value set NHSNDrugSusceptibilityTestMethod.

9. **SHALL** contain at least one [1..*] **component** (CONF:3247-27111).
 - a. Such components **SHALL** contain exactly one [1..1] [Antimicrobial Susceptibility Result Observation \(V3\)](#) (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.186:2016-08-01) (CONF:3247-27112).

Figure 34: Antimicrobial Susceptibility Result Organizer (V3) Example

```
<organizer classCode="BATTERY" moodCode="EVN">
  <!-- [C-CDA R1.1] Result Organizer -->
  <templateId root="2.16.840.1.113883.10.20.22.4.1" />

  <!-- [HAI R3D1.1] Antimicrobial Susceptibility Result Organizer (V3) -->
  <templateId root="2.16.840.1.113883.10.20.5.6.200" extension="2016-08-01" />
  <id nullFlavor="NA" />
  <code code="18725-2"
    codeSystem="2.16.840.1.113883.6.1"
    codeSystemName="LOINC"
    displayName="Microbiology Studies" />
  <statusCode code="completed" />
  <component>
    <observation classCode="OBS" moodCode="EVN" negationInd="false">
      <!-- [C-CDA R1.1] Result Observation -->
      <templateId root="2.16.840.1.113883.10.20.22.4.2" />

      <!-- [HAI R3D1.1] Antimicrobial Susceptibility Result Observation (V3) -->
      <templateId root="2.16.840.1.113883.10.20.5.6.186" extension="2016-08-01" />
      ...
    </observation>
  </component>

  <!-- This observation specifies the susceptibility test was not done. (NegationInd =
true) -->
  <component>
    <observation classCode="OBS" moodCode="EVN" negationInd="true">
      <!-- [C-CDA R1.1] Result Observation -->
      <templateId root="2.16.840.1.113883.10.20.22.4.2" />

      <!-- [HAI R3D1.1] Antimicrobial Susceptibility Result Observation (V3) -->
      <templateId root="2.16.840.1.113883.10.20.5.6.186" extension="2016-08-01" />
      ...
    </observation>
  </component>
  ...
</organizer>
```

7.5 Antimicrobial Susceptibility Tests Organizer (V3)

[organizer: identifier urn:hl7ii:2.16.840.1.113883.10.20.5.6.177:2016-08-01 (closed)]

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Table 42: Antimicrobial Susceptibility Tests Organizer (V3) Contexts

Contained By:	Contains:
Isolate Susceptibility Tests Organizer (V4) (required)	Antimicrobial Susceptibility Final Interpretation Result (required) Antimicrobial Susceptibility Result Organizer (V3) (required)

This organizer identifies a set of antimicrobial susceptibility tests performed on a pathogen along with the final antimicrobial susceptibility result generated by those tests with regard to that pathogen-agent combination.

Table 43: Antimicrobial Susceptibility Tests Organizer (V3) Constraints Overview

XPath	Card.	Verb	Data Type	CONF#	Value
organizer (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.177:2016-08-01)					
@classCode	1..1	SHALL		3247-21091	urn:oid:2.16.840.1.113883.5.6 (HL7ActClass) = CLUSTER
@moodCode	1..1	SHALL		3247-21092	urn:oid:2.16.840.1.113883.5.1001 (HL7ActMood) = EVN
templateId	1..1	SHALL		3247-30498	
@root	1..1	SHALL		3247-30499	2.16.840.1.113883.10.20.22.4.1
templateId	1..1	SHALL		3247-21093	
@root	1..1	SHALL		3247-21094	2.16.840.1.113883.10.20.5.6.177
@extension	1..1	SHALL		3247-30500	2016-08-01
id	1..*	SHALL		3247-21097	
@nullFlavor	1..1	SHALL		3247-22723	NA
code	1..1	SHALL		3247-21098	
@code	1..1	SHALL		3247-21099	urn:oid:2.16.840.1.113883.6.1 (LOINC) = 18725-2
statusCode	1..1	SHALL		3247-21100	
@code	1..1	SHALL		3247-21101	urn:oid:2.16.840.1.113883.5.14 (HL7ActStatus) = completed
component	1..1	SHALL		3247-21104	
organizer	1..1	SHALL		3247-27178	Antimicrobial Susceptibility Result Organizer (V3) (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.200:2016-08-01)
component	1..1	SHALL		3247-21106	
observation	1..1	SHALL		3247-22712	Antimicrobial Susceptibility Final Interpretation Result (identifier: urn:oid:2.16.840.1.113883.10.20.5.6.175)

1. Conforms to Result Organizer template (identifier:
urn:oid:2.16.840.1.113883.10.20.22.4.1).
2. **SHALL** contain exactly one [1..1] **@classCode**="CLUSTER" (CodeSystem: HL7ActClass
urn:oid:2.16.840.1.113883.5.6) (CONF:3247-21091).
3. **SHALL** contain exactly one [1..1] **@moodCode**="EVN" (CodeSystem: HL7ActMood
urn:oid:2.16.840.1.113883.5.1001) (CONF:3247-21092).
4. **SHALL** contain exactly one [1..1] **templateId** (CONF:3247-30498) such that it
 - a. **SHALL** contain exactly one [1..1] **@root**="2.16.840.1.113883.10.20.22.4.1"
(CONF:3247-30499).
5. **SHALL** contain exactly one [1..1] **templateId** (CONF:3247-21093) such that it
 - a. **SHALL** contain exactly one [1..1] **@root**="2.16.840.1.113883.10.20.5.6.177"
(CONF:3247-21094).
 - b. **SHALL** contain exactly one [1..1] **@extension**="2016-08-01" (CONF:3247-30500).
6. **SHALL** contain at least one [1..*] **id** (CONF:3247-21097).
 - a. Such ids **SHALL** contain exactly one [1..1] **@nullFlavor**="NA" (CONF:3247-22723).
7. **SHALL** contain exactly one [1..1] **code** (CONF:3247-21098).
 - a. This code **SHALL** contain exactly one [1..1] **@code**="18725-2" Microbiology studies
(CodeSystem: LOINC urn:oid:2.16.840.1.113883.6.1) (CONF:3247-21099).
8. **SHALL** contain exactly one [1..1] **statusCode** (CONF:3247-21100).
 - a. This statusCode **SHALL** contain exactly one [1..1] **@code**="completed" Completed
(CodeSystem: HL7ActStatus urn:oid:2.16.840.1.113883.5.14) (CONF:3247-
21101).
9. **SHALL** contain exactly one [1..1] **component** (CONF:3247-21104) such that it
 - a. **SHALL** contain exactly one [1..1] Antimicrobial Susceptibility Result
Organizer (V3) (identifier:
urn:hl7ii:2.16.840.1.113883.10.20.5.6.200:2016-08-01) (CONF:3247-
27178).
10. **SHALL** contain exactly one [1..1] **component** (CONF:3247-21106) such that it
 - a. **SHALL** contain exactly one [1..1] Antimicrobial Susceptibility Final
Interpretation Result (identifier:
urn:oid:2.16.840.1.113883.10.20.5.6.175) (CONF:3247-22712).

Figure 35: Antimicrobial Susceptibility Tests Organizer (V3) Example

```
<organizer classCode="CLUSTER" moodCode="EVN">

  <!-- [C-CDA R1.1] Result Organizer -->
  <templateId root="2.16.840.1.113883.10.20.22.4.1" />

  <!-- [HAI R3D1.1] Antimicrobial Susceptibility Tests Organizer (V3) -->
  <templateId root="2.16.840.1.113883.10.20.5.6.177" extension="2016-08-01" />
  <id nullFlavor="NA" />
  <code code="18725-2"
    codeSystem="2.16.840.1.113883.6.1"
    codeSystemName="LOINC"
    displayName="Microbiology Studies" />
  <statusCode code="completed" />
  <component>
    <organizer classCode="BATTERY" moodCode="EVN">
      <!-- [C-CDA R1.1] Result Organizer -->
      <templateId root="2.16.840.1.113883.10.20.22.4.1" />

      <!-- [HAI R3D1.1] Antimicrobial Susceptibility Result Organizer (V3) -->
      <templateId root="2.16.840.1.113883.10.20.5.6.200" extension="2016-08-01" />
      ...
    </organizer>
  </component>
  <component>

    <!-- This observation specifies the Final Interpretation result. -->
    <observation classCode="OBS" moodCode="EVN">
      <!-- [HAI R1] Antimicrobial Susceptibility Final Interpretation Result -->
      <templateId root="2.16.840.1.113883.10.20.5.6.175" />

      <!-- [C-CDA R1.1] Result Observation -->
      <templateId root="2.16.840.1.113883.10.20.22.4.2" />
      ...
    </observation>
  </component>
</organizer>
```

7.6 ARO Staph Aureus Specific Tests Organizer

[organizer: identifier urn:oid:2.16.840.1.113883.10.20.5.6.190 (closed)]

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Table 44: ARO Staph Aureus Specific Tests Organizer Contexts

Contained By:	Contains:
Isolate Susceptibility Tests Organizer (V4) (optional)	ARO Staph Aureus Specific Tests Result Observation (required)

This organizer represents the set of specific tests conducted on an isolate of *Staphylococcus aureus* when performing antimicrobial susceptibility testing.

Table 45: ARO Staph Aureus Specific Tests Organizer Constraints Overview

XPath	Card.	Verb	Data Type	CONF#	Value
organizer (identifier: urn:oid:2.16.840.1.113883.10.20.5.6.190)					
@classCode	1..1	SHALL		86-22700	urn:oid:2.16.840.1.113883.5.6 (HL7ActClass) = CLUSTER
@moodCode	1..1	SHALL		86-22701	urn:oid:2.16.840.1.113883.5.1001 (HL7ActMood) = EVN
templateId	1..1	SHALL		86-28209	
@root	1..1	SHALL		86-28210	2.16.840.1.113883.10.20.22.4.1
templateId	1..1	SHALL		86-22702	
@root	1..1	SHALL		86-22703	2.16.840.1.113883.10.20.5.6.190
id	1..1	SHALL		86-22704	
@nullFlavor	1..1	SHALL		86-23365	NA
code	1..1	SHALL		86-22705	
@code	1..1	SHALL		86-22706	urn:oid:2.16.840.1.113883.6.1 (LOINC) = 18725-2
statusCode	1..1	SHALL		86-22707	
@code	1..1	SHALL		86-22708	urn:oid:2.16.840.1.113883.5.14 (HL7ActStatus) = completed
component	1..*	SHALL		86-22709	
observation	1..1	SHALL		86-22710	ARO Staph Aureus Specific Tests Result Observation (identifier: urn:oid:2.16.840.1.113883.10.20.5.6.189)

1. Conforms to Result Organizer template (identifier: urn:oid:2.16.840.1.113883.10.20.22.4.1).
2. **SHALL** contain exactly one [1..1] **@classCode**="CLUSTER" (CodeSystem: HL7ActClass urn:oid:2.16.840.1.113883.5.6) (CONF:86-22700).
3. **SHALL** contain exactly one [1..1] **@moodCode**="EVN" (CodeSystem: HL7ActMood urn:oid:2.16.840.1.113883.5.1001) (CONF:86-22701).
4. **SHALL** contain exactly one [1..1] **templateId** (CONF:86-28209) such that it
 - a. **SHALL** contain exactly one [1..1] **@root**="2.16.840.1.113883.10.20.22.4.1" (CONF:86-28210).
5. **SHALL** contain exactly one [1..1] **templateId** (CONF:86-22702) such that it
 - a. **SHALL** contain exactly one [1..1] **@root**="2.16.840.1.113883.10.20.5.6.190" (CONF:86-22703).
6. **SHALL** contain exactly one [1..1] **id** (CONF:86-22704).
 - a. This id **SHALL** contain exactly one [1..1] **@nullFlavor**="NA" (CONF:86-23365).
7. **SHALL** contain exactly one [1..1] **code** (CONF:86-22705).

- a. This code **SHALL** contain exactly one [1..1] `@code="18725-2"` Microbiology studies (CodeSystem: LOINC urn:oid:2.16.840.1.113883.6.1) (CONF:86-22706).
8. **SHALL** contain exactly one [1..1] `statusCode` (CONF:86-22707).
 - a. This `statusCode` **SHALL** contain exactly one [1..1] `@code="completed"` Completed (CodeSystem: HL7ActStatus urn:oid:2.16.840.1.113883.5.14) (CONF:86-22708).
9. **SHALL** contain at least one [1..*] `component` (CONF:86-22709) such that it
 - a. **SHALL** contain exactly one [1..1] [ARO Staph Aureus Specific Tests Result Observation](#) (identifier: urn:oid:2.16.840.1.113883.10.20.5.6.189) (CONF:86-22710).

Figure 36: ARO Staph Aureus Specific Tests Organizer Example

```
<organizer classCode="CLUSTER" moodCode="EVN">
  <!-- ARO Staph Aureus Specific Tests Organizer -->
  <templateId root="2.16.840.1.113883.10.20.5.6.190" />
  <!-- Conforms to Consolidated CDA Result Organizer template -->
  <templateId root="2.16.840.1.113883.10.20.22.4.1" />
  <id nullFlavor="NA" />
  <code code="18725-2"
        codeSystem="2.16.840.1.113883.6.1"
        codeSystemName="LOINC"
        displayName="Microbiology studies" />
  <statusCode code="completed" />
  <component>
    <observation classCode="OBS" moodCode="EVN">
      <!-- ARO Staph Aureus Specific Tests Result Observation -->
      <templateId root="2.16.840.1.113883.10.20.5.6.189" />
      <!-- Conforms to Consolidated CDA Result Observation template -->
      <templateId root="2.16.840.1.113883.10.20.22.4.2" />
      ...
    </observation>
  </component>
  ...
</organizer>
```

7.7 ARO Staph Aureus Specific Tests Result Observation

[observation: identifier urn:oid:2.16.840.1.113883.10.20.5.6.189 (closed)]

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Table 46: ARO Staph Aureus Specific Tests Result Observation Contexts

Contained By:	Contains:
ARO Staph Aureus Specific Tests Organizer (required)	

This clinical statement represents the results of a Staphylococcus aureus-specific test when performing antimicrobial susceptibility testing. The type of test is recorded in the code element; the results of the test are recorded in the value element.

Table 47: ARO Staph Aureus Specific Tests Result Observation Constraints Overview

XPath	Card.	Verb	Data Type	CONF#	Value
observation (identifier: urn:oid:2.16.840.1.113883.10.20.5.6.189)					
@classCode	1..1	SHALL		86-22687	urn:oid:2.16.840.1.113883.5.6 (HL7ActClass) = OBS
@moodCode	1..1	SHALL		86-22688	urn:oid:2.16.840.1.113883.5.1001 (HL7ActMood) = EVN
templateId	1..1	SHALL		86-28211	
@root	1..1	SHALL		86-28212	2.16.840.1.113883.10.20.22.4.2
templateId	1..1	SHALL		86-22689	
@root	1..1	SHALL		86-22690	2.16.840.1.113883.10.20.5.6.189
id	1..1	SHALL		86-22691	
@nullFlavor	1..1	SHALL		86-22692	NA
code	1..1	SHALL		86-22693	urn:oid:2.16.840.1.114222.4.11.7160 (NHSNStaphAureusSpecificTest)
statusCode	1..1	SHALL		86-22694	
@code	1..1	SHALL		86-22695	completed
effectiveTime	1..1	SHALL		86-22696	
@nullFlavor	1..1	SHALL		86-22697	NA
value	1..1	SHALL	CD	86-22698	urn:oid:2.16.840.1.114222.4.11.6074 (NHSNStaphAureusTestResults)

1. Conforms to Result Observation template (identifier: urn:oid:2.16.840.1.113883.10.20.22.4.2).
2. **SHALL** contain exactly one [1..1] **@classCode**="OBS" (CodeSystem: HL7ActClass urn:oid:2.16.840.1.113883.5.6) (CONF:86-22687).
3. **SHALL** contain exactly one [1..1] **@moodCode**="EVN" (CodeSystem: HL7ActMood urn:oid:2.16.840.1.113883.5.1001) (CONF:86-22688).
4. **SHALL** contain exactly one [1..1] **templateId** (CONF:86-28211) such that it
 - a. **SHALL** contain exactly one [1..1] **@root**="2.16.840.1.113883.10.20.22.4.2" (CONF:86-28212).
5. **SHALL** contain exactly one [1..1] **templateId** (CONF:86-22689) such that it
 - a. **SHALL** contain exactly one [1..1] **@root**="2.16.840.1.113883.10.20.5.6.189" (CONF:86-22690).
6. **SHALL** contain exactly one [1..1] **id** (CONF:86-22691).
 - a. This id **SHALL** contain exactly one [1..1] **@nullFlavor**="NA" (CONF:86-22692).

7. **SHALL** contain exactly one [1..1] **code**, which **SHALL** be selected from ValueSet [NHSNStaphAureusSpecificTest](#) urn:oid:2.16.840.1.114222.4.11.7160 **DYNAMIC** (CONF:86-22693).
8. **SHALL** contain exactly one [1..1] **statusCode** (CONF:86-22694).
 - a. This statusCode **SHALL** contain exactly one [1..1] **@code="completed"** (CONF:86-22695).
9. **SHALL** contain exactly one [1..1] **effectiveTime** (CONF:86-22696).
 - a. This effectiveTime **SHALL** contain exactly one [1..1] **@nullFlavor="NA"** (CONF:86-22697).
10. **SHALL** contain exactly one [1..1] **value** with **@xsi:type="CD"**, where the code **SHALL** be selected from ValueSet [NHSNStaphAureusTestResults](#) urn:oid:2.16.840.1.114222.4.11.6074 **DYNAMIC** (CONF:86-22698).

Table 48: NHSNStaphAureusSpecificTest

Value Set: NHSNStaphAureusSpecificTest urn:oid:2.16.840.1.114222.4.11.7160 (Clinical Focus: NHSN surveillance reporting: This value set contains codes describing the type of Staphylococcus aureus-specific test used to perform antimicrobial susceptibility testing.),(Data Element Scope: Code identifying the type of observation.),(Inclusion Criteria:),(Exclusion Criteria:) This value set was imported on 10/14/2020 with a version of Latest. Value Set Source: https://vsac.nlm.nih.gov/valueset/2.16.840.1.114222.4.11.7160/expansion			
Code	Code System	Code System OID	Print Name
42721-1	LOINC	urn:oid:2.16.840.1.113883.6.1	Oxacillin Resistant Staphylococcus sp isolate [Presence] in Isolate by Latex agglutination
48813-0	LOINC	urn:oid:2.16.840.1.113883.6.1	Methicillin resistance mecA gene [Presence] by Molecular method

Table 49: NHSNStaphAureusTestResults

Value Set: NHSNStaphAureusTestResults urn:oid:2.16.840.1.114222.4.11.6074 (Clinical Focus: NHSN surveillance reporting: This value set contains codes describing the results of a Staphylococcus aureus-specific test when performing antimicrobial susceptibility testing.),(Data Element Scope: A coded observation value describing the result of a Staphylococcus aureus-specific test when performing antimicrobial susceptibility testing),(Inclusion Criteria:),(Exclusion Criteria:) This value set was imported on 10/14/2020 with a version of Latest. Value Set Source: https://vsac.nlm.nih.gov/valueset/2.16.840.1.114222.4.11.6074/expansion			
Code	Code System	Code System OID	Print Name
10828004	SNOMED CT	urn:oid:2.16.840.1.113883.6.96	Positive (qualifier value)
260385009	SNOMED CT	urn:oid:2.16.840.1.113883.6.96	Negative (qualifier value)
261665006	SNOMED CT	urn:oid:2.16.840.1.113883.6.96	Unknown (qualifier value)

Figure 37: ARO Staph Aureus Specific Tests Result Example

<pre> <observation classCode="OBS" moodCode="EVN"> <!-- ARO Staph Aureus Specific Tests Result Observation --> <templateId root="2.16.840.1.113883.10.20.5.6.189"/> <!-- Conforms to Consolidated CDA Result Observation template --> <templateId root="2.16.840.1.113883.10.20.22.4.2"/> <id nullFlavor="NA"/> <code code="42721-1" displayName="Oxacillin Resistant Staphylococcus sp isolate [Presence] in Isolate by Latex agglutination" codeSystem="2.16.840.1.113883.6.1" codeSystemName="LOINC"/> <statusCode code="completed"/> <effectiveTime nullFlavor="NA"/> <value xsi:type="CD" codeSystem="2.16.840.1.113883.6.96" codeSystemName="SNOMED CT" code="260385009" displayName="Negative"/> </observation> </pre>

7.8 Birth Sex Observation

[observation: identifier urn:hl7ii:2.16.840.1.113883.10.20.22.4.200:2016-06-01 (open)]

Published as part of C-CDA 2.1 Companion Guide

Table 50: Birth Sex Observation Contexts

Contained By:	Contains:
NHSN Social History Section (required)	

This observation represents the sex of the patient at birth. It is the sex that is entered on the person's birth certificate at time of birth.

This observation is not appropriate for recording patient gender (administrativeGender).

Table 51: Birth Sex Observation Constraints Overview

XPath	Card.	Verb	Data Type	CONF#	Value
observation (identifier: urn:hl7ii:2.16.840.1.113883.10.20.22.4.200:2016-06-01)					
@classCode	1..1	SHALL		3250-18230	urn:oid:2.16.840.1.113883.5.6 (HL7ActClass) = OBS
@moodCode	1..1	SHALL		3250-18231	urn:oid:2.16.840.1.113883.5.1001 (HL7ActMood) = EVN
templateId	1..1	SHALL		3250-18232	
@root	1..1	SHALL		3250-18233	2.16.840.1.113883.10.20.22.4.200
@extension	1..1	SHALL		3250-32949	2016-06-01
code	1..1	SHALL		3250-18234	
@code	1..1	SHALL		3250-18235	76689-9
@codeSystem	1..1	SHALL		3250-21163	urn:oid:2.16.840.1.113883.6.1 (LOINC) = 2.16.840.1.113883.6.1
statusCode	1..1	SHALL		3250-18124	
@code	1..1	SHALL		3250-18125	urn:oid:2.16.840.1.113883.5.14 (HL7ActStatus) = completed
value	1..1	SHALL	CD	3250-32947	urn:oid:2.16.840.1.113762.1.4.1 (ONC Administrative Sex)

1. **SHALL** contain exactly one [1..1] **@classCode**="OBS" (CodeSystem: HL7ActClass urn:oid:2.16.840.1.113883.5.6 **STATIC**) (CONF:3250-18230).
2. **SHALL** contain exactly one [1..1] **@moodCode**="EVN" (CodeSystem: HL7ActMood urn:oid:2.16.840.1.113883.5.1001 **STATIC**) (CONF:3250-18231).
3. **SHALL** contain exactly one [1..1] **templateId** (CONF:3250-18232) such that it
 - a. **SHALL** contain exactly one [1..1] **@root**="2.16.840.1.113883.10.20.22.4.200" (CONF:3250-18233).
 - b. **SHALL** contain exactly one [1..1] **@extension**="2016-06-01" (CONF:3250-32949).
4. **SHALL** contain exactly one [1..1] **code** (CONF:3250-18234).
 - a. This code **SHALL** contain exactly one [1..1] **@code**="76689-9" Sex Assigned At Birth (CONF:3250-18235).
 - b. This code **SHALL** contain exactly one [1..1] **@codeSystem**="2.16.840.1.113883.6.1" (CodeSystem: LOINC urn:oid:2.16.840.1.113883.6.1 **STATIC**) (CONF:3250-21163).

5. **SHALL** contain exactly one [1..1] **statusCode** (CONF:3250-18124).
 - a. This **statusCode** **SHALL** contain exactly one [1..1] **@code="completed"** Completed (CodeSystem: HL7ActStatus urn:oid:2.16.840.1.113883.5.14 **STATIC**) (CONF:3250-18125).
6. **SHALL** contain exactly one [1..1] **value** with **@xsi:type="CD"**, where the code **SHALL** be selected from ValueSet **ONC Administrative Sex** urn:oid:2.16.840.1.113762.1.4.1 **STATIC** 2016-06-01 (CONF:3250-32947).
 - a. If value/**@code** not from value set ONC Administrative Sex urn:oid:2.16.840.1.113762.1.4.1 **STATIC** 2016-06-01, then value/**@nullFlavor** **SHALL** be "UNK" (CONF:3250-32948).

Table 52: ONC Administrative Sex

Value Set: ONC Administrative Sex urn:oid:2.16.840.1.113762.1.4.1 (Clinical Focus: Gender identity restricted to only Male and Female used in administrative situations requiring a restriction to these two categories.),(Data Element Scope: Gender),(Inclusion Criteria: Male and Female only.),(Exclusion Criteria: Any gender identity that is not male or female.) This value set was imported on 10/17/2019 with a version of 20190425. Value Set Source: https://vsac.nlm.nih.gov/valueset/2.16.840.1.113762.1.4.1/expansion			
Code	Code System	Code System OID	Print Name
F	Administrative Gender	urn:oid:2.16.840.1.113883.5.1	Female
M	Administrative Gender	urn:oid:2.16.840.1.113883.5.1	Male

Figure 38: Birth Sex Example

```
<observation classCode="OBS" moodCode="EVN">
  <!-- New templateId for Birth Sex -->
  <!-- Not asserting conformance to Social History Observation due to different vocab. --
>
  <templateId root="2.16.840.1.113883.10.20.22.4.200" extension="2016-06-01"/>
  <code code="76689-9" codeSystem="2.16.840.1.113883.6.1"
    displayName="Sex Assigned At Birth"/>
  <text>
    <reference value="#BSex_Narrative1"/>
  </text>
  <statusCode code="completed"/>
  <!-- effectiveTime if present should match birthTime -->
  <!-- Request name change to QRDA value set (2.16.840.1.113762.1.4.1) - ONC Birth Sex -
->
  <value xsi:type="CD" codeSystem="2.16.840.1.113883.5.1"
codeSystemName="AdministrativeGender"
    code="F" displayName="Female">
    <originalText>
      <reference value="#BSex_value"/>
    </originalText>
  </value>
  <author>
    ...
  </author>
</observation>
```

7.9 Gender Identity Observation (V3)

[observation: identifier urn:hl7ii:2.16.840.1.113883.10.20.34.3.45:2022-06-01
(open)]

Draft as part of C-CDA 2.1 Companion Guide V3

Table 53: Gender Identity Observation (V3) Contexts

Contained By:	Contains:
NHSN Social History Section (optional)	

This observation represents the gender identity of the patient, defined as:

"One's basic sense of being male, female, or other gender (for example, transgender or gender queer). Gender identity can be congruent or incongruent with one's sex assigned at birth based on the appearance of external genitalia." (Advancing Effective Communication, Cultural Competence, and Patient- and Family-Centered Care for the Lesbian, Gay, Bisexual, and Transgender (LGBT) Community—A Field Guide, The Joint Commission (2011).)

This template follows the guidelines from the HL7 Gender Harmony project . This template is based on C-CDA Social History Observation template.

This observation is not appropriate for recording patient gender (administrativeGender) or birth sex.

Table 54: Gender Identity Observation (V3) Constraints Overview

XPath	Card.	Verb	Data Type	CONF#	Value
observation (identifier: urn:hl7ii:2.16.840.1.113883.10.20.34.3.45:2022-06-01)					
@classCode	1..1	SHALL		4515-1230	urn:oid:2.16.840.1.113883.5.6 (HL7ActClass) = OBS
@moodCode	1..1	SHALL		4515-1231	urn:oid:2.16.840.1.113883.5.1001 (HL7ActMood) = EVN
templateId	1..1	SHALL		4515-1221	
@root	1..1	SHALL		4515-1225	2.16.840.1.113883.10.20.34.3.45
@extension	1..1	SHALL		4515-1226	2022-06-01
code	1..1	SHALL		4515-1222	
@code	1..1	SHALL		4515-1227	76691-5
@codeSystem	1..1	SHALL		4515-1228	urn:oid:2.16.840.1.113883.6.1 (LOINC) = 2.16.840.1.113883.6.1
statusCode	1..1	SHALL		4515-33031	
@code	1..1	SHALL		4515-33032	urn:oid:2.16.840.1.113883.5.14 (HL7ActStatus) = completed
effectiveTime	1..1	SHALL		4515-33033	
low	1..1	SHALL		4515-33034	
high	0..1	MAY		4515-33035	
value	1..1	SHALL	CD	4515-1223	urn:oid:2.16.840.1.113762.1.4.1021.101 (Gender Identity USCDI core)
@nullFlavor	0..1	MAY		4515-1232	urn:oid:2.16.840.1.113762.1.4.1114.17 (Asked but Unknown and Other)

1. Conforms to Social History Observation (V3) template (identifier: urn:hl7ii:2.16.840.1.113883.10.20.22.4.38:2015-08-01).
2. **SHALL** contain exactly one [1..1] **@classCode**="OBS" (CodeSystem: HL7ActClass urn:oid:2.16.840.1.113883.5.6 **STATIC**) (CONF:4515-1230).
3. **SHALL** contain exactly one [1..1] **@moodCode**="EVN" (CodeSystem: HL7ActMood urn:oid:2.16.840.1.113883.5.1001 **STATIC**) (CONF:4515-1231).
4. **SHALL** contain exactly one [1..1] **templateId** (CONF:4515-1221) such that it

- a. **SHALL** contain exactly one [1..1] **@root**="2.16.840.1.113883.10.20.34.3.45" (CONF:4515-1225).
 - b. **SHALL** contain exactly one [1..1] **@extension**="2022-06-01" (CONF:4515-1226).
- 5. **SHALL** contain exactly one [1..1] **code** (CONF:4515-1222).
 - a. This code **SHALL** contain exactly one [1..1] **@code**=" 76691-5" Gender identity (CONF:4515-1227).
 - b. This code **SHALL** contain exactly one [1..1] **@codeSystem**="2.16.840.1.113883.6.1" (CodeSystem: LOINC urn:oid:2.16.840.1.113883.6.1 **STATIC**) (CONF:4515-1228).
- 6. **SHALL** contain exactly one [1..1] **statusCode** (CONF:4515-33031).
 - a. This statusCode **SHALL** contain exactly one [1..1] **@code**="completed" (CodeSystem: HL7ActStatus urn:oid:2.16.840.1.113883.5.14) (CONF:4515-33032).
- 7. **SHALL** contain exactly one [1..1] **effectiveTime** (CONF:4515-33033).

The effectiveTime represents the clinically relevant time of the observation. A patient's "gender identity" may change and using effectiveTime/low and effectiveTime/high defines the time during which the patient had identified as specified.

- a. This effectiveTime **SHALL** contain exactly one [1..1] **low** (CONF:4515-33034).
 - b. This effectiveTime **MAY** contain zero or one [0..1] **high** (CONF:4515-33035).
- 8. **SHALL** contain exactly one [1..1] **value** with **@xsi:type**="CD", where the code **SHALL** be selected from ValueSet [Gender Identity USCDI core](#) urn:oid:2.16.840.1.113762.1.4.1021.101 **DYNAMIC** (CONF:4515-1223).

To represent additional Gender Identities, set nullFlavor="OTH". To represent "choose not to disclose", set nullFlavor="ASKU".

- a. This value **MAY** contain zero or one [0..1] **@nullFlavor**, which **SHOULD** be selected from ValueSet [Asked but Unknown and Other](#) urn:oid:2.16.840.1.113762.1.4.1114.17 **DYNAMIC** (CONF:4515-1232).

Table 55: Gender Identity USCDI core

<p>Value Set: Gender Identity USCDI core urn:oid:2.16.840.1.113762.1.4.1021.101</p> <p>(Clinical Focus: Concepts that are used to describe a person's socially acknowledged gender that are used, at a minimum, in the USA. This is the gender they identify as. These are not concepts used to describe a person's sexual orientation (who they are attracted to).),(Data Element Scope: gender identity),(Inclusion Criteria: Concepts that can represent a type of gender that as used in the USA. This is not restricted to male and female.),(Exclusion Criteria: Concepts that are improper to use in the USA for gender identity. Concepts used to describe a person's sexual orientation. Concepts that are used to represent when data is absent or not represented in the provided list.)</p> <p>This value set was imported on 3/16/2022 with a version of Latest.</p> <p>Value Set Source: https://vsac.nlm.nih.gov/valueset/2.16.840.1.113762.1.4.1021.101/expansion</p>			
Code	Code System	Code System OID	Print Name
407376001	SNOMED CT	urn:oid:2.16.840.1.113883.6.96	Male-to-female transsexual (finding)
407377005	SNOMED CT	urn:oid:2.16.840.1.113883.6.96	Female-to-male transsexual (finding)
44613100012 4102	SNOMED CT	urn:oid:2.16.840.1.113883.6.96	Identifies as non-conforming gender (finding)
44614100012 4107	SNOMED CT	urn:oid:2.16.840.1.113883.6.96	Identifies as female gender (finding)
44615100012 4109	SNOMED CT	urn:oid:2.16.840.1.113883.6.96	Identifies as male gender (finding)

Table 56: Asked but Unknown and Other

<p>Value Set: Asked but Unknown and Other urn:oid:2.16.840.1.113762.1.4.1114.17</p> <p>(Clinical Focus: Data absent reasons specific for representing only asked but unknown and other),(Data Element Scope: any data representation that supports inclusion of data absent reasons),(Inclusion Criteria: Asked but no answer known and Other meant to mean data not available for selection),(Exclusion Criteria: all other codes)</p> <p>This value set was imported on 3/16/2022 with a version of Latest.</p> <p>Value Set Source: https://vsac.nlm.nih.gov/valueset/2.16.840.1.113762.1.4.1114.17/expansion</p>			
Code	Code System	Code System OID	Print Name
ASKU	HL7NullFlavor	urn:oid:2.16.840.1.113883.5.10 08	asked but unknown
OTH	HL7NullFlavor	urn:oid:2.16.840.1.113883.5.10 08	other

Figure 39: Gender Identity Observation Example

```
<observation classCode="OBS" moodCode="EVN">
  <!-- Gender Identity Observation -->
  <templateId root="2.16.840.1.113883.10.20.34.3.45" extension="2019-04-01" />
  <templateId root="2.16.840.1.113883.10.20.34.3.45" extension="2022-06-01" />
  <id root="5501b49a-32ea-4c78-9c31-3dbe782871b7" />
  <code code="76691-5"
    displayName="Gender identity"
    codeSystem="2.16.840.1.113883.6.1"
    codeSystemName="LOINC" />
  <statusCode code="completed" />
  <effectiveTime>
    <low value="20180703" />
  </effectiveTime>
  <value xsi:type="CD" code="446141000124107"
    displayName="Identifies as female gender (finding)"
    codeSystem="2.16.840.1.113883.6.96"
    codeSystemName="SNOMED CT" />
</observation>
```

7.10 Isolate Susceptibility Tests Organizer (V4)

[organizer: identifier urn:hl7ii:2.16.840.1.113883.10.20.5.6.201:2020-04-01
(closed)]

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Table 57: Isolate Susceptibility Tests Organizer (V4) Contexts

Contained By:	Contains:
Specimen Collection Procedure (ARO) (V4) (required)	ARO Staph Aureus Specific Tests Organizer (optional) Antimicrobial Susceptibility Tests Organizer (V3) (required) Antimicrobial Susceptibility Isolate Participant (V2) (required)

This organizer records a laboratory-identified microorganism isolate and details of the antimicrobial susceptibility tests performed on that isolate.

Additionally, it records the unique isolate identifier for purposes of laboratory tracking. Special tests done on isolates of *Staphylococcus aureus* are also recorded here. The ARO Staph Aureus Specific Tests Organizer is omitted from this clinical statement if *Staph. aureus* is NOT the identified pathogen (i.e., the participant subject).

Table 58: Isolate Susceptibility Tests Organizer (V4) Constraints Overview

XPath	Card.	Verb	Data Type	CONF#	Value
organizer (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.201:2020-04-01)					
@classCode	1..1	SHALL		4459-27120	urn:oid:2.16.840.1.113883.5.6 (HL7ActClass) = CLUSTER
@moodCode	1..1	SHALL		4459-27121	urn:oid:2.16.840.1.113883.5.1001 (HL7ActMood) = EVN
templateId	1..1	SHALL		4459-27122	
@root	1..1	SHALL		4459-27123	2.16.840.1.113883.10.20.5.6.201
@extension	1..1	SHALL		4459-30470	2020-04-01
id	1..*	SHALL		4459-27124	
@nullFlavor	1..1	SHALL		4459-27125	NA
code	1..1	SHALL		4459-27126	
@code	1..1	SHALL		4459-27127	urn:oid:2.16.840.1.113883.6.1 (LOINC) = 18725-2
statusCode	1..1	SHALL		4459-27128	
@code	1..1	SHALL		4459-27129	urn:oid:2.16.840.1.113883.5.14 (HL7ActStatus) = completed
participant	1..1	SHALL		4459-27130	Antimicrobial Susceptibility Isolate Participant (V2) (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.202:2020-04-01)
component	0..1	MAY		4459-27156	
organizer	1..1	SHALL		4459-27157	ARO Staph Aureus Specific Tests Organizer (identifier: urn:oid:2.16.840.1.113883.10.20.5.6.190)
component	1..*	SHALL		4459-27158	
organizer	1..1	SHALL		4459-30469	Antimicrobial Susceptibility Tests Organizer (V3) (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.177:2016-08-01)

1. **SHALL** contain exactly one [1..1] **@classCode**="CLUSTER" (CodeSystem: HL7ActClass urn:oid:2.16.840.1.113883.5.6) (CONF:4459-27120).
2. **SHALL** contain exactly one [1..1] **@moodCode**="EVN" (CodeSystem: HL7ActMood urn:oid:2.16.840.1.113883.5.1001) (CONF:4459-27121).
3. **SHALL** contain exactly one [1..1] **templateId** (CONF:4459-27122) such that it
 - a. **SHALL** contain exactly one [1..1] **@root**="2.16.840.1.113883.10.20.5.6.201" (CONF:4459-27123).
 - b. **SHALL** contain exactly one [1..1] **@extension**="2020-04-01" (CONF:4459-30470).
4. **SHALL** contain at least one [1..*] **id** (CONF:4459-27124).
 - a. Such ids **SHALL** contain exactly one [1..1] **@nullFlavor**="NA" (CONF:4459-27125).
5. **SHALL** contain exactly one [1..1] **code** (CONF:4459-27126).
 - a. This code **SHALL** contain exactly one [1..1] **@code**="18725-2" Microbiology studies (CodeSystem: LOINC urn:oid:2.16.840.1.113883.6.1) (CONF:4459-27127).
6. **SHALL** contain exactly one [1..1] **statusCode** (CONF:4459-27128).
 - a. This statusCode **SHALL** contain exactly one [1..1] **@code**="completed" Completed (CodeSystem: HL7ActStatus urn:oid:2.16.840.1.113883.5.14) (CONF:4459-27129).
7. **SHALL** contain exactly one [1..1] [Antimicrobial Susceptibility Isolate Participant \(V2\)](#) (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.202:2020-04-01) (CONF:4459-27130).

This component is included only if the isolate is Staphylococcus aureus.

8. **MAY** contain zero or one [0..1] **component** (CONF:4459-27156) such that it
 - a. **SHALL** contain exactly one [1..1] [ARO Staph Aureus Specific Tests Organizer](#) (identifier: urn:oid:2.16.840.1.113883.10.20.5.6.190) (CONF:4459-27157).
9. **SHALL** contain at least one [1..*] **component** (CONF:4459-27158) such that it
 - a. **SHALL** contain exactly one [1..1] [Antimicrobial Susceptibility Tests Organizer \(V3\)](#) (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.177:2016-08-01) (CONF:4459-30469).

Figure 40: Isolate Susceptibility Tests Organizer (V4) Example

```

<organizer classCode="CLUSTER" moodCode="EVN">

  <!-- [HAI R3D1.1] Isolate Susceptibility Tests Organizer (V4) -->
  <templateId root="2.16.840.1.113883.10.20.5.6.201" extension="2020-04-01" />
  <id nullFlavor="NA" />
  <code code="18725-2"
    codeSystem="2.16.840.1.113883.6.1"
    codeSystemName="LOINC"
    displayName="Microbiology Studies" />
  <statusCode code="completed" />
  <participant typeCode="SBJ">

    <!-- [HAI R3 N1] Antimicrobial Susceptibility Isolate Participant (V2) -->
    <templateId root="2.16.840.1.113883.10.20.5.6.202" extension="2020-04-01" />
    ...
  </participant>

  <!-- This component is included only if the pathogen identified is Staph. aureus -->
  <component>
    <organizer classCode="CLUSTER" moodCode="EVN">
      <!-- [C-CDA R1.1] Result Organizer -->
      <templateId root="2.16.840.1.113883.10.20.22.4.1" />

      <!-- [HAI R1] ARO Staph Aureus Specific Tests Organizer -->
      <templateId root="2.16.840.1.113883.10.20.5.6.190" />
      ...
    </organizer>
  </component>

  <!-- Clarithromycin Susceptibility Testing -->
  <component>
    <organizer classCode="CLUSTER" moodCode="EVN">
      <!-- [C-CDA R1.1] Result Organizer -->
      <templateId root="2.16.840.1.113883.10.20.22.4.1" />

      <!-- [HAI R3D1.1] Antimicrobial Susceptibility Tests Organizer (V3) -->
      <templateId root="2.16.840.1.113883.10.20.5.6.177" extension="2016-08-01" />
      ...
    </organizer>
  </component>

  <!-- Vancomycin susceptibility testing -->
  <component>
    <organizer classCode="CLUSTER" moodCode="EVN">
      <!-- [C-CDA R1.1] Result Organizer -->
      <templateId root="2.16.840.1.113883.10.20.22.4.1" />

      <!-- [HAI R3D1.1] Antimicrobial Susceptibility Tests Organizer (V3) -->
      <templateId root="2.16.840.1.113883.10.20.5.6.177" extension="2016-08-01" />
      ...
    </organizer>
  </component>
</organizer>

```

7.11 NHSN Comment

[act: identifier urn:hl7ii:2.16.840.1.113883.10.20.5.6.243:2017-04-01 (closed)]

Published as part of NHSN Healthcare Associated Infection (HAI) Reports Release 3, STU 2 - US Realm

Table 59: NHSN Comment Contexts

Contained By:	Contains:
NHSN Comment Section (required)	

A comment is free text information of less than 2000 characters. A comment can contain information that is relevant to the whole report (it is not specific to any section of a report).

Table 60: NHSN Comment Constraints Overview

XPath	Card.	Verb	Data Type	CONF#	Value
act (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.243:2017-04-01)					
@classCode	1..1	SHALL		3311-87	urn:oid:2.16.840.1.113883.5.6 (HL7ActClass) = ACT
@moodCode	1..1	SHALL		3311-88	urn:oid:2.16.840.1.113883.5.1001 (HL7ActMood) = EVN
templateId	1..1	SHALL		3311-79	
@root	1..1	SHALL		3311-89	2.16.840.1.113883.10.20.5.6.243
@extension	1..1	SHALL		3311-92	2017-04-01
code	1..1	SHALL		3311-80	
@code	1..1	SHALL		3311-90	86467-8
@codeSystem	1..1	SHALL		3311-91	urn:oid:2.16.840.1.113883.6.1 (LOINC) = 2.16.840.1.113883.6.1
text	1..1	SHALL		3311-81	

1. **SHALL** contain exactly one [1..1] @classCode="ACT" Act (CodeSystem: HL7ActClass urn:oid:2.16.840.1.113883.5.6 **STATIC**) (CONF:3311-87).
2. **SHALL** contain exactly one [1..1] @moodCode="EVN" Event (CodeSystem: HL7ActMood urn:oid:2.16.840.1.113883.5.1001 **STATIC**) (CONF:3311-88).
3. **SHALL** contain exactly one [1..1] templateId (CONF:3311-79) such that it
 - a. **SHALL** contain exactly one [1..1] @root="2.16.840.1.113883.10.20.5.6.243" (CONF:3311-89).
 - b. **SHALL** contain exactly one [1..1] @extension="2017-04-01" (CONF:3311-92).
4. **SHALL** contain exactly one [1..1] code (CONF:3311-80).
 - a. This code **SHALL** contain exactly one [1..1] @code="86467-8" Report comment Narrative (CONF:3311-90).

- b. This code **SHALL** contain exactly one [1..1]
@codeSystem="2.16.840.1.113883.6.1" (CodeSystem: LOINC
urn:oid:2.16.840.1.113883.6.1) (CONF:3311-91).
- 5. **SHALL** contain exactly one [1..1] **text** (CONF:3311-81).
 - a. The length of the free text comment **SHALL** be less than 2000 characters (CONF:3311-93).

Figure 41: NHSN Comment Example

```
<act classCode="ACT" moodCode="EVN">
  <!-- [HAI R3D2] NHSN Comment -->
  <templateId root="2.16.840.1.113883.10.20.5.6.243" extension="2017-04-01" />
  <code code="86467-8"
    displayName="Report comment Narrative"
    codeSystem="2.16.840.1.113883.6.1"
    codeSystemName="LOINC" />
  <!-- Less than 2000 characters -->
  <text>NHSN text comment that is less than 2000 characters.</text>
</act>
```

7.12 Patient Admitted This Encounter Observation

[observation: identifier urn:hl7ii:2.16.840.1.113883.10.20.5.6.266:2020-04-01
(open)]

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Release 3, Normative 1 - US Realm

Table 61: Patient Admitted This Encounter Observation Contexts

Contained By:	Contains:
Specimen Collection Encounter (ARO) (V2) (required)	

This observation represents whether or not the patient was admitted to an inpatient location during this encounter. If the patient was admitted to an inpatient location during this encounter, set the value to true. If the patient was not admitted to an inpatient location during this encounter, set the value to false.

Table 62: Patient Admitted This Encounter Observation Constraints Overview

XPath	Card.	Verb	Data Type	CONF#	Value
observation (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.266:2020-04-01)					
@classCode	1..1	SHALL		4459-5	urn:oid:2.16.840.1.113883.5.6 (HL7ActClass) = OBS
@moodCode	1..1	SHALL		4459-6	urn:oid:2.16.840.1.113883.5.1001 (HL7ActMood) = EVN
templateId	1..1	SHALL		4459-4	
@root	1..1	SHALL		4459-12	2.16.840.1.113883.10.20.5.6.266
@extension	1..1	SHALL		4459-13	2020-04-01
code	1..1	SHALL		4459-1	
@code	1..1	SHALL		4459-7	95415-6
@codeSystem	1..1	SHALL		4459-8	urn:oid:2.16.840.1.113883.6.1 (LOINC) = 2.16.840.1.113883.6.1
value	1..1	SHALL	BL	4459-3	

1. **SHALL** contain exactly one [1..1] **@classCode**="OBS" Observation (CodeSystem: HL7ActClass urn:oid:2.16.840.1.113883.5.6 **STATIC**) (CONF:4459-5).
2. **SHALL** contain exactly one [1..1] **@moodCode**="EVN" Event (CodeSystem: HL7ActMood urn:oid:2.16.840.1.113883.5.1001 **STATIC**) (CONF:4459-6).
3. **SHALL** contain exactly one [1..1] **templateId** (CONF:4459-4).
 - a. This templateId **SHALL** contain exactly one [1..1] **@root**="2.16.840.1.113883.10.20.5.6.266" (CONF:4459-12).
 - b. This templateId **SHALL** contain exactly one [1..1] **@extension**="2020-04-01" (CONF:4459-13).
4. **SHALL** contain exactly one [1..1] **code** (CONF:4459-1).
 - a. This code **SHALL** contain exactly one [1..1] **@code**="95415-6" Patient admitted as an inpatient (CONF:4459-7).
 - b. This code **SHALL** contain exactly one [1..1] **@codeSystem**="2.16.840.1.113883.6.1" (CodeSystem: LOINC urn:oid:2.16.840.1.113883.6.1) (CONF:4459-8).

If the patient was admitted to an inpatient location during this encounter, set the value to true. If the patient was not admitted to an inpatient location during this encounter, set the value to false.

5. **SHALL** contain exactly one [1..1] **value** with **@xsi:type**="BL" (CONF:4459-3).

Figure 42: Patient Admitted This Encounter Observation Example

```
<observation classCode="OBS" moodCode="EVN">
  <!-- [HAI R3N1] Patient Admitted This Encounter Observation -->
  <templateId root="2.16.840.1.113883.10.20.5.6.266" extension="2020-04-01" />
  <code code="95415-6"
    displayName="Patient admitted as an inpatient"
    codeSystem="2.16.840.1.113883.6.1"
    codeSystemName="LOINC" />
  <!-- If the patient was admitted to an inpatient location during this
    encounter, set the value to true.
    If the patient was not admitted to an inpatient location during this
    encounter, set the value to false. -->
  <value xsi:type="BL" value="true" />
</observation>
```

7.13 Report No Events

[act: identifier urn:hl7ii:2.16.840.1.113883.10.20.5.6.249:2018-04-01
(closed)]

Published as part of NHSN Healthcare Associated Infection (HAI) Reports
Release 3, STU 3 - US Realm

Table 63: Report No Events Contexts

Contained By:	Contains:
Report No Events Section (required)	

This template represents the statement that there are no events to report for a particular type of event.

Table 64: Report No Events Constraints Overview

XPath	Card.	Verb	Data Type	CONF#	Value
act (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.249:2018-04-01)					
@classCode	1..1	SHALL		3357-30599	urn:oid:2.16.840.1.113883.5.6 (HL7ActClass) = ACT
@moodCode	1..1	SHALL		3357-30600	urn:oid:2.16.840.1.113883.5.1001 (HL7ActMood) = EVN
templateId	1..1	SHALL		3357-28468	
@root	1..1	SHALL		3357-28470	2.16.840.1.113883.10.20.5.6.249
@extension	1..1	SHALL		3357-28471	2018-04-01
code	1..1	SHALL		3357-28469	

1. **SHALL** contain exactly one [1..1] **@classCode**="ACT" Act (CodeSystem: HL7ActClass urn:oid:2.16.840.1.113883.5.6) (CONF:3357-30599).
2. **SHALL** contain exactly one [1..1] **@moodCode**="EVN" Event (CodeSystem: HL7ActMood urn:oid:2.16.840.1.113883.5.1001) (CONF:3357-30600).
3. **SHALL** contain exactly one [1..1] **templateId** (CONF:3357-28468) such that it
 - a. **SHALL** contain exactly one [1..1] **@root**="2.16.840.1.113883.10.20.5.6.249" (CONF:3357-28470).
 - b. **SHALL** contain exactly one [1..1] **@extension**="2018-04-01" (CONF:3357-28471).
4. **SHALL** contain exactly one [1..1] **code** (CONF:3357-28469).
 - a. If this is a Neonatal Intensive Care Unit (NICU) Summary Report then the code **SHALL** be selected from ValueSet NHSNReportNoEventsNICU urn:oid:2.16.840.1.113883.10.20.5.9.19 **DYNAMIC** (CONF:3357-30905).
 - b. If this is an Intensive Care Unit (ICU) Summary Report then the code **SHALL** be selected from ValueSet NHSNReportNoEventsICU urn:oid:2.16.840.1.113883.10.20.5.9.18 **DYNAMIC** (CONF:3357-30906).
 - c. If this is a Vascular Access Type Report (VAT) Summary Report then the code **SHALL** be selected from ValueSet NHSNReportNoEventsDialysis urn:oid:2.16.840.1.113883.10.20.5.9.22 **DYNAMIC** (CONF:3357-30907).
 - d. If this is a Prevention Process and Outcome Measures (POM) Summary Report then the code **SHALL** be selected from ValueSet NHSNReportNoEventsMDRO urn:oid:2.16.840.1.113883.10.20.5.9.21 **DYNAMIC** (CONF:3357-30908).
 - e. If this is a Specialty Care Area (SCA) Summary Report then the code **SHALL** be selected from ValueSet NHSNReportNoEventsSCA urn:oid:2.16.840.1.113883.10.20.5.9.20 **DYNAMIC** (CONF:3357-30909).
 - f. If this is an Outpatient Procedure Component Denominator for Same Day Outcome Measures Report then the code **SHALL** be selected from ValueSet NHSNReportNoEventsOPCSameDayOutcomeMeasures urn:oid:2.16.840.1.113883.10.20.5.9.33 **DYNAMIC** (CONF:3357-30913).
 - g. If this is an Antimicrobial Resistance Option (ARO) Summary Report then the code **SHALL** be selected from ValueSet NHSNReportNoEventsAR urn:oid:2.16.840.1.113883.10.20.5.9.35 **DYNAMIC** (CONF:3357-30914).
 - h. If this is an MDRO and CDI LabID Event Reporting Monthly Summary Data for LTCF then the code **SHALL** be selected from ValueSet NHSNReportNoEventsMDROCDI (urn:oid:2.16.840.1.113883.10.20.5.1.9.1) **DYNAMIC** (CONF:3357-30915).

Table 65: NHSNReportNoEventsNICU

Value Set: NHSNReportNoEventsNICU urn:oid:2.16.840.1.113883.10.20.5.9.19

(Clinical Focus: NHSN surveillance reporting: indicators for reporting no events with denominators for neonatal intensive care unit (NICU)),(Data Element Scope: Code identifying that no event of interest occurred.),(Inclusion Criteria:),(Exclusion Criteria:)

This value set was imported on 9/16/2020 with a version of Latest.

Value Set Source:

<https://vsac.nlm.nih.gov/valueset/2.16.840.1.113883.10.20.5.9.19/expansion>

Code	Code System	Code System OID	Print Name
1313-6	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Report No Events: NICU: PedVAE: birth weight under 750 grams
1314-4	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Report No Events: NICU: PedVAE: birth weight 751-1000 grams
1316-9	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Report No Events: NICU: PedVAE: birth weight 1001-1500 grams
1317-7	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Report No Events: NICU: PedVAE: birth weight 1501-2500 grams
1318-5	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Report No Events: NICU: PedVAE: birth weight over 2500 grams
1319-3	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Report No Events: NICU: PedVAE: Extremely preterm (<28 weeks)
1330-0	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Report No Events: NICU: PedVAE: Very preterm (28 to <32 weeks)
1331-8	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Report No Events: NICU: PedVAE: Moderate to late preterm (32 to <37 weeks)
1332-6	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Report No Events: NICU: PedVAE: Term (>=37 weeks)
3014-8	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Report No Events: NICU: CLABSI: under 750 grams
...			

Table 66: NHSNReportNoEventsICU

Value Set: NHSNReportNoEventsICU urn:oid:2.16.840.1.113883.10.20.5.9.18 (Clinical Focus: NHSN surveillance reporting: indicators for reporting no events with denominators for intensive care unit),(Data Element Scope: Code identifying that no event of interest occurred.),(Inclusion Criteria:),(Exclusion Criteria:) This value set was imported on 9/16/2020 with a version of Latest. Value Set Source: https://vsac.nlm.nih.gov/valueset/2.16.840.1.113883.10.20.5.9.18/expansion			
Code	Code System	Code System OID	Print Name
1338-3	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Report No Events: ICU: PedVAE
3010-6	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Report No Events: ICU: CLABSI
3011-4	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Report No Events: ICU: CAUTI
3012-2	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Report No Events: ICU: VAE
3013-0	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Report No Events: ICU: PedVAP

Table 67: NHSNReportNoEventsDialysis

Value Set: NHSNReportNoEventsDialysis urn:oid:2.16.840.1.113883.10.20.5.9.22 (Clinical Focus: NHSN surveillance reporting: indicators for reporting no events with denominators for dialysis),(Data Element Scope: Code identifying that no event of interest occurred.),(Inclusion Criteria:),(Exclusion Criteria:) This value set was imported on 9/16/2020 with a version of Latest. Value Set Source: https://vsac.nlm.nih.gov/valueset/2.16.840.1.113883.10.20.5.9.22/expansion			
Code	Code System	Code System OID	Print Name
3052-8	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Report No Events: Dialysis: intravenous antimicrobial start
3053-6	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Report No Events: Dialysis: positive blood culture
3054-4	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Report No Events: Dialysis: pus, redness, or increased swelling at vascular access site

Table 68: NHSNReportNoEventsMDRO

Value Set: NHSNReportNoEventsMDRO urn:oid:2.16.840.1.113883.10.20.5.9.21 (Clinical Focus: NHSN surveillance reporting: indicators for reporting no events with denominators for LabID Event),(Data Element Scope: Code identifying that no event of interest occurred.),(Inclusion Criteria:),(Exclusion Criteria:) This value set was imported on 9/16/2020 with a version of Latest. Value Set Source: https://vsac.nlm.nih.gov/valueset/2.16.840.1.113883.10.20.5.9.21/expansion			
Code	Code System	Code System OID	Print Name
1306-0	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Report No Events: Infection Surveillance: MSSA
1307-8	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Report No Events: LabID Event (All specimens): MSSA
1308-6	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Report No Events: LabID Event (Blood specimens only): MSSA
3029-6	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Report No Events: Infection Surveillance: MRSA
3030-4	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Report No Events: LabID Event (All specimens): MRSA
3031-2	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Report No Events: LabID Event (Blood specimens only): MRSA
3032-0	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Report No Events: Infection Surveillance: VRE
3033-8	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Report No Events: LabID Event (All specimens): VRE
3034-6	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Report No Events: LabID Event (Blood specimens only): VRE
3035-3	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Report No Events: Infection Surveillance: CephR Klebsiella
...			

Table 69: NHSNReportNoEventsSCA

Value Set: NHSNReportNoEventsSCA urn:oid:2.16.840.1.113883.10.20.5.9.20 (Clinical Focus: NHSN surveillance reporting: indicators for reporting no events with denominators for specialty care area / oncology),(Data Element Scope: Code identifying that no event of interest occurred.),(Inclusion Criteria:),(Exclusion Criteria:) This value set was imported on 9/16/2020 with a version of Latest. Value Set Source: https://vsac.nlm.nih.gov/valueset/2.16.840.1.113883.10.20.5.9.20/expansion			
Code	Code System	Code System OID	Print Name
1339-1	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Report No Events: SCA: PedVAE
3024-7	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Report No Events: SCA: TCLAB
3025-4	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Report No Events: SCA: PCLAB
3026-2	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Report No Events: SCA: CAUTI
3027-0	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Report No Events: SCA: VAE
3028-8	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Report No Events: SCA: PedVAP

Table 70: NHSNReportNoEventsOPCSameDayOutcomeMeasures

Value Set: NHSNReportNoEventsOPCSameDayOutcomeMeasures urn:oid:2.16.840.1.113883.10.20.5.9.33 (Clinical Focus: NHSN surveillance reporting: indicators for reporting no events with denominators for Outpatient Procedure Component Same Day Outcome Measures),(Data Element Scope: Code identifying that no event of interest occurred.),(Inclusion Criteria:),(Exclusion Criteria:) This value set was imported on 9/16/2020 with a version of Latest. Value Set Source: https://vsac.nlm.nih.gov/valueset/2.16.840.1.113883.10.20.5.9.33/expansion			
Code	Code System	Code System OID	Print Name
1340-9	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	No same day outcome measures (events) reported this month

Table 71: NHSNReportNoEventsAR

<p>Value Set: NHSNReportNoEventsAR urn:oid:2.16.840.1.113883.10.20.5.9.35 (Clinical Focus: NHSN surveillance reporting: indicator for reporting no events with denominators for antimicrobial resistance),(Data Element Scope: Code identifying that no event of interest occurred.),(Inclusion Criteria:),(Exclusion Criteria:)</p> <p>This value set was imported on 9/16/2020 with a version of Latest.</p> <p>Value Set Source: https://vsac.nlm.nih.gov/valueset/2.16.840.1.113883.10.20.5.9.35/expansion</p>			
Code	Code System	Code System OID	Print Name
1341-7	cdcNHSN	urn:oid:2.16.840.1.113883.6.27 7	Report No Events: Antimicrobial Resistance (AR)

Table 72: NHSNReportNoEventsMDROLTCF

Value Set: NHSNReportNoEventsMDROLTCF urn:oid:2.16.840.1.113883.10.20.5.1.9.1 (Clinical Focus: NHSN surveillance reporting: indicators for reporting no events with denominators for LTCF),(Data Element Scope: Code identifying that no event of interest occurred.),(Inclusion Criteria:),(Exclusion Criteria:) This value set was imported on 9/16/2020 with a version of Latest. Value Set Source: https://vsac.nlm.nih.gov/valueset/2.16.840.1.113883.10.20.5.1.9.1/expansion			
Code	Code System	Code System OID	Print Name
1307-8	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Report No Events: LabID Event (All specimens): MSSA
3030-4	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Report No Events: LabID Event (All specimens): MRSA
3033-8	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Report No Events: LabID Event (All specimens): VRE
3036-1	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Report No Events: LabID Event (All specimens): CephR Klebsiella
3039-5	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Report No Events: LabID Event (All specimens): CRE-E. coli
3042-9	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Report No Events: LabID Event (All specimens): CRE-Enterobacter
3045-2	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Report No Events: LabID Event (All specimens): CRE-Klebsiella
3048-6	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Report No Events: LabID Event (All specimens): MDR-Acinetobacter
3051-0	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Report No Events: LabID Event (All specimens): C. difficile

Figure 43: Report No Events Example

```
<act classCode="ACT" moodCode="EVN">
  <!-- [HAI R3D3] Report No Events -->
  <templateId root="2.16.840.1.113883.10.20.5.6.249" extension="2018-04-01" />
  <code code="3029-6"
    displayName="Report no infection surveillance events - Methicillin-resistant
    Staphylococcus aureus"
    codeSystem="2.16.840.1.113883.6.277"
    codeSystemName="cdcNHSN" />
</act>
```

7.14 Specimen Collection Encounter (ARO) (V2)

```
[encounter: identifier urn:hl7ii:2.16.840.1.113883.10.20.5.6.187:2020-04-01
(closed)]
```

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Table 73: Specimen Collection Encounter (ARO) (V2) Contexts

Contained By:	Contains:
Specimen Collection Procedure (ARO) (V4) (required)	Patient Admitted This Encounter Observation (required)

The Specimen Collection Encounter (ARO) records the in-facility location where a specimen was collected.

This template conforms to the C-CDA Encounter Activities template. That template requires an id; in the NHSN ARO Report, the id of the encounter is not reported, therefore a "NA" nullFlavor is used for the required id.

The participant element represents the in-facility location where the specimen was collected. 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.

The contained Patient Admitted This Encounter Observation represents whether or not the patient was admitted to an inpatient location during this encounter.

Table 74: Specimen Collection Encounter (ARO) (V2) Constraints Overview

XPath	Card.	Verb	Data Type	CONF#	Value
encounter (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.187:2020-04-01)					
@classCode	1..1	SHALL		4459-22649	urn:oid:2.16.840.1.113883.5.6 (HL7ActClass) = ENC
@moodCode	1..1	SHALL		4459-22650	urn:oid:2.16.840.1.113883.5.1 001 (HL7ActMood) = EVN
templateId	1..1	SHALL		4459-28279	

XPath	Card.	Verb	Data Type	CONF#	Value
@root	1..1	SHALL		4459-28280	2.16.840.1.113883.10.20.22.4.49
templateId	1..1	SHALL		4459-22651	
@root	1..1	SHALL		4459-22652	2.16.840.1.113883.10.20.5.6.187
@extension	1..1	SHALL		4459-30795	2020-04-01
id	1..1	SHALL		4459-22653	
@nullFlavor	1..1	SHALL		4459-22654	urn:oid:2.16.840.1.113883.5.1002 (HL7ActRelationshipType) = NA
effectiveTime	1..1	SHALL		4459-22655	
@nullFlavor	1..1	SHALL		4459-22656	NA
participant	1..1	SHALL		4459-22657	
@typeCode	1..1	SHALL		4459-22658	urn:oid:2.16.840.1.113883.5.90 (HL7ParticipationType) = LOC
participantRole	1..1	SHALL		4459-22659	
@classCode	1..1	SHALL		4459-22660	urn:oid:2.16.840.1.113883.5.110 (HL7RoleClass) = SDLOC
id	1..1	SHALL		4459-22661	
@root	1..1	SHALL		4459-22662	
@extension	1..1	SHALL		4459-22663	
playingEntity	1..1	SHALL		4459-22664	
@classCode	1..1	SHALL		4459-22665	urn:oid:2.16.840.1.113883.5.41 (HL7EntityClass) = PLC
code	1..1	SHALL		4459-22666	urn:oid:2.16.840.1.113883.13.19 (NHSNHealthcareServiceLocationCode)
entryRelationship	1..1	SHALL		4459-30796	
@typeCode	1..1	SHALL		4459-30798	urn:oid:2.16.840.1.113883.5.1002 (HL7ActRelationshipType) = COMP

XPath	Card.	Verb	Data Type	CONF#	Value
observation	1..1	SHALL		4459-30797	Patient Admitted This Encounter Observation (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.266:2020-04-01)

1. Conforms to Encounter Activities template (identifier: urn:oid:2.16.840.1.113883.10.20.22.4.49).
2. **SHALL** contain exactly one [1..1] **@classCode**="ENC" Encounter (CodeSystem: HL7ActClass urn:oid:2.16.840.1.113883.5.6 **STATIC**) (CONF:4459-22649).
3. **SHALL** contain exactly one [1..1] **@moodCode**="EVN" Event (CodeSystem: HL7ActMood urn:oid:2.16.840.1.113883.5.1001 **STATIC**) (CONF:4459-22650).
4. **SHALL** contain exactly one [1..1] **templateId** (CONF:4459-28279) such that it
 - a. **SHALL** contain exactly one [1..1] **@root**="2.16.840.1.113883.10.20.22.4.49" (CONF:4459-28280).
5. **SHALL** contain exactly one [1..1] **templateId** (CONF:4459-22651) such that it
 - a. **SHALL** contain exactly one [1..1] **@root**="2.16.840.1.113883.10.20.5.6.187" (CONF:4459-22652).
 - b. **SHALL** contain exactly one [1..1] **@extension**="2020-04-01" (CONF:4459-30795).
6. **SHALL** contain exactly one [1..1] **id** (CONF:4459-22653).
 - a. This id **SHALL** contain exactly one [1..1] **@nullFlavor**="NA" (CodeSystem: HL7ActRelationshipType urn:oid:2.16.840.1.113883.5.1002) (CONF:4459-22654).
7. **SHALL** contain exactly one [1..1] **effectiveTime** (CONF:4459-22655).
 - a. This effectiveTime **SHALL** contain exactly one [1..1] **@nullFlavor**="NA" (CONF:4459-22656).
8. **SHALL** contain exactly one [1..1] **participant** (CONF:4459-22657).
 - a. This participant **SHALL** contain exactly one [1..1] **@typeCode**="LOC" Location (CodeSystem: HL7ParticipationType urn:oid:2.16.840.1.113883.5.90 **STATIC**) (CONF:4459-22658).
 - b. This participant **SHALL** contain exactly one [1..1] **participantRole** (CONF:4459-22659).
 - i. This participantRole **SHALL** contain exactly one [1..1] **@classCode**="SDLOC" Service delivery location (CodeSystem: HL7RoleClass urn:oid:2.16.840.1.113883.5.110 **STATIC**) (CONF:4459-22660).
 - ii. This participantRole **SHALL** contain exactly one [1..1] **id** (CONF:4459-22661).

The value of **@root** must be the NHSN assigned Facility OID.

1. This id **SHALL** contain exactly one [1..1] **@root** (CONF:4459-22662).

The value of **@extension** must be a value registered with NHSN.

2. This id **SHALL** contain exactly one [1..1] **@extension** (CONF:4459-22663).

- iii. This participantRole **SHALL** contain exactly one [1..1] **playingEntity** (CONF:4459-22664).
 - 1. This playingEntity **SHALL** contain exactly one [1..1] **@classCode="PLC" Place** (CodeSystem: HL7EntityClass urn:oid:2.16.840.1.113883.5.41 **STATIC**) (CONF:4459-22665).
 - 2. This playingEntity **SHALL** contain exactly one [1..1] **code**, which **SHALL** be selected from ValueSet [NHSNHealthcareServiceLocationCode](#) urn:oid:2.16.840.1.113883.13.19 **DYNAMIC** (CONF:4459-22666).
- 9. **SHALL** contain exactly one [1..1] **entryRelationship** (CONF:4459-30796).
 - a. This entryRelationship **SHALL** contain exactly one [1..1] **@typeCode="COMP"** Has component (CodeSystem: HL7ActRelationshipType urn:oid:2.16.840.1.113883.5.1002) (CONF:4459-30798).
 - b. This entryRelationship **SHALL** contain exactly one [1..1] [Patient Admitted This Encounter Observation](#) (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.266:2020-04-01) (CONF:4459-30797).

Table 75: NHSNHealthcareServiceLocationCode

Value Set: NHSNHealthcareServiceLocationCode urn:oid:2.16.840.1.113883.13.19 (Clinical Focus: NHSN surveillance reporting: A classification of patient care locations within healthcare facilities for public health surveillance purposes.),(Data Element Scope: Code identifying the type of service location in a health care facility.),(Inclusion Criteria:),(Exclusion Criteria:) This value set was imported on 10/14/2020 with a version of Latest. Value Set Source: https://vsac.nlm.nih.gov/valueset/2.16.840.1.113883.13.19/expansion			
Code	Code System	Code System OID	Print Name
1005-8	HSLOC	urn:oid:2.16.840.1.113883.6.259	Cardiac Catheterization Room/Suite
1007-4	HSLOC	urn:oid:2.16.840.1.113883.6.259	Endoscopy Suite
1008-2	HSLOC	urn:oid:2.16.840.1.113883.6.259	Radiology
1009-0	HSLOC	urn:oid:2.16.840.1.113883.6.259	Pulmonary Function Testing
1010-8	HSLOC	urn:oid:2.16.840.1.113883.6.259	General Laboratory
1011-6	HSLOC	urn:oid:2.16.840.1.113883.6.259	Clinical Chemistry Laboratory
1012-4	HSLOC	urn:oid:2.16.840.1.113883.6.259	Hematology Laboratory
1013-2	HSLOC	urn:oid:2.16.840.1.113883.6.259	Histology-Surgical Pathology Laboratory
1014-0	HSLOC	urn:oid:2.16.840.1.113883.6.259	Microbiology Laboratory
1015-7	HSLOC	urn:oid:2.16.840.1.113883.6.259	Serology Laboratory
...			

Figure 44: Specimen Collection Encounter (ARO) (V2) Example

```
<encounter classCode="ENC" moodCode="EVN">
  <!-- [HAI R3N1] Specimen Collection Encounter (ARO) (V2) -->
  <templateId root="2.16.840.1.113883.10.20.5.6.187" extension="2020-04-01" />
  <!-- [C-CDA R1.1] Encounter Activities -->
  <templateId root="2.16.840.1.113883.10.20.22.4.49" />
  <id nullFlavor="NA" />
  <effectiveTime nullFlavor="NA" />

  <!-- The in-facility location where the specimen was collected -->
  <participant typeCode="LOC">
    <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
HealthCareServiceLocation" code="1029-8" displayName="Medical/Surgical Critical Care" />
      </playingEntity>
    </participantRole>
  </participant>

  <entryRelationship typeCode="COMP">
    <observation classCode="OBS" moodCode="EVN">
      <!-- [HAI R3N1] Patient Admitted This Encounter Observation -->
      <templateId root="2.16.840.1.113883.10.20.5.6.266" extension="2020-04-01" />
      ...
    </observation>
  </entryRelationship>
</encounter>
```

7.15 Specimen Collection Procedure (ARO) (V4)

[procedure: identifier urn:hl7ii:2.16.840.1.113883.10.20.5.6.188:2020-04-01
(closed)]

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Table 76: Specimen Collection Procedure (ARO) (V4) Contexts

Contained By:	Contains:
Findings Section in an ARO Report (V4) (required)	Specimen Collection Encounter (ARO) (V2) (required) Isolate Susceptibility Tests Organizer (V4) (required)

The Specimen Collection Procedure (ARO) records the date a specimen was collected and the type of specimen. It includes a Specimen Collection Encounter (ARO), which records the in-facility location where the specimen was collected. The template is derived from the Specimen Collection Procedure template from Public Health Case Reports.

In the ARO 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.

Table 77: Specimen Collection Procedure (ARO) (V4) Constraints Overview

XPath	Card.	Verb	Data Type	CONF#	Value
procedure (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.188:2020-04-01)					
@classCode	1..1	SHALL		4459-22668	urn:oid:2.16.840.1.113883.5.6 (HL7ActClass) = PROC
@moodCode	1..1	SHALL		4459-22669	urn:oid:2.16.840.1.113883.5.1001 (HL7ActMood) = EVN
templateId	1..1	SHALL		4459-22670	
@root	1..1	SHALL		4459-22671	2.16.840.1.113883.10.20.5.6.188
@extension	1..1	SHALL		4459-30472	2020-04-01
effectiveTime	1..1	SHALL		4459-22672	
@value	1..1	SHALL		4459-22673	
specimen	1..1	SHALL		4459-27160	
specimenRole	1..1	SHALL		4459-27161	
specimenPlayingEntity	1..1	SHALL		4459-27162	
code	1..1	SHALL		4459-27163	urn:oid:2.16.840.1.114222.4.11.3249 (NHSNSpecimenTypeCode)
entryRelationship	1..1	SHALL		4459-22681	
@typeCode	1..1	SHALL		4459-22682	urn:oid:2.16.840.1.113883.5.1002 (HL7ActRelationshipType) = COMP
@inversionInd	1..1	SHALL		4459-22683	true
encounter	1..1	SHALL		4459-22684	Specimen Collection Encounter (ARO) (V2) (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.187:2020-04-01)
entryRelationship	1..*	SHALL		4459-27164	
@typeCode	1..1	SHALL		4459-27165	urn:oid:2.16.840.1.113883.5.1002 (HL7ActRelationshipType) = COMP
@inversionInd	1..1	SHALL		4459-27432	true
organizer	1..1	SHALL		4459-30471	Isolate Susceptibility Tests Organizer (V4) (identifier:

XPath	Card.	Verb	Data Type	CONF#	Value
					urn:hl7ii:2.16.840.1.113883.10.20.5.6.201:2020-04-01

1. **SHALL** contain exactly one [1..1] **@classCode="PROC"** Procedure (CodeSystem: HL7ActClass urn:oid:2.16.840.1.113883.5.6 **STATIC**) (CONF:4459-22668).
2. **SHALL** contain exactly one [1..1] **@moodCode="EVN"** Event (CodeSystem: HL7ActMood urn:oid:2.16.840.1.113883.5.1001 **STATIC**) (CONF:4459-22669).
3. **SHALL** contain exactly one [1..1] **templateId** (CONF:4459-22670) such that it
 - a. **SHALL** contain exactly one [1..1] **@root="2.16.840.1.113883.10.20.5.6.188"** (CONF:4459-22671).
 - b. **SHALL** contain exactly one [1..1] **@extension="2020-04-01"** (CONF:4459-30472).
4. **SHALL** contain exactly one [1..1] **effectiveTime** (CONF:4459-22672).
 - a. This effectiveTime **SHALL** contain exactly one [1..1] **@value** (CONF:4459-22673).
5. **SHALL** contain exactly one [1..1] **specimen** (CONF:4459-27160).
 - a. This specimen **SHALL** contain exactly one [1..1] **specimenRole** (CONF:4459-27161).
 - i. This specimenRole **SHALL** contain exactly one [1..1] **specimenPlayingEntity** (CONF:4459-27162).
 1. This specimenPlayingEntity **SHALL** contain exactly one [1..1] **code**, which **SHALL** be selected from ValueSet [NHSNSpecimenTypeCode](#) urn:oid:2.16.840.1.114222.4.11.3249 **DYNAMIC** (CONF:4459-27163).
6. **SHALL** contain exactly one [1..1] **entryRelationship** (CONF:4459-22681) such that it
 - a. **SHALL** contain exactly one [1..1] **@typeCode="COMP"** Has component (CodeSystem: HL7ActRelationshipType urn:oid:2.16.840.1.113883.5.1002 **STATIC**) (CONF:4459-22682).
 - b. **SHALL** contain exactly one [1..1] **@inversionInd="true"** (CONF:4459-22683).
 - c. **SHALL** contain exactly one [1..1] [Specimen Collection Encounter \(ARO\) \(V2\)](#) (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.187:2020-04-01) (CONF:4459-22684).
7. **SHALL** contain at least one [1..*] **entryRelationship** (CONF:4459-27164) such that it
 - a. **SHALL** contain exactly one [1..1] **@typeCode="COMP"** (CodeSystem: HL7ActRelationshipType urn:oid:2.16.840.1.113883.5.1002) (CONF:4459-27165).
 - b. **SHALL** contain exactly one [1..1] **@inversionInd="true"** (CONF:4459-27432).
 - c. **SHALL** contain exactly one [1..1] [Isolate Susceptibility Tests Organizer \(V4\)](#) (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.201:2020-04-01) (CONF:4459-30471).

Table 78: NHSNSpecimenTypeCode

Value Set: NHSNSpecimenTypeCode urn:oid:2.16.840.1.114222.4.11.3249 (Clinical Focus: NHSN surveillance reporting: This value set contains codes describing the type of specimen.),(Data Element Scope: A code identifying the type of entity playing the role of specimen. A code identifying the type of specimen.),(Inclusion Criteria:),(Exclusion Criteria:) This value set was imported on 9/16/2020 with a version of Latest. Value Set Source: https://vsac.nlm.nih.gov/valueset/2.16.840.1.114222.4.11.3249/expansion			
Code	Code System	Code System OID	Print Name
110893002	SNOMED CT	urn:oid:2.16.840.1.113883.6.96	Cutaneous cytologic material (specimen)
110894008	SNOMED CT	urn:oid:2.16.840.1.113883.6.96	Mammary cytologic material (specimen)
110896005	SNOMED CT	urn:oid:2.16.840.1.113883.6.96	Subcutaneous cytologic material (specimen)
110903005	SNOMED CT	urn:oid:2.16.840.1.113883.6.96	Nasal cytologic material (specimen)
110926003	SNOMED CT	urn:oid:2.16.840.1.113883.6.96	Gallbladder cytologic material (specimen)
110931001	SNOMED CT	urn:oid:2.16.840.1.113883.6.96	Penis cytologic material (specimen)
110933003	SNOMED CT	urn:oid:2.16.840.1.113883.6.96	Prostate cytologic material (specimen)
110935005	SNOMED CT	urn:oid:2.16.840.1.113883.6.96	Testis cytologic material (specimen)
110937002	SNOMED CT	urn:oid:2.16.840.1.113883.6.96	Seminal vesicle cytologic material (specimen)
110939004	SNOMED CT	urn:oid:2.16.840.1.113883.6.96	Vas deferens cytologic material (specimen)
...			

Figure 45: Specimen Collection Procedure (ARO) (V4) Example

```
<procedure classCode="PROC" moodCode="EVN">
  <!-- [HAI R3N1] Specimen Collection Procedure (ARO) (V4) -->
  <templateId root="2.16.840.1.113883.10.20.5.6.188" extension="2020-04-01" />
  <!-- Date specimen collected -->
  <effectiveTime value="20200121" />
  <specimen>
    <specimenRole>
      <specimenPlayingEntity>
        <!-- Specimen type -->
        <code codeSystem="2.16.840.1.113883.6.96" codeSystemName="SNOMED CT"
code="119297000" displayName="Blood specimen" />
        </specimenPlayingEntity>
      </specimenRole>
    </specimen>
  <!-- [HAI R3N1] Specimen Collection Encounter (ARO) -->
  <entryRelationship typeCode="COMP" inversionInd="true">
    <encounter classCode="ENC" moodCode="EVN">
      <!-- [HAI R3N1] Specimen Collection Encounter (ARO) (V2) -->
      <templateId root="2.16.840.1.113883.10.20.5.6.187" extension="2020-04-01" />
      <!-- [C-CDA R1.1] Encounter Activities -->
      <templateId root="2.16.840.1.113883.10.20.22.4.49" />
      ...
    </encounter>
  </entryRelationship>
  <!-- [HAI R3N1] Isolate Susceptibility Tests Organizer (V4) -->
  <entryRelationship typeCode="COMP" inversionInd="true">
    <organizer classCode="CLUSTER" moodCode="EVN">
      <!-- [HAI R3D1.1] Isolate Susceptibility Tests Organizer (V3) -->
      <templateId root="2.16.840.1.113883.10.20.5.6.201" extension="2020-04-01" />
      ...
    </organizer>
  </entryRelationship>
</procedure>
```

7.16 Summary Data Observation (AU/AR)

[observation: identifier urn:hl7ii:2.16.840.1.113883.10.20.5.6.229:2015-04-01
(closed)]

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Table 79: Summary Data Observation (AU/AR) Contexts

Contained By:	Contains:
Summary Encounter Patient Presence (AUP) (V2) (required)	
Summary Encounter (AUP) (V2) (required)	
Summary Encounter (ARO) (V3) (required)	

This template specializes the Summary Data Observation for the AU/AR population-summary reports.

The documentationOf/serviceEvent/code in the header identifies the intended content of the report. For example, cdcNHSN code 1887-9 indicates that the data content is "Summary data reporting Antimicrobial Usage". NHSN protocol specifies which data to report for each type of content. The data required by NHSN for each type of content, at time of publication, are shown in the tables below. The table of codes for a particular report indicate what data are required at time of publication for the NHSN protocol. Accordingly, the Summary Encounter will contain the same number of Summary Data Observations as codes in the table.

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, patients, episodes, or events.

Table 80: Summary Data Observation (AU/AR) Constraints Overview

XPath	Card.	Verb	Data Type	CONF#	Value
observation (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.229:2015-04-01)					
@classCode	1..1	SHALL		1181-30549	urn:oid:2.16.840.1.113883.5.6 (HL7ActClass) = OBS
@moodCode	1..1	SHALL		1181-30550	urn:oid:2.16.840.1.113883.5.1001 (HL7ActMood) = EVN
templateId	1..1	SHALL		1181-30545	
@root	1..1	SHALL		1181-30551	2.16.840.1.113883.10.20.5.6.229
@extension	1..1	SHALL		1181-30561	2015-04-01
code	1..1	SHALL		1181-30546	
statusCode	1..1	SHALL		1181-30547	
@code	1..1	SHALL		1181-30559	urn:oid:2.16.840.1.113883.5.14 (HL7ActStatus) = completed
value	1..1	SHALL		1181-30548	

1. **SHALL** contain exactly one [1..1] **@classCode**="OBS" Observation (CodeSystem: HL7ActClass urn:oid:2.16.840.1.113883.5.6 **STATIC**) (CONF:1181-30549).
2. **SHALL** contain exactly one [1..1] **@moodCode**="EVN" Event (CodeSystem: HL7ActMood urn:oid:2.16.840.1.113883.5.1001 **STATIC**) (CONF:1181-30550).
3. **SHALL** contain exactly one [1..1] **templateId** (CONF:1181-30545) such that it
 - a. **SHALL** contain exactly one [1..1] **@root**="2.16.840.1.113883.10.20.5.6.229" (CONF:1181-30551).
 - b. **SHALL** contain exactly one [1..1] **@extension**="2015-04-01" (CONF:1181-30561).
4. **SHALL** contain exactly one [1..1] **code** (CONF:1181-30546).
 - a. If this is ARO Summary Data, NHSN protocol requires, at the time of publication, the data in the Codes for Antimicrobial Resistance Option (ARO) Summary Data table below (CONF:1181-30552).

- b. If this is AUP Summary Data, NHSN protocol requires, at the time of publication, the data in the Codes for Antimicrobial Usage, Pharmacy (AUP) Summary Data table below (CONF:1181-30557).
5. **SHALL** contain exactly one [1..1] **statusCode** (CONF:1181-30547).
 - a. This statusCode **SHALL** contain exactly one [1..1] **@code="completed"** Completed (CodeSystem: HL7ActStatus urn:oid:2.16.840.1.113883.5.14) (CONF:1181-30559).
6. **SHALL** contain exactly one [1..1] **value** (CONF:1181-30548).
 - 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, episodes or events 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:1181-30560).

Table 81: Codes for Antimicrobial Resistance Option (ARO) Summary Data

Value Set: Codes for Antimicrobial Resistance Option (ARO) Summary Data urn:oid:2.16.840.1.113883.10.20.5.9.8 (Clinical Focus: NHSN surveillance reporting: monthly reporting denominators for antimicrobial resistance.),(Data Element Scope: Code identifying the type of observation.),(Inclusion Criteria:),(Exclusion Criteria:) This value set was imported on 10/14/2020 with a version of Latest. Value Set Source: https://vsac.nlm.nih.gov/valueset/2.16.840.1.113883.10.20.5.9.8/expansion			
Code	Code System	Code System OID	Print Name
1851-5	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Number of patient days
1862-2	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Number of admissions
2409-1	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Number of blood cultures performed
1863-0	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Number of encounters

Table 82: Codes for Antimicrobial Usage, Pharmacy (AUP) Summary Data

Value Set: Codes for Antimicrobial Usage, Pharmacy (AUP) Summary Data urn:oid:2.16.840.1.113883.10.20.5.9.9 (Clinical Focus: NHSN surveillance reporting: monthly reporting denominators for antimicrobial usage),(Data Element Scope: Code identifying the type of observation.),(Inclusion Criteria:),(Exclusion Criteria:) This value set was imported on 10/14/2020 with a version of Latest. Value Set Source: https://vsac.nlm.nih.gov/valueset/2.16.840.1.113883.10.20.5.9.9/expansion			
Code	Code System	Code System OID	Print Name
1862-2	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Number of admissions
2524-7	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Number of therapy days
2525-4	cdcNHSN	urn:oid:2.16.840.1.113883.6.277	Number of patient-present days

Figure 46: Summary Data Observation (AU/AR) Example

<pre><observation classCode="OBS" moodCode="EVN"> <!-- Summary Data Observation (AU/AR) templateId --> <templateId root="2.16.840.1.113883.10.20.5.6.229" extension="2015-04-01"/> <code code="2409-1" codeSystem="2.16.840.1.113883.6.277" codeSystemName="cdcNHSN" displayName="Number of blood cultures performed"/> <statusCode code="completed"/> <value xsi:type="INT" value="24" /> </observation></pre>

7.17 Summary Data Observation (AUP)

[observation: identifier urn:oid:2.16.840.1.113883.10.20.5.6.194 (closed)]

Published as part of NHSN Healthcare Associated Infection (HAI) Reports
Release 1 - US Realm

Table 83: Summary Data Observation (AUP) Contexts

Contained By:	Contains:
Summary Encounter (AUP) (V2) (required)	

This template specializes the Summary Data Observation for an Antimicrobial Use (AUP) Summary Report.

The Summary Data Observation (AUP) 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 must be "NA".

Table 84: Summary Data Observation (AUP) Constraints Overview

XPath	Card.	Verb	Data Type	CONF#	Value
observation (identifier: urn:oid:2.16.840.1.113883.10.20.5.6.194)					
@classCode	1..1	SHALL		86-22910	urn:oid:2.16.840.1.113883.5.6 (HL7ActClass) = OBS
@moodCode	1..1	SHALL		86-22911	urn:oid:2.16.840.1.113883.5.1001 (HL7ActMood) = EVN
templateId	1..1	SHALL		86-22912	
@root	1..1	SHALL		86-22913	2.16.840.1.113883.10.20.5.6.194
code	1..1	SHALL		86-22914	
statusCode	1..1	SHALL		86-22915	
@code	1..1	SHALL		86-28111	urn:oid:2.16.840.1.113883.5.14 (HL7ActStatus) = completed
value	1..1	SHALL		86-22916	
methodCode	1..1	SHALL		86-23044	urn:oid:2.16.840.1.114222.4.11.3361 (NHSNRouteOfAdministration AURPCode)

1. **SHALL** contain exactly one [1..1] **@classCode**="OBS" Observation (CodeSystem: HL7ActClass urn:oid:2.16.840.1.113883.5.6 **STATIC**) (CONF:86-22910).
2. **SHALL** contain exactly one [1..1] **@moodCode**="EVN" Event (CodeSystem: HL7ActMood urn:oid:2.16.840.1.113883.5.1001 **STATIC**) (CONF:86-22911).
3. **SHALL** contain exactly one [1..1] **templateId** (CONF:86-22912) such that it
 - a. **SHALL** contain exactly one [1..1] **@root**="2.16.840.1.113883.10.20.5.6.194" (CONF:86-22913).
4. **SHALL** contain exactly one [1..1] **code** (CONF:86-22914).
5. **SHALL** contain exactly one [1..1] **statusCode** (CONF:86-22915).
 - a. This statusCode **SHALL** contain exactly one [1..1] **@code**="completed" Completed (CodeSystem: HL7ActStatus urn:oid:2.16.840.1.113883.5.14) (CONF:86-28111).
6. **SHALL** contain exactly one [1..1] **value** (CONF:86-22916).
7. **SHALL** contain exactly one [1..1] **methodCode**, which **SHALL** be selected from ValueSet [NHSNRouteOfAdministrationAURPCode](#) urn:oid:2.16.840.1.114222.4.11.3361 **DYNAMIC** (CONF:86-23044).
8. 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:86-22917).

Table 85: NHSNRouteOfAdministrationAURPCode

Value Set: NHSNRouteOfAdministrationAURPCode urn:oid:2.16.840.1.114222.4.11.3361 (Clinical Focus: NHSN surveillance reporting: Antimicrobial Use summary, route by which antimicrobial was administered),(Data Element Scope: A method code describing the route of administration of the antimicrobial.),(Inclusion Criteria:),(Exclusion Criteria:) This value set was imported on 10/14/2020 with a version of Latest. Value Set Source: https://vsac.nlm.nih.gov/valueset/2.16.840.1.114222.4.11.3361/expansion			
Code	Code System	Code System OID	Print Name
447694001	SNOMED CT	urn:oid:2.16.840.1.113883.6.96	Respiratory tract route (qualifier value)
447964005	SNOMED CT	urn:oid:2.16.840.1.113883.6.96	Digestive tract route (qualifier value)
47625008	SNOMED CT	urn:oid:2.16.840.1.113883.6.96	Intravenous route (qualifier value)
78421000	SNOMED CT	urn:oid:2.16.840.1.113883.6.96	Intramuscular route (qualifier value)

Figure 47: Summary Data Observation (AUP) Example

<pre> <observation classCode="OBS" moodCode="EVN"> <templateId root="2.16.840.1.113883.10.20.5.6.194" /> <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" /> <methodCode code="447694001" codeSystemName="SNOMED CT" codeSystem="2.16.840.1.113883.6.96" displayName="Respiratory tract route"/> </observation> </pre>

7.18 Summary Encounter (ARO) (V3)

[encounter: identifier urn:hl7ii:2.16.840.1.113883.10.20.5.6.199:2019-04-01 (closed)]

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Release 3, STU 4 - US Realm

Table 86: Summary Encounter (ARO) (V3) Contexts

Contained By:	Contains:
Summary Data Section (ARO) (V3) (required)	Summary Data Observation (AU/AR) (required)

A Summary Encounter records a set of summary data, usually for a population such as the patients in a ward in a specified period. The NHSN protocol defines which data to record for each type of summary report. For an ARO report, each datum is recorded as a Summary Data Observation (AU/AR). The data requirements at time of publication are shown in a table under the Summary Data Observation (AU/AR) template, above.

A participant element records the location to which the data pertains. The location id has the form <id root="..." extension="...">.

Table 87: Summary Encounter (ARO) (V3) Constraints Overview

XPath	Card.	Verb	Data Type	CONF#	Value
encounter (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.199:2019-04-01)					
@classCode	1..1	SHALL		4395-23077	urn:oid:2.16.840.1.113883.5.6 (HL7ActClass) = ENC
@moodCode	1..1	SHALL		4395-23078	urn:oid:2.16.840.1.113883.5.1001 (HL7ActMood) = EVN
templateId	1..1	SHALL		4395-23079	
@root	1..1	SHALL		4395-23080	2.16.840.1.113883.10.20.5.6.199
@extension	1..1	SHALL		4395-30919	2019-04-01
participant	1..1	SHALL		4395-23081	
@typeCode	1..1	SHALL		4395-23082	urn:oid:2.16.840.1.113883.5.90 (HL7ParticipationType) = LOC
participantRole	1..1	SHALL		4395-23083	
@classCode	1..1	SHALL		4395-23084	urn:oid:2.16.840.1.113883.5.41 (HL7EntityClass) = SDLOC
id	1..1	SHALL		4395-23085	
@root	1..1	SHALL		4395-23086	
@extension	1..1	SHALL		4395-23087	
code	1..1	SHALL		4395-23088	urn:oid:2.16.840.1.113883.13.19 (NHSNHealthcareServiceLocationCode)
entryRelationship	1..*	SHALL		4395-23092	
@typeCode	1..1	SHALL		4395-23093	urn:oid:2.16.840.1.113883.5.1002 (HL7ActRelationshipType) = COMP
observation	1..1	SHALL		4395-23094	Summary Data Observation (AU/AR) (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.229:2015-04-01)

1. **SHALL** contain exactly one [1..1] @classCode="ENC" Encounter (CodeSystem: HL7ActClass urn:oid:2.16.840.1.113883.5.6 **STATIC**) (CONF:4395-23077).
2. **SHALL** contain exactly one [1..1] @moodCode="EVN" Event (CodeSystem: HL7ActMood urn:oid:2.16.840.1.113883.5.1001 **STATIC**) (CONF:4395-23078).

3. **SHALL** contain exactly one [1..1] **templateId** (CONF:4395-23079) such that it
 - a. **SHALL** contain exactly one [1..1] **@root**="2.16.840.1.113883.10.20.5.6.199" (CONF:4395-23080).
 - b. **SHALL** contain exactly one [1..1] **@extension**="2019-04-01" (CONF:4395-30919).
4. **SHALL** contain exactly one [1..1] **participant** (CONF:4395-23081) such that it
 - a. **SHALL** contain exactly one [1..1] **@typeCode**="LOC" Location (CodeSystem: HL7ParticipationType urn:oid:2.16.840.1.113883.5.90 **STATIC**) (CONF:4395-23082).
 - b. **SHALL** contain exactly one [1..1] **participantRole** (CONF:4395-23083).
 - i. This participantRole **SHALL** contain exactly one [1..1] **@classCode**="SDLOC" Service Delivery Location (CodeSystem: HL7EntityClass urn:oid:2.16.840.1.113883.5.41 **STATIC**) (CONF:4395-23084).
 - ii. This participantRole **SHALL** contain exactly one [1..1] **id** (CONF:4395-23085).

The value of **@root** must be the NHSN assigned Facility OID.

1. This id **SHALL** contain exactly one [1..1] **@root** (CONF:4395-23086).

The value of **@extension** must be a value registered with NHSN.

2. This id **SHALL** contain exactly one [1..1] **@extension** (CONF:4395-23087).
 - iii. This participantRole **SHALL** contain exactly one [1..1] **code**, which **SHOULD** be selected from ValueSet [NHSNHealthcareServiceLocationCode](#) urn:oid:2.16.840.1.113883.13.19 **DYNAMIC** (CONF:4395-23088).
5. **SHALL** contain at least one [1..*] **entryRelationship** (CONF:4395-23092).
 - a. Such entryRelationships **SHALL** contain exactly one [1..1] **@typeCode**="COMP" Has component (CodeSystem: HL7ActRelationshipType urn:oid:2.16.840.1.113883.5.1002 **STATIC**) (CONF:4395-23093).
 - b. Such entryRelationships **SHALL** contain exactly one [1..1] [Summary Data Observation \(AU/AR\)](#) (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.229:2015-04-01) (CONF:4395-23094).

Figure 48: Summary Encounter (ARO) (V3)

```
<!-- Summary Encounter -->
<encounter classCode="ENC" moodCode="EVN">
  <!-- Summary Encounter (ARO) (V3) templateId -->
  <templateId root="2.16.840.1.113883.10.20.5.6.199"
    extension="2019-04-01"/>
  <!-- the location id and type -->
  <participant typeCode="LOC">
    <participantRole classCode="SDLOC">
      <id root="2.111.111.111.10709" extension="FACWIDEIN"/>
      <code codeSystem="2.16.840.1.113883.6.259"
        codeSystemName="HL7 Healthcare Service Location Code"
        code="1250-0"
        displayName="Facility Wide Inpatient"/>
    </participantRole>
  </participant>

  <entryRelationship typeCode="COMP">
    <observation classCode="OBS" moodCode="EVN">
      <!-- Summary Data Observation (AU/AR) templateId -->
      <templateId root="2.16.840.1.113883.10.20.5.6.229"
        extension="2015-04-01"/>
      <code code="1851-5"
        codeSystem="2.16.840.1.113883.6.277"
        codeSystemName="cdcNHSN"
        displayName="Patient Days"/>
      <statusCode code="completed"/>
      <value xsi:type="PQ" unit="d" value="235"/>
    </observation>
  </entryRelationship>

  <entryRelationship typeCode="COMP">
    <observation classCode="OBS" moodCode="EVN">
      <!-- Summary Data Observation (AU/AR) templateId -->
      <templateId root="2.16.840.1.113883.10.20.5.6.229"
        extension="2015-04-01"/>
      <code code="1862-2" codeSystem="2.16.840.1.113883.6.277"
        codeSystemName="cdcNHSN"
        displayName="Admission count"/>
      <statusCode code="completed"/>
      <value xsi:type="INT" value="46"/>
    </observation>
  </entryRelationship>

  <entryRelationship typeCode="COMP">
    <!-- Summary Data Observation (AU/AR) templateId -->
    <observation classCode="OBS" moodCode="EVN">
      <templateId root="2.16.840.1.113883.10.20.5.6.229"
        extension="2015-04-01"/>
      <code code="2409-1" codeSystem="2.16.840.1.113883.6.277"
        codeSystemName="cdcNHSN"
        displayName="Blood cultures performed"/>
      <statusCode code="completed"/>
      <value xsi:type="INT" value="24"/>
    </observation>
  </entryRelationship>
```

</encounter>

7.19 Summary Encounter (AUP) (V2)

[encounter: identifier urn:hl7ii:2.16.840.1.113883.10.20.5.6.198:2015-04-01 (closed)]

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Release 2 - US Realm

Table 88: Summary Encounter (AUP) (V2) Contexts

Contained By:	Contains:
Summary Data Section (AUP) (V2) (required)	Summary Data Observation (AUP) (required) Summary Data Observation (AU/AR) (required)

A Summary Encounter records a set of summary data, usually for a population such as the patients in a ward in a specified period. The NHSN protocol defines which data to record for each type of summary report. For an AUP report, data are recorded in both a Summary Data Observation (AU/AR) (non-stratified data) and a Summary Data Observation (AUP) (stratified data). The data requirements at time of publication are shown in a table under the Summary Data Observation (AU/AR) template, above.

A participant element records the location to which the data pertains. It has three parts: a location id, a location type code, and a scoping entity. The location id has the form <id root="..." extension="..."> representing a location such as ward 9W, or <id root="..."> representing the whole facility. The scoping entity is optional if an id is present.

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.

Table 89: Summary Encounter (AUP) (V2) Constraints Overview

XPath	Card.	Verb	Data Type	CONF#	Value
encounter (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.198:2015-04-01)					
@classCode	1..1	SHALL		1181-23019	urn:oid:2.16.840.1.113883.5.6 (HL7ActClass) = ENC
@moodCode	1..1	SHALL		1181-23020	urn:oid:2.16.840.1.113883.5.1 001 (HL7ActMood) = EVN
templateId	1..1	SHALL		1181-23021	
@root	1..1	SHALL		1181-23022	2.16.840.1.113883.10.20.5.6. 198
@extension	1..1	SHALL		1181-30563	2015-04-01
participant	1..1	SHALL		1181-23023	

XPath	Card.	Verb	Data Type	CONF#	Value
@typeCode	1..1	SHALL		1181-23024	urn:oid:2.16.840.1.113883.5.90 (HL7ParticipationType) = LOC
participantRole	1..1	SHALL		1181-23025	
@classCode	1..1	SHALL		1181-23026	urn:oid:2.16.840.1.113883.5.41 (HL7EntityClass) = SDLOC
participant	1..1	SHALL		1181-23030	
@typeCode	1..1	SHALL		1181-23031	urn:oid:2.16.840.1.113883.5.90 (HL7ParticipationType) = CSM
participantRole	1..1	SHALL		1181-23032	
@classCode	0..1	MAY		1181-23033	urn:oid:2.16.840.1.113883.5.110 (HL7RoleClass) = MANU
code	1..1	SHALL		1181-23034	urn:oid:2.16.840.1.114222.4.11.3360 (NHSNAntimicrobialAgentAURPCode)
entryRelationship	1..1	SHALL		1181-23036	
@typeCode	1..1	SHALL		1181-23037	urn:oid:2.16.840.1.113883.5.1002 (HL7ActRelationshipType) = COMP
observation	1..1	SHALL		1181-23038	Summary Data Observation (AU/AR) (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.229:2015-04-01)
entryRelationship	4..4	SHALL		1181-23040	
@typeCode	1..1	SHALL		1181-23041	urn:oid:2.16.840.1.113883.5.1002 (HL7ActRelationshipType) = COMP
observation	1..1	SHALL		1181-23042	Summary Data Observation (AUP) (identifier: urn:oid:2.16.840.1.113883.10.20.5.6.194)

1. **SHALL** contain exactly one [1..1] @classCode="ENC" Encounter (CodeSystem: HL7ActClass urn:oid:2.16.840.1.113883.5.6 **STATIC**) (CONF:1181-23019).
2. **SHALL** contain exactly one [1..1] @moodCode="EVN" Event (CodeSystem: HL7ActMood urn:oid:2.16.840.1.113883.5.1001 **STATIC**) (CONF:1181-23020).
3. **SHALL** contain exactly one [1..1] templateId (CONF:1181-23021) such that it
 - a. **SHALL** contain exactly one [1..1] @root="2.16.840.1.113883.10.20.5.6.198" (CONF:1181-23022).

- b. **SHALL** contain exactly one [1..1] **@extension="2015-04-01"** (CONF:1181-30563).
- 4. **SHALL** contain exactly one [1..1] **participant** (CONF:1181-23023) such that it
 - a. **SHALL** contain exactly one [1..1] **@typeCode="LOC"** Location (CodeSystem: HL7ParticipationType urn:oid:2.16.840.1.113883.5.90 **STATIC**) (CONF:1181-23024).
 - b. **SHALL** contain exactly one [1..1] **participantRole** (CONF:1181-23025).
 - i. This participantRole **SHALL** contain exactly one [1..1] **@classCode="SDLOC"** Service Delivery Location (CodeSystem: HL7EntityClass urn:oid:2.16.840.1.113883.5.41 **STATIC**) (CONF:1181-23026).

The value of **@root** must be the NHSN assigned Facility OID.

The value of **@extension** must be a value registered with NHSN.

- ii. If recording data from an in-facility location, the participantRole element **SHALL** contain an id element with both **@root** and **@extension**, and a code element where the value is selected from ValueSet 2.16.840.1.113883.13.19NHSNHealthcareServiceLocationCode **DYNAMIC**, recording the type of location (CONF:1181-23027).

The value of **@root** must be the NHSN assigned Facility OID.

- iii. Or, if recording data from the whole facility, the participantRole element **SHALL** contain an id element with **@root** (CONF:1181-23028).

The value of **@root** must be the NHSN assigned Facility OID.

- 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:1181-23029).

- 5. **SHALL** contain exactly one [1..1] **participant** (CONF:1181-23030) such that it
 - a. **SHALL** contain exactly one [1..1] **@typeCode="CSM"** Consumable (CodeSystem: HL7ParticipationType urn:oid:2.16.840.1.113883.5.90) (CONF:1181-23031).
 - b. **SHALL** contain exactly one [1..1] **participantRole** (CONF:1181-23032).
 - i. This participantRole **MAY** contain zero or one [0..1] **@classCode="MANU"** (CodeSystem: HL7RoleClass urn:oid:2.16.840.1.113883.5.110) (CONF:1181-23033).
 - ii. This participantRole **SHALL** contain exactly one [1..1] **code**, which **SHALL** be selected from ValueSet [NHSNAntimicrobialAgentAURPCode](#) urn:oid:2.16.840.1.114222.4.11.3360 **DYNAMIC** (CONF:1181-23034).
- 6. **SHALL** contain exactly one [1..1] **entryRelationship** (CONF:1181-23036) such that it
 - a. **SHALL** contain exactly one [1..1] **@typeCode="COMP"** Has component (CodeSystem: HL7ActRelationshipType urn:oid:2.16.840.1.113883.5.1002 **STATIC**) (CONF:1181-23037).
 - b. **SHALL** contain exactly one [1..1] [Summary Data Observation \(AU/AR\)](#) (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.229:2015-04-01) (CONF:1181-23038).

- c. This Summary Data Observation (AU/AR) records Number of Therapy Days for the antimicrobial (this is not a simple total of the stratified data; consult the NHSN protocol for the calculation) (CONF:1181-23039).
- 7. **SHALL** contain [4..4] **entryRelationship** (CONF:1181-23040) such that it
 - a. **SHALL** contain exactly one [1..1] **@typeCode="COMP"** (CodeSystem: HL7ActRelationshipType urn:oid:2.16.840.1.113883.5.1002) (CONF:1181-23041).
 - b. **SHALL** contain exactly one [1..1] **Summary Data Observation (AUP)** (identifier: urn:oid:2.16.840.1.113883.10.20.5.6.194) (CONF:1181-23042).
 - c. These Summary Data Observation (AUP) elements record Number of Therapy Days for the antimicrobial stratified by route of actual administration (four observations, one for each route) (CONF:1181-23043).

Table 90: NHSNAntimicrobialAgentAURPCode

Value Set: NHSNAntimicrobialAgentAURPCode urn:oid:2.16.840.1.114222.4.11.3360 (Clinical Focus: NHSN surveillance reporting: This value set contains codes describing the antimicrobial agent.), (Data Element Scope: An entity code representing the antimicrobial agent for which susceptibilities are reported against a certain pathogen.), (Inclusion Criteria:), (Exclusion Criteria:) This value set was imported on 10/14/2020 with a version of Latest. Value Set Source: https://vsac.nlm.nih.gov/valueset/2.16.840.1.114222.4.11.3360/expansion			
Code	Code System	Code System OID	Print Name
1009148	RxNorm	urn:oid:2.16.840.1.113883.6.88	ampicillin / sulbactam
10109	RxNorm	urn:oid:2.16.840.1.113883.6.88	streptomycin
10207	RxNorm	urn:oid:2.16.840.1.113883.6.88	sulfisoxazole
10395	RxNorm	urn:oid:2.16.840.1.113883.6.88	tetracycline
1040005	RxNorm	urn:oid:2.16.840.1.113883.6.88	ceftaroline
10591	RxNorm	urn:oid:2.16.840.1.113883.6.88	ticarcillin
10612	RxNorm	urn:oid:2.16.840.1.113883.6.88	tinidazole
10627	RxNorm	urn:oid:2.16.840.1.113883.6.88	tobramycin
10829	RxNorm	urn:oid:2.16.840.1.113883.6.88	trimethoprim
10831	RxNorm	urn:oid:2.16.840.1.113883.6.88	sulfamethoxazole / trimethoprim
...			

Figure 49: Summary Encounter (AUP) (V2) Example

```
<!-- encounter reporting data for one antimicrobial -->
<encounter classCode="ENC" moodCode="EVN">
  <!-- Summary Encounter (AUP) (V2) templateId -->
  <templateId root="2.16.840.1.113883.10.20.5.6.198"
    extension="2015-04-01"/>
  <!-- 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>
  <!-- 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>
  <!-- first of five data observations -->
  <entryRelationship typeCode="COMP">
    <observation classCode="OBS" moodCode="EVN">
      <!-- Summary Data Observation (AU/AR) templateId -->
      <templateId root="2.16.840.1.113883.10.20.5.6.229"
        extension="2015-04-01"/>
      <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 -->
  <entryRelationship typeCode="COMP">
    <observation classCode="OBS" moodCode="EVN">
      <!-- Summary Data Observation (AUP) templateId -->
      <templateId root="2.16.840.1.113883.10.20.5.6.194"/>
      ...
    </observation>
  </entryRelationship>
</encounter>
<!-- end of encounter for this antimicrobial -->
```

7.20 Summary Encounter Patient Presence (AUP) (V2)

[encounter: identifier urn:hl7ii:2.16.840.1.113883.10.20.5.6.197:2015-04-01 (closed)]

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Table 91: Summary Encounter Patient Presence (AUP) (V2) Contexts

Contained By:	Contains:
Summary Data Section (AUP) (V2) (required)	Summary Data Observation (AU/AR) (required)

A Summary Encounter records a set of summary data, usually for a population such as the patients in a ward in a specified period. The NHSN protocol defines which data to record for each type of summary report. The Summary Encounter Patient Presence (AUP) contains one or more Summary Data Observations (AU/AR). The data requirements at time of publication are shown in a table under the Summary Data Observation (AU/AR) template, above.

NHSN reporting requires:

- 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.

Table 92: Summary Encounter Patient Presence (AUP) (V2) Constraints Overview

XPath	Card.	Verb	Data Type	CONF#	Value
encounter (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.197:2015-04-01)					
@classCode	1..1	SHALL		1181-22995	urn:oid:2.16.840.1.113883.5.6 (HL7ActClass) = ENC
@moodCode	1..1	SHALL		1181-22996	urn:oid:2.16.840.1.113883.5.1001 (HL7ActMood) = EVN
templateId	1..1	SHALL		1181-22997	
@root	1..1	SHALL		1181-22998	2.16.840.1.113883.10.20.5.6.197
@extension	1..1	SHALL		1181-30562	2015-04-01
participant	1..1	SHALL		1181-22999	
@typeCode	1..1	SHALL		1181-23000	urn:oid:2.16.840.1.113883.5.90 (HL7ParticipationType) = LOC
participantRole	1..1	SHALL		1181-23001	
@classCode	1..1	SHALL		1181-23002	urn:oid:2.16.840.1.113883.5.41 (HL7EntityClass) = SDLOC
entryRelationship	1..*	SHALL		1181-23006	
@typeCode	1..1	SHALL		1181-23007	urn:oid:2.16.840.1.113883.5.1002 (HL7ActRelationshipType) = COMP
observation	1..1	SHALL		1181-23008	Summary Data Observation (AU/AR) (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.229:2015-04-01)

1. **SHALL** contain exactly one [1..1] @classCode="ENC" Encounter (CodeSystem: HL7ActClass urn:oid:2.16.840.1.113883.5.6 **STATIC**) (CONF:1181-22995).
2. **SHALL** contain exactly one [1..1] @moodCode="EVN" Event (CodeSystem: HL7ActMood urn:oid:2.16.840.1.113883.5.1001 **STATIC**) (CONF:1181-22996).
3. **SHALL** contain exactly one [1..1] templateId (CONF:1181-22997) such that it
 - a. **SHALL** contain exactly one [1..1] @root="2.16.840.1.113883.10.20.5.6.197" (CONF:1181-22998).
 - b. **SHALL** contain exactly one [1..1] @extension="2015-04-01" (CONF:1181-30562).
4. **SHALL** contain exactly one [1..1] participant (CONF:1181-22999) such that it
 - a. **SHALL** contain exactly one [1..1] @typeCode="LOC" Location (CodeSystem: HL7ParticipationType urn:oid:2.16.840.1.113883.5.90 **STATIC**) (CONF:1181-23000).
 - b. **SHALL** contain exactly one [1..1] participantRole (CONF:1181-23001).

- i. This participantRole **SHALL** contain exactly one [1..1] @classCode="SDLOC" Service Delivery Location (CodeSystem: HL7EntityClass urn:oid:2.16.840.1.113883.5.41 **STATIC**) (CONF:1181-23002).

The value of @root must be the NHSN assigned Facility OID.

The value of @extension must be a value registered with NHSN.

- ii. If recording data from an in-facility location, the participantRole element **SHALL** contain an id element with both @root and @extension, and a code element where the value is selected from ValueSet 2.16.840.1.113883.13.19NHSNHealthcareServiceLocationCode **DYNAMIC**, recording the type of location (CONF:1181-23003).

The value of @root must be the NHSN assigned Facility OID.

- iii. Or, if recording data from the whole facility, the participantRole element **SHALL** contain an id element with @root (CONF:1181-23004).

The value of @root must be the NHSN assigned Facility OID.

- 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:1181-23005).

5. **SHALL** contain at least one [1..*] entryRelationship (CONF:1181-23006).
 - a. Such entryRelationships **SHALL** contain exactly one [1..1] @typeCode="COMP" Has component (CodeSystem: HL7ActRelationshipType urn:oid:2.16.840.1.113883.5.1002 **STATIC**) (CONF:1181-23007).
 - b. Such entryRelationships **SHALL** contain exactly one [1..1] [Summary Data Observation \(AU/AR\)](#) (identifier: urn:hl7ii:2.16.840.1.113883.10.20.5.6.229:2015-04-01) (CONF:1181-23008).
6. This Summary Encounter **SHALL** contain a Summary Data Observation (AU/AR) that records Number of Patient-present Days for the reporting location (CONF:1181-23011).
7. If the reporting location is facility-wide inpatient units, this Summary Encounter **SHALL** contain a second Summary Data Observation (AU/AR) that records Number of Admissions (CONF:1181-23012).

Figure 50: Summary Encounter Patient Presence (AUP) (V2)

```
<!-- encounter recording patient presence -->
<encounter classCode="ENC" moodCode="EVN">
  <!-- Summary Encounter Patient Presence (AUP) templateId -->
  <templateId root="2.16.840.1.113883.10.20.5.6.197"
    extension="2015-04-01" />
  <!-- 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">
      <!-- Summary Data Observation (AU/AP) templateId -->
      <templateId root="2.16.840.1.113883.10.20.5.6.229"
        extension="2015-04-01" />
      ...
    </observation>
  </entryRelationship>
  <!-- if the reporting location is facility-wide inpatient units,
    a second observation recording Number of Admissions -->
</encounter>
```

8 TEMPLATE IDS IN THIS GUIDE

Table 93: Template List

Template Title	Template Type	templateId
Antimicrobial Resistance Option (ARO) Summary Report (V3)	document	urn:hl7ii:2.16.840.1.113883.10.20.5.46:2019-04-01
Antimicrobial Use (AUP) Summary Report (V2)	document	urn:hl7ii:2.16.840.1.113883.10.20.5.44:2015-04-01
HAI AUR Antimicrobial Resistance Option (ARO) Report (V6)	document	urn:hl7ii:2.16.840.1.113883.10.20.5.31:2022-04-01
HAI Population Summary Report Generic Constraints	document	urn:oid:2.16.840.1.113883.10.20.5.4.28
HAI Single-Person Report Generic Constraints (V2)	document	urn:hl7ii:2.16.840.1.113883.10.20.5.4.27:2022-04-01
Healthcare Associated Infection Report	document	urn:oid:2.16.840.1.113883.10.20.5.4.25
Findings Section in an ARO Report (V4)	section	urn:hl7ii:2.16.840.1.113883.10.20.5.5.32:2020-04-01
HAI Section Generic Constraints	section	urn:oid:2.16.840.1.113883.10.20.5.4.26
NHSN Comment Section	section	urn:hl7ii:2.16.840.1.113883.10.20.5.5.61:2017-04-01
NHSN Social History Section	section	urn:hl7ii:2.16.840.1.113883.10.20.5.5.81:2022-04-01
Report No Events Section	section	urn:hl7ii:2.16.840.1.113883.10.20.5.5.62:2018-04-01
Summary Data Section (ARO) (V3)	section	urn:hl7ii:2.16.840.1.113883.10.20.5.5.52:2019-04-01
Summary Data Section (AUP) (V2)	section	urn:hl7ii:2.16.840.1.113883.10.20.5.5.51:2015-04-01
Antimicrobial Susceptibility Final Interpretation Result	entry	urn:oid:2.16.840.1.113883.10.20.5.6.175
Antimicrobial Susceptibility Isolate Participant (V2)	entry	urn:hl7ii:2.16.840.1.113883.10.20.5.6.202:2020-04-01
Antimicrobial Susceptibility Result Observation (V3)	entry	urn:hl7ii:2.16.840.1.113883.10.20.5.6.186:2016-08-01
Antimicrobial Susceptibility Result Organizer (V3)	entry	urn:hl7ii:2.16.840.1.113883.10.20.5.6.200:2016-08-01
Antimicrobial Susceptibility Tests Organizer (V3)	entry	urn:hl7ii:2.16.840.1.113883.10.20.5.6.177:2016-08-01
ARO Staph Aureus Specific Tests Organizer	entry	urn:oid:2.16.840.1.113883.10.20.5.6.190
ARO Staph Aureus Specific Tests Result Observation	entry	urn:oid:2.16.840.1.113883.10.20.5.6.189
Birth Sex Observation	entry	urn:hl7ii:2.16.840.1.113883.10.20.22.4.200:2016-06-01

Template Title	Template Type	templateId
Gender Identity Observation (V3)	entry	urn:hl7ii:2.16.840.1.113883.10.20.34.3.45:2022-06-01
Isolate Susceptibility Tests Organizer (V4)	entry	urn:hl7ii:2.16.840.1.113883.10.20.5.6.201:2020-04-01
NHSN Comment	entry	urn:hl7ii:2.16.840.1.113883.10.20.5.6.243:2017-04-01
Patient Admitted This Encounter Observation	entry	urn:hl7ii:2.16.840.1.113883.10.20.5.6.266:2020-04-01
Report No Events	entry	urn:hl7ii:2.16.840.1.113883.10.20.5.6.249:2018-04-01
Specimen Collection Encounter (ARO) (V2)	entry	urn:hl7ii:2.16.840.1.113883.10.20.5.6.187:2020-04-01
Specimen Collection Procedure (ARO) (V4)	entry	urn:hl7ii:2.16.840.1.113883.10.20.5.6.188:2020-04-01
Summary Data Observation (AU/AR)	entry	urn:hl7ii:2.16.840.1.113883.10.20.5.6.229:2015-04-01
Summary Data Observation (AUP)	entry	urn:oid:2.16.840.1.113883.10.20.5.6.194
Summary Encounter (ARO) (V3)	entry	urn:hl7ii:2.16.840.1.113883.10.20.5.6.199:2019-04-01
Summary Encounter (AUP) (V2)	entry	urn:hl7ii:2.16.840.1.113883.10.20.5.6.198:2015-04-01
Summary Encounter Patient Presence (AUP) (V2)	entry	urn:hl7ii:2.16.840.1.113883.10.20.5.6.197:2015-04-01

Table 94: Template Containments

Template Title	Template Type	templateId
Antimicrobial Resistance Option (ARO) Summary Report (V3)	document	urn:hl7ii:2.16.840.1.113883.10.20.5.46:2019-04-01
NHSN Comment Section	section	urn:hl7ii:2.16.840.1.113883.10.20.5.5.61:2017-04-01
NHSN Comment	entry	urn:hl7ii:2.16.840.1.113883.10.20.5.6.243:2017-04-01
Report No Events Section	section	urn:hl7ii:2.16.840.1.113883.10.20.5.5.62:2018-04-01
Report No Events	entry	urn:hl7ii:2.16.840.1.113883.10.20.5.6.249:2018-04-01
Summary Data Section (ARO) (V3)	section	urn:hl7ii:2.16.840.1.113883.10.20.5.5.52:2019-04-01
Summary Encounter (ARO) (V3)	entry	urn:hl7ii:2.16.840.1.113883.10.20.5.6.199:2019-04-01
Summary Data Observation (AU/AR)	entry	urn:hl7ii:2.16.840.1.113883.10.20.5.6.229:2015-04-01

Template Title	Template Type	templateId
Antimicrobial Use (AUP) Summary Report (V2)	document	urn:hl7ii:2.16.840.1.113883.10.20.5.44:2015-04-01
Summary Data Section (AUP) (V2)	section	urn:hl7ii:2.16.840.1.113883.10.20.5.5.51:2015-04-01
Summary Encounter Patient Presence (AUP) (V2)	entry	urn:hl7ii:2.16.840.1.113883.10.20.5.6.197:2015-04-01
Summary Data Observation (AU/AR)	entry	urn:hl7ii:2.16.840.1.113883.10.20.5.6.229:2015-04-01
Summary Encounter (AUP) (V2)	entry	urn:hl7ii:2.16.840.1.113883.10.20.5.6.198:2015-04-01
Summary Data Observation (AUP)	entry	urn:oid:2.16.840.1.113883.10.20.5.6.194
Summary Data Observation (AU/AR)	entry	urn:hl7ii:2.16.840.1.113883.10.20.5.6.229:2015-04-01
HAI AUR Antimicrobial Resistance Option (ARO) Report (V6)	document	urn:hl7ii:2.16.840.1.113883.10.20.5.31:2022-04-01
Findings Section in an ARO Report (V4)	section	urn:hl7ii:2.16.840.1.113883.10.20.5.5.32:2020-04-01
Specimen Collection Procedure (ARO) (V4)	entry	urn:hl7ii:2.16.840.1.113883.10.20.5.6.188:2020-04-01
Specimen Collection Encounter (ARO) (V2)	entry	urn:hl7ii:2.16.840.1.113883.10.20.5.6.187:2020-04-01
Patient Admitted This Encounter Observation	entry	urn:hl7ii:2.16.840.1.113883.10.20.5.6.266:2020-04-01
Isolate Susceptibility Tests Organizer (V4)	entry	urn:hl7ii:2.16.840.1.113883.10.20.5.6.201:2020-04-01
ARO Staph Aureus Specific Tests Organizer	entry	urn:oid:2.16.840.1.113883.10.20.5.6.190
ARO Staph Aureus Specific Tests Result Observation	entry	urn:oid:2.16.840.1.113883.10.20.5.6.189
Antimicrobial Susceptibility Tests Organizer (V3)	entry	urn:hl7ii:2.16.840.1.113883.10.20.5.6.177:2016-08-01
Antimicrobial Susceptibility Final Interpretation Result	entry	urn:oid:2.16.840.1.113883.10.20.5.6.175
Antimicrobial Susceptibility Result Organizer (V3)	entry	urn:hl7ii:2.16.840.1.113883.10.20.5.6.200:2016-08-01
Antimicrobial Susceptibility Result Observation (V3)	entry	urn:hl7ii:2.16.840.1.113883.10.20.5.6.186:2016-08-01
Antimicrobial Susceptibility Isolate Participant (V2)	entry	urn:hl7ii:2.16.840.1.113883.10.20.5.6.202:2020-04-01
HAI Population Summary Report Generic Constraints	document	urn:oid:2.16.840.1.113883.10.20.5.4.28

Template Title	Template Type	templateId
HAI Single-Person Report Generic Constraints (V2)	document	urn:hl7ii:2.16.840.1.113883.10.20.5.4.27:2022-04-01
NHSN Social History Section	section	urn:hl7ii:2.16.840.1.113883.10.20.5.5.81:2022-04-01
Birth Sex Observation	entry	urn:hl7ii:2.16.840.1.113883.10.20.22.4.200:2016-06-01
Gender Identity Observation (V3)	entry	urn:hl7ii:2.16.840.1.113883.10.20.34.3.45:2022-06-01
Healthcare Associated Infection Report	document	urn:oid:2.16.840.1.113883.10.20.5.4.25
HAI Section Generic Constraints	section	urn:oid:2.16.840.1.113883.10.20.5.4.26

9 VALUE SETS IN THIS GUIDE

Table 95: Value Sets

Name	OID	URL
Administrative Gender (HL7 V3)	urn:oid:2.16.840.1.113883.1.11.1	https://vsac.nlm.nih.gov/valueset/2.16.840.1.113883.1.11.1/expansion
Asked but Unknown and Other	urn:oid:2.16.840.1.113762.1.4.1114.17	https://vsac.nlm.nih.gov/valueset/2.16.840.1.113762.1.4.1114.17/expansion
Codes for Antimicrobial Resistance Option (ARO) Summary Data	urn:oid:2.16.840.1.113883.10.20.5.9.8	https://vsac.nlm.nih.gov/valueset/2.16.840.1.113883.10.20.5.9.8/expansion
Codes for Antimicrobial Usage, Pharmacy (AUP) Summary Data	urn:oid:2.16.840.1.113883.10.20.5.9.9	https://vsac.nlm.nih.gov/valueset/2.16.840.1.113883.10.20.5.9.9/expansion
Ethnicity	urn:oid:2.16.840.1.114222.4.11.837	https://vsac.nlm.nih.gov/valueset/2.16.840.1.114222.4.11.837/expansion
Gender Identity USCDI core	urn:oid:2.16.840.1.113762.1.4.1021.101	https://vsac.nlm.nih.gov/valueset/2.16.840.1.113762.1.4.1021.101/expansion
NHSNAntimicrobialAgentAURPCode	urn:oid:2.16.840.1.114222.4.11.3360	https://vsac.nlm.nih.gov/valueset/2.16.840.1.114222.4.11.3360/expansion
NHSNDrugSusceptibilityFindingCode	urn:oid:2.16.840.1.113883.13.13	https://vsac.nlm.nih.gov/valueset/2.16.840.1.113883.13.13/expansion
NHSNDrugSusceptibilityTestMethod	urn:oid:2.16.840.1.113883.10.20.5.9.4	https://vsac.nlm.nih.gov/valueset/2.16.840.1.113883.10.20.5.9.4/expansion
NHSNDrugSusceptibilityTestsCode	urn:oid:2.16.840.1.113883.13.15	https://vsac.nlm.nih.gov/valueset/2.16.840.1.113883.13.15/expansion
NHSNEncounterTypeCode	urn:oid:2.16.840.1.113883.13.1	https://vsac.nlm.nih.gov/valueset/2.16.840.1.113883.13.1/expansion
NHSNHealthcareServiceLocationCode	urn:oid:2.16.840.1.113883.13.19	https://vsac.nlm.nih.gov/valueset/2.16.840.1.113883.13.19/expansion
NHSNPathogenCodeARO	urn:oid:2.16.840.1.113762.1.4.1190.6	https://vsac.nlm.nih.gov/valueset/2.16.840.1.113762.1.4.1190.6/expansion
NHSNPopulationSummaryReportTypeCode	urn:oid:2.16.840.1.114222.4.11.3595	https://vsac.nlm.nih.gov/valueset/2.16.840.1.114222.4.11.3595/expansion
NHSNReportNoEventsAR	urn:oid:2.16.840.1.113883.10.20.5.9.35	https://vsac.nlm.nih.gov/valueset/2.16.840.1.113883.10.20.5.9.35/expansion

Name	OID	URL
<u>NHSNReportNoEventsDialysis</u>	urn:oid:2.16.840.1.113883.10.20.5.9.22	<u>https://vsac.nlm.nih.gov/valueset/2.16.840.1.113883.10.20.5.9.22/expansion</u>
<u>NHSNReportNoEventsICU</u>	urn:oid:2.16.840.1.113883.10.20.5.9.18	<u>https://vsac.nlm.nih.gov/valueset/2.16.840.1.113883.10.20.5.9.18/expansion</u>
<u>NHSNReportNoEventsMDRO</u>	urn:oid:2.16.840.1.113883.10.20.5.9.21	<u>https://vsac.nlm.nih.gov/valueset/2.16.840.1.113883.10.20.5.9.21/expansion</u>
<u>NHSNReportNoEventsMDROLTCTF</u>	urn:oid:2.16.840.1.113883.10.20.5.1.9.1	<u>https://vsac.nlm.nih.gov/valueset/2.16.840.1.113883.10.20.5.1.9.1/expansion</u>
<u>NHSNReportNoEventsNICU</u>	urn:oid:2.16.840.1.113883.10.20.5.9.19	<u>https://vsac.nlm.nih.gov/valueset/2.16.840.1.113883.10.20.5.9.19/expansion</u>
<u>NHSNReportNoEventsOPCSameDayOutcomeMeasures</u>	urn:oid:2.16.840.1.113883.10.20.5.9.33	<u>https://vsac.nlm.nih.gov/valueset/2.16.840.1.113883.10.20.5.9.33/expansion</u>
<u>NHSNReportNoEventsSCA</u>	urn:oid:2.16.840.1.113883.10.20.5.9.20	<u>https://vsac.nlm.nih.gov/valueset/2.16.840.1.113883.10.20.5.9.20/expansion</u>
<u>NHSNRouteOfAdministrationAURP Code</u>	urn:oid:2.16.840.1.114222.4.11.3361	<u>https://vsac.nlm.nih.gov/valueset/2.16.840.1.114222.4.11.3361/expansion</u>
<u>NHSNSpecimenTypeCode</u>	urn:oid:2.16.840.1.114222.4.11.3249	<u>https://vsac.nlm.nih.gov/valueset/2.16.840.1.114222.4.11.3249/expansion</u>
<u>NHSNStaphAureusSpecificTest</u>	urn:oid:2.16.840.1.114222.4.11.7160	<u>https://vsac.nlm.nih.gov/valueset/2.16.840.1.114222.4.11.7160/expansion</u>
<u>NHSNStaphAureusTestResults</u>	urn:oid:2.16.840.1.114222.4.11.6074	<u>https://vsac.nlm.nih.gov/valueset/2.16.840.1.114222.4.11.6074/expansion</u>
<u>ONC Administrative Sex</u>	urn:oid:2.16.840.1.113762.1.4.1	<u>https://vsac.nlm.nih.gov/valueset/2.16.840.1.113762.1.4.1/expansion</u>
<u>Race Category Excluding Nulls</u>	urn:oid:2.16.840.1.113883.3.2074.1.1.3	<u>https://vsac.nlm.nih.gov/valueset/2.16.840.1.113883.3.2074.1.1.3/expansion</u>

10 CODE SYSTEMS IN THIS GUIDE

Table 96: Code Systems

Name	OID
Administrative Gender	urn:oid:2.16.840.1.113883.5.1
cdcNHSN	urn:oid:2.16.840.1.113883.6.277
CPT4	urn:oid:2.16.840.1.113883.6.12
Healthcare Provider Taxonomy (HIPAA)	urn:oid:2.16.840.1.113883.6.101
HL7ActClass	urn:oid:2.16.840.1.113883.5.6
HL7ActCode	urn:oid:2.16.840.1.113883.5.4
HL7ActMood	urn:oid:2.16.840.1.113883.5.1001
HL7ActPriority	urn:oid:2.16.840.1.113883.5.7
HL7ActRelationshipType	urn:oid:2.16.840.1.113883.5.1002
HL7ActStatus	urn:oid:2.16.840.1.113883.5.14
HL7Confidentiality	urn:oid:2.16.840.1.113883.5.25
HL7ContextControl	urn:oid:2.16.840.1.113883.5.1057
HL7EntityClass	urn:oid:2.16.840.1.113883.5.41
HL7NullFlavor	urn:oid:2.16.840.1.113883.5.1008
HL7ParticipationFunction	urn:oid:2.16.840.1.113883.5.88
HL7ParticipationType	urn:oid:2.16.840.1.113883.5.90
HL7RoleClass	urn:oid:2.16.840.1.113883.5.110
HL7RoleCode	urn:oid:2.16.840.1.113883.5.111
HSLOC	urn:oid:2.16.840.1.113883.6.259
ICD-10-CM	urn:oid:2.16.840.1.113883.6.90
ISBT-128	urn:oid:2.16.840.1.113883.6.18
LOINC	urn:oid:2.16.840.1.113883.6.1
Media Type	urn:oid:2.16.840.1.113883.5.79
ObservationInterpretation	urn:oid:2.16.840.1.113883.5.83
ProvenanceParticipantType	urn:oid:2.16.840.1.113883.4.642.4.1131
Race & Ethnicity - CDC	urn:oid:2.16.840.1.113883.6.238
RxNorm	urn:oid:2.16.840.1.113883.6.88
SNOMED CT	urn:oid:2.16.840.1.113883.6.96
UCUM	urn:oid:1.3.6.1.4.1.12009.10.3.1
UCUM	urn:oid:2.16.840.1.113883.6.8

11 CHANGES FROM PREVIOUS VERSION

11.1 HAI AUR Antimicrobial Resistance Option (ARO) Report (V6)

[HAI AUR Antimicrobial Resistance Option \(ARO\) Report \(V6\)](#)

[\(urn:hl7ii:2.16.840.1.113883.10.20.5.31:2022-04-01\)](#)

Change	Old	New
Status	Published	Draft
Name	HAI AUR Antimicrobial Resistance Option (ARO) Report (V5)	HAI AUR Antimicrobial Resistance Option (ARO) Report (V6)
Oid	urn:hl7ii:2.16.840.1.113883.10.20.5.31:2020-04-01	urn:hl7ii:2.16.840.1.113883.10.20.5.31:2022-04-01
Implied Template	HAI Single-Person Report Generic Constraints (urn:oid:2.16.840.1.113883.10.20.5.4.27)	HAI Single-Person Report Generic Constraints (V2) (urn:hl7ii:2.16.840.1.113883.10.20.5.4.27:2022-04-01)
CONF #: 4523-30541 Modified	SHALL contain exactly one [1..1] @root="2.16.840.1.113883.10.20.5.7.3" (CONF:4459-30541).	SHALL contain exactly one [1..1] @root="2.16.840.1.113883.10.20.5.7.4.2" (CONF:4523-30541).
CONF #: 4523-30542 Modified	SHALL contain exactly one [1..1] @extension="2020-04-01" (CONF:4459-30542).	SHALL contain exactly one [1..1] @extension="2022-04-01" (CONF:4523-30542).

11.2 HAI Single-Person Report Generic Constraints (V2)

[HAI Single-Person Report Generic Constraints \(V2\)](#)

[\(urn:hl7ii:2.16.840.1.113883.10.20.5.4.27:2022-04-01\)](#)

Change	Old	New
Status	Published	Draft
Name	HAI Single-Person Report Generic Constraints	HAI Single-Person Report Generic Constraints (V2)
Oid	urn:oid:2.16.840.1.113883.10.20.5.4.27	urn:hl7ii:2.16.840.1.113883.10.20.5.4.27:2022-04-01
Description	<p>This template records the constraints for HAI single-person reports. It is used by all numerator reports covered by this guide. It is also used by the Procedure Denominator Report.</p> <p>A single-person report must conform to the Healthcare Associated Infection Report template. In addition, key data about the patient are recorded in the recordTarget element.</p> <ul style="list-style-type: none"> • A patient identifier representing 	<p>This template records the constraints for HAI single-person reports. It is used by all numerator reports covered by this guide. It is also used by the Procedure Denominator Report.</p> <p>A single-person report must conform to the Healthcare Associated Infection Report template. In addition, key data about the patient are recorded in the recordTarget element.</p> <ul style="list-style-type: none"> • A patient identifier representing

Change	Old	New
	<p>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). If there isn't an available "other" identifier, then there should not be an id present for that type of identifier.</p> <ul style="list-style-type: none"> • The patient name is optional; consult the NHSN reporting protocol and requirements. • Patient gender and birthdate are required. <p>The report-specific requirements specify the encounter data to record for each single-person report type. These data always include an identifier for the reporting facility, and usually include the encounter type (inpatient or outpatient), the admission date or encounter date, and the facility unit identifier and type.</p> <p>Note: The section on “Template Ids in this Guide” includes a containment table showing all the entries within each report type.</p>	<p>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). If there isn't an available "other" identifier, then there should not be an id present for that type of identifier.</p> <ul style="list-style-type: none"> • The patient name is optional; consult the NHSN reporting protocol and requirements. • Patient gender and birthdate are required. <p>The report-specific requirements specify the encounter data to record for each single-person report type. These data always include an identifier for the reporting facility, and usually include the encounter type (inpatient or outpatient), the admission date or encounter date, and the facility unit identifier and type.</p> <p>**TODO** Add Gender Identity and Birth Sex text if we decide to keep that section in this template</p> <p>Note: The section on “Template Ids in this Guide” includes a containment table showing all the entries within each report type.</p>
CONF #: 4523-22431 Added		SHALL contain exactly one [1..1] component (CONF:4523-22431).
CONF #: 4523-22432 Added		This component SHALL contain exactly one [1..1] structuredBody (CONF:4523-22432).
CONF #: 4523-22433 Added		This structuredBody SHALL contain at least one [1..*] component (CONF:4523-22433) such that it
CONF #: 4523-22434 Added		SHALL contain exactly one [1..1] section (CONF:4523-22434).
CONF #: 4523-30795 Added		SHALL contain exactly one [1..1] @extension="2022-04-01" (CONF:4523-30795).

