HL7 CDA® R2 Implementation Guide: Emergency Medical Services Hospital Outcomes Report, Release 1

September 2015

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Contents

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Revision History

Rev	Date	By Whom	Changes
Intial publication	August 2015	Jay Lyle	

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Chapter 1

INTRODUCTION

Topics:

This document is intended to guide software developers in generating CDA-compliant XML reports of hospital events and outcomes back to the EMS agencies that brought the patients in, primarily in the interest of quality control for the agencies. It consists of a set of constraints on the HL7 CDA R2 model mapped to National EMS Information System (NEMSIS) data elements, specifically the Outcomes section.

Clinical Document Architecture (CDA) is a standard for information exchange. It is based on the HL7 Reference Information Model, but it constrains that model to a specific set of patterns. This document adds further constraints, so that it specifies not just a generic clinical document, but an Emergency Medical Services (EMS) Patient Care Report—a record of an Emergency Medical Services encounter with a patient.

Further information about CDA is available at HL7.org.

This guide constrains NEMSIS data elements from version 3.4 to the HL7 CDA R2 document format. NEMSIS is maintained by the NEMSIS Technical Assistance Center, a US organization funded by the National Highway Transportation Safety Administration, the Centers for Disease Control, and the Health Resources and Services Administration at the University of Utah. The NEMSIS data dictionary is available at www.nemsis.org.

Overview

This implementation guide is generated from UML models developed in the Open Health Tools (OHT) Model-Driven Health Tools (MDHT) project. The data specifications have been formalized into computational models expressed in UML. These models are used by automated tooling to generate this publication, plus validation tools and Java libraries for implementers.

Approach

The approach for standardization of NEMSIS elements has been to rely on the expertise of the twenty professional societies that defined the elements, and to focus on clearly articulating their adaptation to the CDA formalism.

As HL7 offers the expertise of EHR and emergency care professionals, the project team solicits input from these communities.

Special attention is requested for

- The method of identifying ED vs inpatient context
- The possibility that there may be alternatives to the Rankin scale for discharge functional assessment
- The value of asserting conformance to C-CDA templates, which may enable more reuse for EHR firms, but which will also require a fairly heavy amount of nullification of elements designed for clinical care that would be inappropriate for this tool.

Scope

The NEMSIS data specification content has been developed over the past 20 years by a variety of partners. Professional organizations contributing to the content include American Ambulance Association (AAA), American College of Emergency Physicians (ACEP), American College of Surgeons: Committee on Trauma (ACS-COT), American Heart Association (AHA), Emergency Medical Services Outcomes Project (EMSOP), International Association of Fire Chiefs (IAFC), International Association of Fire Fighters (IAFF), National Academy of Emergency Medical Dispatch (NAEMD), National Association of Emergency Medical Technicians (NAEMT), National Association of EMS Physicians (NAEMSP), National Association of State EMS Officers (NASEMSO), National EMS Management Association (NEMSMA, formerly NAEMSQP), and the National Emergency Number Association (NENA). Supporting federal partners include National Highway Traffic Safety Administration (NHTSA), Health Resources and Services Administration (HRSA), Emergency Medical Services for Children Program (EMSC), EMSC National Resource Center (NRC), EMSC National EMSC Data Analysis Resource Center (NEDARC), Centers for Disease Control and Prevention (CDC), Federal Emergency Management Administration (FEMA), and HRSA's Office of Rural Health Policy (ORHP). NEMSIS has been adopted in 46 states and territories and implemented by scores of software providers.

This guide addresses the Outcomes section of NEMSIS 3.4, as well as certain element necessary to associate the data with the subject of a previous EMS Patient Care Report.

Audience

The audience for this document is software developers and development organizations who wish to produce or receive EMS Hospital Outcomes reports.

Software developers should use the CDA XML schema to guide their production of EMS patient care reports, subject to the constraints documented in this guide. Mappings of NEMSIS elements to the CDA schema are included in this document, in the "NEMSIS trace" comment. Coded elements should use the vocabularies referred to in the constraints.

The CDA schema is published by Health Level 7, and is available at http://www.hl7.org/implement/standards. This guide defines the information payload only. Implementers are encouraged to coordinate with one another by using the

IHE framework (available at http://www.ihe.net) to address expected capabilities of participating systems, including security and audit considerations.

Organization of This Guide

The requirements as laid out in the body of this document are subject to change per the policy on implementation guides (see section 13.02" Draft Standard for Trial Use Documents" within the HL7® Governance and Operations Manual, *http://www.hl7.org/documentcenter/public/membership/HL7_Governance_and_Operations_Manual.pdf*).

Templates

Templates are organized by document (see Document Templates), by section (see Section Templates), and by clinical statements (see Clinical Statement Templates). Within a section, templates are arranged hierarchically, where a more specific template is nested under the more generic template that it conforms to. See Templates by Containment for a listing of the higher level templates by containment; the appendix Templates Used in This Guide includes a table of all of the templates Organized Hierarchically.

Vocabulary and Value Sets

Vocabularies recommended in this guide are from standard vocabularies. When SNOMED codes are used, rules defined in Using SNOMED CT in HL7® Version 3 are adhered to. In many cases, these vocabularies are further constrained into value sets for use within this guide. Value set names and OIDs are summarized in the table Summary of Value Sets. Each named value set in this summary table is stored in a template database that will be maintained by CHCA.

Use of Templates

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

Originator Responsibilities

An originator can apply a `templateId` to assert conformance with a particular template.

In the most general forms of CDA® exchange, an originator need not apply a `templateId` for every template that an object in an instance document conforms to. This implementation guide asserts when `templateId`s are required for conformance.

Recipient Responsibilities

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

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

Conventions Used in This Guide

Conformance Requirements

Conformance statements are grouped and identified by the name of the template, along with the templateId and the context of the template (e.g., ClinicalDocument, section, observation), which specifies the element under constraint. If a template is a specialization of another template, its first constraint indicates the more general template. In all cases

where a more specific template conforms to a more general template, asserting the more specific template also implies conformance to the more general template. An example is shown below.

Template name

```
[<type of template>: templateId <XXXX.XX.XXX.XXX>]
```

Description of the template will be here .....

1. Conforms to <The template name> Template (templateId: XXXX<XX>XXX>YYY).
2. **SHALL** contain [1..1] @classCode = <AAA> <code display name> (CodeSystem: 123.456.789 <XXX> Class) **STATIC** (CONF:<number>).
3. .....

Figure 1: Template name and "conforms to" appearance

The conformance verb keyword at the start of a constraint (**SHALL** , **SHOULD** , **MAY**, etc.) indicates business conformance, whereas the cardinality indicator (0..1, 1..1, 1..*, etc.) specifies the allowable occurrences within an instance. Thus, " **MAY** contain 0..1" and " **SHOULD** contain 0..1" both allow for a document to omit the particular component, but the latter is a stronger recommendation that the component be included if it is known.

The following cardinality indicators may be interpreted as follows:

0..1 as zero to one present
1..1 as one and only one present
2..2 as two must be present
1..* as one or more present
0..* as zero to many present

Value set bindings adhere to HL7® Vocabulary Working Group best practices, and include both a conformance verb (**SHALL** , **SHOULD** , **MAY,** etc.) and an indication of **DYNAMIC** vs. **STATIC** binding. The use of **SHALL** requires that the component be valued with a member from the cited value set; however, in every case any HL7® "null" value such as other (OTH) or unknown (UNK) may be used.

Each constraint is uniquely identified (e.g., "CONF:605") by an identifier placed at or near the end of the constraint. These identifiers are not sequential as they are based on the order of creation of the constraint.

1. **SHALL** contain [1..1] component/structuredBody (CONF:4082).
    a. This component/structuredBody **SHOULD** contain [0..1] component (CONF:4130) such that it
        a. **SHALL** contain [1..1] Reporting Parameters section (templateId:2.16.840.1.113883.10.20.17.2.1) (CONF:4131).
    b. This component/structuredBody **SHALL** contain [1..1] component (CONF:4132) such that it
        a. **SHALL** contain [1..1] Patient data section - NCR (templateId:2.16.840.1.113883.10.20.17.2.5) (CONF:4133).

Figure 2: Template-based conformance statements example

CCD templates are included within this implementation guide for ease of reference. CCD templates contained within this implementation guide are formatted WITHOUT typical **KEYWORD** and **XML** element styles. A WIKI site is available if you would like to make a comment to be considered for the next release of CCD: *http://wiki.hl7.org/index.php?title=CCD_Suggested_Enhancements* The user name and password are: wiki/wikiwiki. You will need to create an account to edit the page and add your suggestion.

1. The value for "Observation / @moodCode" in a problem observation SHALL be "EVN" 2.16.840.1.113883.5.1001 ActMood STATIC. (CONF: 814).
2. A problem observation SHALL include exactly one Observation / statusCode. (CONF: 815).
3. The value for "Observation / statusCode" in a problem observation SHALL be "completed" 2.16.840.1.113883.5.14 ActStatus STATIC. (CONF: 816).

4. A problem observation SHOULD contain exactly one Observation / effectiveTime, to indicate the biological timing of condition (e.g. the time the condition started, the onset of the illness or symptom, the duration of a condition). (CONF: 817).

Figure 3: CCD conformance statements example

Keywords

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

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

XML Examples

XML samples appear in various figures in this document in a fixed-width font. Portions of the XML content may be omitted from the content for brevity, marked by an ellipsis (…) as shown in the example below.

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

Figure 4: ClinicalDocument example

XPath expressions are used in the narrative and conformance requirements to identify elements because they are familiar to many XML implementers.

Chapter 2

DOCUMENT TEMPLATES

Topics:

This section contains the document level constraints for CDA® documents that are compliant with this implementation guide.

emshospitaloutcomes

[ClinicalDocument: templateId `2.16.840.1.113883.17.3.10.3`]

A section to contain information from the patient's encounter with the Emergency Department

1. **SHALL** contain exactly one [1..1] templateId such that it
   a. **SHALL** contain exactly one [1..1] **@root**="2.16.840.1.113883.17.3.10.3"
2. **MAY** contain [0..1] **`componentOf`**
   a. Contains exactly one [1..1] CDA Encompassing Encounter
3. **MAY** contain [0..1] **`component`**
   a. Contains exactly one [1..1] *ED Observations Section*
4. **MAY** contain [0..1] **`component`**
   a. Contains exactly one [1..1] *Outcomes Procedures Section*
5. **MAY** contain [0..1] **`component`**
   a. Contains exactly one [1..1] *Outcomes Prior Document Section*
6. **MAY** contain [0..1] **`component`**
   a. Contains exactly one [1..1] *Outcomes Discharge Diagnosis Section*
7. **MAY** contain [0..1] **`component`**
   a. Contains exactly one [1..1] *Outcomes Inpatient Observations Section*

emshospitaloutcomes example

```
Error: Missing Runtime Class
```

Chapter 3

SECTION TEMPLATES

Topics:

ED Chief Complaint Section

[Section: templateId `null`]

1. **SHALL** contain zero or one [0..1] **`code`** (CONF:13)**`/@code`**="`46239-0`" *Chief Complaint and Reason for Visit* (CodeSystem: `2.16.840.1.113883.6.1 LOINC`)
2. **SHALL** contain zero or more [0..*] **`templateId`**
3. **SHALL** contain zero or one [0..1] **`text`** (CONF:14)
4. **SHALL** contain zero or one [0..1] **`title`** and **SHOULD** equal "Emergency Department Chief Complaint" (CONF:15)

ED Chief Complaint Section example

```
Error: Missing Runtime Class
```

ED Observations Section

[Section: templateId `null`]

Contained By	Contains
ems Hospital Outcomes	

1. **SHALL** contain zero or one [0..1] **`code/@code`**="`LOINC_TBD_002`" *ED Observations Section* (CodeSystem: `2.16.840.1.113883.6.1 LOINC`) (CONF:4)
2. contains zero or more [0..*] **`templateId1`** with @xsi:type="II"
3. **SHALL** contain zero or one [0..1] **`text`** (CONF:5)
4. **SHALL** contain zero or one [0..1] **`title`** and **SHOULD** equal "ED Observations Section"
5. **SHALL** contain zero or more [0..*] **`entry`** {subsets Section::entry}, where its type is *ED Discharge Disposition Observation* (CONF:6)
   a. Contains exactly one [1..1] *ED Discharge Disposition Observation*
6. **SHALL** contain zero or more [0..*] **`entry`**, where its type is *ED Cause Of Injury Observation*
   a. Contains exactly one [1..1] *ED Cause Of Injury Observation*
7. **SHALL** contain zero or more [0..*] **`entry`**, where its type is *ED Discharge Diagnosis*
   a. Contains exactly one [1..1] *ED Discharge Diagnosis*
8. **SHALL** contain zero or more [0..*] **`entry`**, where its type is *ED Encounter*
   a. Contains exactly one [1..1] *ED Encounter*
9. **SHALL** contain exactly one [1..1] **`entry`**, where its type is *ED Systolic BP Observation*
   a. Contains exactly one [1..1] *ED Systolic BP Observation*

ED Observations Section example

```
Error: Missing Runtime Class
```

Outcomes Discharge Diagnosis Section

[Section: templateId `null`]

Contained By	Contains
ems Hospital Outcomes	

1. **SHALL** contain exactly one [1..1] **`code/@code`**="`11535-2`" *Hospital Discharge Diagnosis* (CodeSystem: `2.16.840.1.113883.6.1 LOINC`)
2. **SHALL** contain at least one [1..*] **`templateId1`** with @xsi:type="II"
3. **SHALL** contain exactly one [1..1] **`text`**
4. **SHALL** contain exactly one [1..1] **`title`** and **SHOULD** equal "Hospital Discharge Diagnosis"
5. **SHALL** contain exactly one [1..1] **`entry`**
   a. This entry **SHALL** contain exactly one [1..1] **`entryRelationship`**
      a. This entryRelationship **SHALL** contain exactly one [1..1] **`code`**, which **SHALL** be selected from ValueSet `Problem Type 2.16.840.1.113883.3.88.12.3221.7.2` **STATIC** 2008-12-18
      b. This entryRelationship **SHALL** contain exactly one [1..1] **`value1`** with @xsi:type="CD"

      NEMSIS Trace: eOutcome.13 - Hospital Diagnosis
      Note that the C-CDA template requires a SCT code, which can be null; NEMSIS specifies an ICD-10 CM value, which should be placed in a code translation
      a. Contains **`@typeCode=`**"`COMP`" *COMP*

Outcomes Discharge Diagnosis Section example

```
Error: Missing Runtime Class
```

Outcomes Inpatient Observations Section

[Section: templateId `null`]

Contained By	Contains
ems Hospital Outcomes	

1. **SHALL** contain zero or one [0..1] **`code/@code`**="`LOINC_TBD_004`" *Hospital Outcomes Inpatient Observations Section* (CodeSystem: `2.16.840.1.113883.6.1 LOINC`)
2. **SHALL** contain at least one [1..*] **`templateId1`** with @xsi:type="II"
3. **SHALL** contain exactly one [1..1] **`text`**
4. **SHALL** contain exactly one [1..1] **`title`** and **SHOULD** equal "Outcomes Inpatient Observations"
5. **SHALL** contain exactly one [1..1] **`entry`**, where its type is *Ventilator Days Observation*
   a. Contains exactly one [1..1] *Ventilator Days Observation*
6. **SHALL** contain exactly one [1..1] **`entry`**, where its type is *ICU Length Of Stay Observation*
   a. Contains exactly one [1..1] *ICU Length Of Stay Observation*
7. **SHALL** contain exactly one [1..1] **`entry`**, where its type is *Patient Degree Of Disability At Discharge*
   a. Contains exactly one [1..1] *Patient Degree Of Disability At Discharge*

Outcomes Inpatient Observations Section example

```
Error: Missing Runtime Class
```

Outcomes Prior Document Section

[Section: templateId `null`]

Contained By	Contains
ems Hospital Outcomes	

1. **SHALL** contain exactly one [1..1] **`code`** (CONF:51)**`/@code`**="`LOINC_TBD_001`" *External Document Section* (CodeSystem: `2.16.840.1.113883.6.1 LOINC`) (CONF:50)
2. **SHALL** contain exactly one [1..1] **`text`** (CONF:52)
3. **SHALL** contain exactly one [1..1] **`title`** and **SHOULD** equal "External Document" (CONF:53)
4. **SHALL** contain at least one [1..*] **`entry`** {subsets Section::entry} (CONF:55)
   a. Such entries **SHALL** contain exactly one [1..1] **`outcomesPriorDocument`**
      a. This outcomesPriorDocument **SHALL** contain exactly one [1..1] **`code`**, which **SHALL** be selected from ValueSet **STATIC** (CONF:25)

         NEMSIS Trace: eOutcome.03 - External Report ID/Number Type, eOutcome.05 - Other Report Registry Type. If the type is not found, the type code may be null and the other type text placed in the code original text attribute.
      b. This outcomesPriorDocument **SHALL** contain exactly one [1..1] **`id`** (CONF:26)

         NEMSIS Trace: eOutcome.04 - External Report ID/Number. This will typically be placed in the extension, as NEMSIS will not maintain an OID registry for all responder and healthcare organizations. The vendor or implementer may discover or assign OIDS.

Outcomes Prior Document Section example

```
Error: Missing Runtime Class
```

Outcomes Procedures Section

[Section: templateId `null`]

Contained By	Contains
ems Hospital Outcomes	

1. **SHALL** contain exactly one [1..1] **`code/@code`**="`47519-4`" *History of Procedures* (CodeSystem: `2.16.840.1.113883.6.1 LOINC`)
2. **SHALL** contain at least one [1..*] **`templateId1`** with @xsi:type="II"
3. **SHALL** contain exactly one [1..1] **`text`**
4. **SHALL** contain zero or one [0..1] **`title`** and **SHOULD** equal "History of Procedures"
5. **SHALL** contain at least one [1..*] **`entry`**
   a. Such entries **SHALL** contain exactly one [1..1] **`code`**, which **SHALL** be selected from (CodeSystem: `2.16.840.1.113883.6.4 ICD-10 PCS`)

b. Such entries **MAY** contain zero or one [0..1] **`entryRelationship`**, where its type is *ED Context Reference Entry*

ED procedures (eOutcome.09) should be identified with this relationship; hospital procedures (eOutcome.12) should not

Outcomes Procedures Section example

```
Error: Missing Runtime Class
```

Chapter 4

CLINICAL STATEMENT TEMPLATES

Topics:

This section of the Implementation Guide details the clinical statement entries referenced in the document section templates. The clinical statement entry templates are arranged alphabetically.

ED Cause Of Injury Observation

[Observation: templateId `null`]

1. **SHALL** contain exactly one [1..1] **`code`** (CONF:20)**`/@code`**="`11373-8`" *Injury cause* (CodeSystem: `2.16.840.1.113883.6.1 LOINC`) (CONF:19)
2. **SHALL** contain at least one [1..*] **`value`** with @xsi:type="CD" (CONF:21), which **SHALL** be selected from (CodeSystem: `2.16.840.1.113883.6.3.1 ICD-10`) (CONF:22)
   - *NEMSIS Trace: eOutcome.08 - Emergency Department Recorded Cause of Injury*
3. **SHALL** contain exactly one [1..1] **`entryRelationship`** {subsets Observation::entryRelationship}, where its type is *ED Context Reference Entry*
   a. Contains exactly one [1..1] *ED Context Reference Entry*
4. **SHALL** contain at least one [1..*] **`templateId1`** with @xsi:type="II"

ED Cause Of Injury Observation example

```
Error: Missing Runtime Class
```

ED Discharge Diagnosis

[Observation: templateId `null`]

1. **SHALL** contain exactly one [1..1] **`code`** (CONF:1)**`/@code`**="`11535-2`" *Hospital discharge Dx Narrative* (CodeSystem: `2.16.840.1.113883.6.1 LOINC`) (CONF:2)
2. **SHALL** contain at least one [1..*] **`value`** with @xsi:type="CD", which **SHALL** be selected from (CodeSystem: `2.16.840.1.113883.6.90 ICD-10 CM`) (CONF:3)
   - *NEMSIS trace: eOutcome.10*
3. **SHALL** contain exactly one [1..1] **`entryRelationship`**, where its type is *ED Context Reference Entry*
   a. Contains exactly one [1..1] *ED Context Reference Entry*

ED Discharge Diagnosis example

```
Error: Missing Runtime Class
```

ED Discharge Disposition Observation

[Observation: templateId `null`]

1. **SHALL** contain exactly one [1..1] **`code/@code`**="`74285-8`" *ED discharge disposition [NTDS]* (CodeSystem: `2.16.840.1.113883.6.1 LOINC`) (CONF:7)
2. contains zero or more [0..*] **`templateId1`** with @xsi:type="II"
3. **SHALL** contain zero or more [0..*] **`value`** with @xsi:type="CD" (CONF:9), which **SHALL** be selected from ValueSet *`EDDischargeDisposition`* **STATIC** (CONF:8)
   - *NEMSIS Trace: eOutcome.01 - Emergency Department Disposition*
4. contains zero or more [0..*] **`entryRelationship`**, where its type is *ED Context Reference Entry*

a. Contains exactly one [1..1] *ED Context Reference Entry*

ED Discharge Disposition Observation example

```
Error: Missing Runtime Class
```

ED Encounter

[Encounter: templateId `null`]

1. **SHALL** contain exactly one [1..1] **`code`**, which **SHALL** be selected from (CodeSystem: `2.16.840.1.113883.6.12 CPT-4`) (CONF:56)
   - *This code is used to specify that the section in question documents ED activities. Relevant CPT codes are 99281 - 99285*
2. contain exactly one [1..1] **`id1`** with @xsi:type="II"
   - *This id is the reference to be used in all ED observation Act References to associate the observation with its context*

ED Encounter example

```
Error: Missing Runtime Class
```

ED Systolic BP Observation

[Observation: templateId `null`]

1. **SHALL** contain exactly one [1..1] **`code/@code`**=**`"11378-7"`** *Systolic blood pressure at First encounter* (CodeSystem: `2.16.840.1.113883.6.1 LOINC`) (CONF:17)
2. **SHALL** contain exactly one [1..1] **`value`** with @xsi:type="PQ" (CONF:18)
   - *NEMSIS Trace: eOutcome.07 - First ED Systolic Blood Pressure*

ED Systolic BP Observation example

```
Error: Missing Runtime Class
```

EMS Outcomes Procedure

[Procedure: templateId `null`]

1. **SHALL** contain zero or one [0..1] **`code`** (CONF:11), which **SHALL** be selected from (CodeSystem: `2.16.840.1.113883.6.4 ICD-10 PCS`) (CONF:10)
   - *NEMSIS Trace: eOutcome.12 - Hospital Procedures, eOutcome.09 - Emergency Department Procedures*
2. **SHALL** contain zero or more [0..*] **`templateId`** (CONF:12)

EMS Outcomes Procedure example

```
Error: Missing Runtime Class
```

ICU Length Of Stay Observation

[Observation: templateId `null`]

1. **SHALL** contain exactly one [1..1] **`code`** (CONF:40)**`/@code`**="`74200-7`" *Days in intensive care unit* (CodeSystem: `2.16.840.1.113883.6.1 LOINC`)
   - *NEMSIS Trace: eOutcome.14 - Total ICU Length of Stay*
2. **SHALL** contain at least one [1..*] **`templateId`** (CONF:42)
3. **SHALL** contain exactly one [1..1] **`value`** with @xsi:type="PQ" (CONF:43)

ICU Length Of Stay Observation example

```
Error: Missing Runtime Class
```

Inpatient Discharge Diagnosis Act

[Act: templateId `null`]

1.

Inpatient Discharge Diagnosis Act example

```
Error: Missing Runtime Class
```

Inpatient Discharge Diagnosis Observation

[Observation: templateId `null`]

1. contain exactly one [1..1] **`code`**
2. contains at least one [1..*] **`templateId`**
3. **SHALL** contain zero or more [0..*] **`value`** with @xsi:type="CD" (CONF:38), which **SHALL** be selected from (CodeSystem: `2.16.840.1.113883.6.90 ICD-10 CM`) (CONF:39)
   - *NEMSIS Trace: eOutcome.13 - Hospital Diagnosis*

Inpatient Discharge Diagnosis Observation example

```
Error: Missing Runtime Class
```

Patient Degree Of Disability At Discharge

[Observation: templateId `null`]

1. **SHALL** contain exactly one [1..1] **code** (CONF:46)**/@code**="75859-9" *Modified rankin scale* (CodeSystem: 2.16.840.1.113883.6.1 LOINC) (CONF:45)
2. **SHALL** contain at least one [1..*] **templateId** (CONF:47)
3. **SHALL** contain exactly one [1..1] **value** with @xsi:type="CD" (CONF:48), which **SHALL** be selected from ValueSet *DegreeOfDisability (Modified rankin scale)* **STATIC** (CONF:49)

Patient Degree Of Disability At Discharge example

```
Error: Missing Runtime Class
```

Ventilator Days Observation

[Observation: templateId null]

1. **SHALL** contain exactly one [1..1] **code/@code**="74201-5" *Days on ventilator* (CodeSystem: 2.16.840.1.113883.6.1 LOINC) (CONF:44)
2. **SHALL** contain at least one [1..*] **templateId**
3. **SHALL** contain exactly one [1..1] **value** with @xsi:type="PQ"

Ventilator Days Observation example

```
Error: Missing Runtime Class
```

Chapter 5

OTHER CLASSES

Topics:

This section of the Implementation Guide describes other classes that are not CDA® Clinical Documents, Sections, or Clinical Statements.

ED Context Reference Entry

[EntryRelationship: templateId `null`]

1. **SHALL** contain exactly one [1..1] **`@typeCode`**=`"REFR"` (CONF:57)
2. **SHALL** contain exactly one [1..1] **`act`**
   a. This act **SHALL** contain exactly one [1..1] **`id1`** with @xsi:type="II"

ED Context Reference Entry example

```
Error: Missing Runtime Class
```

EMS Outcomes Encompassing Encounter

[EncompassingEncounter: templateId `null`]

1. **SHALL** contain exactly one [1..1] **`dischargeDispositionCode`**, which **SHALL** be selected from ValueSet *`InpatientDischargeDisposition`* **STATIC** (CONF:23)
   - *NEMSIS Trace: eOutcome.02 - Hospital Disposition*
2. **SHALL** contain exactly one [1..1] **`effectiveTime`** (CONF:24)
   - *NEMSIS Trace: eOutcome.11 - Date/Time of Hospital Admission, eOutcome.16 - Date/Time of Hospital Discharge*

EMS Outcomes Encompassing Encounter example

```
Error: Missing Runtime Class
```

Chapter 6

CLASS REFERENCES

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- LOINC® : Logical Observation Identifiers Names and Codes, Regenstrief Institute.
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Chapter 7

VALUE SETS

Topics:

The following tables summarize the value sets used in this Implementation Guide.

CPT4

Value Set	CPT4

DegreeOfDisability (Modified rankin scale)

Value Set	DegreeOfDisability (Modified rankin scale) - (OID not specified)
Code System	LOINC - 2.16.840.1.113883.6.1

Code	Code System	Print Name
LA6111-4	LOINC	No symptoms
LA6112-2	LOINC	No significant disability despite symptoms; able to carry out all usual duties and activities
LA6113-0	LOINC	Slight disability; unable to carry out all previous activities, but able to look after own affairs without assistance
LA6114-8	LOINC	Moderate disability; requiring some help, but able to walk without assistance
LA6115-5	LOINC	Moderately severe disability; unable to walk without assistance and unable to attend to own bodily needs without assistance
LA10137-0	LOINC	Severe disability; bedridden, incontinent and requiring constant nursing care and attention
LA10138-8	LOINC	Dead

ICD-10 PCS

Value Set	ICD-10 PCS

Inpatient Discharge Disposition

Value Set	InpatientDischargeDisposition - (OID not specified)

Code	Code System	Print Name
01		Discharged to home or self care (routine discharge)
02		Discharged/transferred to another short term general hospital for inpatient care
03		Discharged/transferred to a skilled nursing facility (SNF)
04		Discharged/transferred to an intermediate care facility (ICF)

Code	Code System	Print Name
05		Discharged/transferred to a designated cancer center or children's hospital
06		Discharged/transferred to home under care of organized home health service organization in anticipation of covered skills care
07		Left against medical advice or discontinued care
20		Deceased/Expired (or did not recover - Religious Non Medical Health Care Patient)
21		Discharged/transferred to court/law enforcement
30		Still a patient or expected to return for outpatient services
43		Discharged/transferred to a Federal Health Care Facility (e.g., VA or federal health care facility)
50		Discharged/transferred to Hospice - home
51		Discharged/transferred to Hospice - medical facility
61		Discharged/transferred within this institution to a hospital based Medicare approved swing bed
62		Discharged/transferred to a inpatient rehabilitation facility including distinct part units of a hospital
63		Discharged/transferred to long term care hospitals
64		Discharged/transferred to a nursing facility certified under Medicaid but not certified under Medicare
65		Discharged/transferred to a psychiatric hospital or psychiatric distinct part unit of a hospital
66		Discharged/transferred to a Critical Access Hospital (CAH)
70		Discharged/transferred to another type of health care institution not defined elsewhere in the code list

LOINC

Value Set	LOINC

nubc-UB-04-Manual-code set

Value Set	nubc-UB-04-Manual-code set

REFERENCES

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- HL7® Implementation Guide for CDA® Release 2 CDA® for Public Health Case Reports (PHCR) Informative Standard October 2009. Available through *HL7®* .
- HL7® Implementation Guide for CDA® Release 2: NHSN Healthcare Associated Infection (HAI) Reports, Release 2 Draft Standard for Trial Use January 2009 Available at: *NHSN Healthcare Associated Infection (HAI) Reports*
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- *LOINC®* : Logical Observation Identifiers Names and Codes, Regenstrief Institute.
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