

nehta

# eDischarge summary



A NEW DIRECTION FOR HEALTHCARE

## SNOMED-CT in the NEHTA Discharge Summary

Release 1 of the NEHTA Discharge Summary will include SCT-AU Reference Sets for the following :

Problem/Diagnosis

Clinical Intervention concepts

Agent (Adverse Reactions)

Adverse Reaction Type

Pathology Test Names

Specimen

Testing Method

Medications



## SNOMED-CT in the Clinical Information Life Cycle

### Capture & Display Representations

- Must be able to capture & display full clinical meaning
- Must be as easy as possible to capture

### Communication Representations

- Must be able to convey full clinical meaning
- Must be transformable to alternative (equivalent) representations

### Storage Representations

- Must be able to support retrieval for various purposes:
  - Display
  - Communication
  - Electronic decision support



## Options for Communicating SNOMED CT in Messages

Option 1 : Send single precoordinated concepts in message elements

Option 2 : Allow SNOMED CT postcoordinated expressions in messages, by either:

- (a) Binding the expression to a single data element in message
- (b) Binding each individual component to an individual data element  
= multiple data elements in message
- (c) Binding one or more terminology components to individual data elements as logically supported by the clinical information and terminology information models



## Criteria for Analysing the Options

Is able to capture and display full clinical meaning

Is able to communicate full clinical meaning

Easy to capture

Is able to support electronic clinical decision support

Supports common understanding

Supports effective/efficient reuse of information

Supports a migration strategy to more sophisticated terminology use

Implementable – constructable by a sending system and able to be understood and unpacked by a receiving system



## HL7 Message data types for SNOMED-CT

### CDA: CD (Concept Descriptor)

```

type ConceptDescriptor alias CD specializes
ANY {
    ST.SIMPLE          code;
    ST                 displayName;
    UID                codeSystem;
    ST.NT              codeSystemName;
    ST.SIMPLE          codeSystemVersion;
    UID                valueSet;
    TS.DATETIME.FULL  valueSetVersion;
    ED.TEXT            originalText;
    SET<CS>            codingRationale;
    DSET<CD>          translation;
    CD                 source;
    BL                 isCompositional;
    BL                 equal(ANY x);
    BL                 implies(CD x);
};

```

### V2 CE - Coded Element

```

<identifier (ST)> ^
<text (ST)> ^
<name of coding system (IS)> ^
<alternate identifier (ST)> ^
<alternate text (ST)> ^
<name of alternate coding system (IS)>

```

### V2 CWE – Coded with Exceptions

```

...(as per CE) +
<coding system version ID (ST)>
<alternate coding system version id (ST)>
<original text (ST)>

```



## SNOMED-CT in the NEHTA Discharge Summary

Release 1 of the NEHTA Discharge Summary will include SCT-AU reference sets for the following concepts:

**Problem/Diagnosis “Deep wound infection following hip fracture surgery”**

Clinical Intervention

Agent (Adverse Reactions)

Reaction

Pathology Test Name

Specimen

Testing Method

Medication Name

Reason for Medication



## Option 1

- Select a concept ID (from an appropriate Reference Set) that is nearest proximal supertype to the clinical meaning trying to be conveyed
- Consider associating a free text field with the coded data to be used to further describe the required clinical meaning
- Send coded data and the associated free text in the message



## Option 1 - Values

Free Text Clinical Description: “Deep wound infection following hip fracture surgery”

SNOMED CT:

213286009 – Postoperative wound infection – deep



## Option 1 – Messaging: CDA Observation class

### Observation

**classCode\*:** <= *OBS*

**moodCode\*:** <= *x\_ActMoodDocumentObservation*

code (CD)

```
{  
    code          55607006  
    displayName   Problem  
    codeSystem    2.16.840.1.113883.6.96  
    codeSystemName SNOMED CT  
}
```

}

... ..

value (CD)

```
{  
    code          213286009  
    displayName   Post-operative wound infection - deep  
    codeSystem    2.16.840.1.113883.6.96  
    codeSystemName SNOMED CT  
    originalText  Deep wound infection following hip fracture surgery  
}
```

}

... ..



## Option 1 – Messaging: HL7 V2 (DG1-3)

### CE

<identifier (ST)> ^	213286009
<text (ST)> ^	Post-operative wound infection - deep
<name of coding system (IS)> ^	SCT
<alternate identifier (ST)> ^	
<alternate text (ST)> ^	Deep wound infection following hip fracture surgery
<name of alternate coding system (IS)>	

### CWE

<identifier (ST)> ^	213286009
<text (ST)> ^	Post-operative wound infection - deep
<name of coding system (IS)> ^	SCT
<alternate identifier (ST)> ^	
<alternate text (ST)> ^	
<name of alternate coding system (IS)>	
<original text (ST) >	Deep wound infection following hip fracture surgery



## Option 2 – Binding Postcoordinated Expressions

Q1. What sort of expressions are allowed?

Normal form

vs.

Any valid SNOMED CT expression. Normal form could be created at the receiving end.

Q2. Should we constrain the allowable expressions?



## Option 2 – SNOMED CT Normal Form

Free Text Clinical Description: “Deep wound infection following hip fracture surgery”

Based on Augmented Backus-Naur Form (ABNF):

```
expression = concept *( "+" concept ) [ ":" ws refinements ]
```

```
213286009|post-operative wound infection - deep|:  
{  
    116676008|associated morphology|=11263309|surgical wound|,  
    246075003|causative agent|=36272005|infectious agent|,  
    363698007|finding site|=29836001|hip region structure|,  
    255234002|after|= 71388002|procedure|:  
        260686004|method|=129284003|surgical action|)  
}
```



## Option 2 – SNOMED-CT Attributes for Problem/Diagnosis

Exists in Clinical Finding hierarchy (including findings and disorders) and Situation with Explicit Context hierarchy

<b>Attributes</b>	
Finding site	Has interpretation
Associated morphology	Pathological process
Associated with	Has definitional manifestation
Causative agent	Occurrence
Due to	Finding method
After	Finding informer
Severity	
Clinical course	<b>Qualifiers</b>
Episodicity	Finding context (suspected, known ..)
Interprets	Temporal context (current, past ..)



## Constrained “normal form”

- NHS are doing this in some areas – eg. adverse reactions
- Implement rules on the way the expressions can be communicated
  - Eg. An adverse reaction expression **MUST** contain a type **AND** an agent and **MAY** contain a severity and a context. Nothing else is permitted in the expression.

```
414285001|food allergy|:  
{  
  260872001|agent|=256349002|peanut|,  
  246112005|severity|=272141005|fatal|,  
  246103008|certainty|=255545003|definite|  
}
```



## Option 2 – SNOMED CT Expression

Free Text Clinical Description: “Deep wound infection following hip fracture surgery”

```
213286009|post-operative wound infection - deep|:  
  {  
    363698007|finding site|=29836001|hip region structure|  
  }
```



## Putting expressions into messages

Must be able to carry the source used to generate the expression. This may be:

- Concept IDs from SNOMED CT Reference Sets aligned with the normal form concepts

- A single precoordinated SNOMED concept

- Augmented if required by free text



## Option 2a – Messaging: CDA Observation class

### Observation

**classCode\*:** <= *OBS*

**moodCode\*:** <= *x\_ActMoodDocumentObservation*

code (CD)

```
{
    code          55607006
    displayName   Problem
    codeSystem    2.16.840.1.113883.6.96
    codeSystemName SNOMED CT
}
```

}

... ..

value (CD)

```
{
    code          213286009 : {116676008=11263309,246075003=36272005,
    363698007=29836001, (255234002=71388002:260686004=129284003)}
    codeSystem    2.16.840.1.113883.6.96
    codeSystemName SNOMED CT
    originalText  Deep wound infection following hip fracture surgery
    isCompositional True
}
```

}

... ..



## Option 2a – Messaging: HL7 V2 (DG1-3)

### CE data type

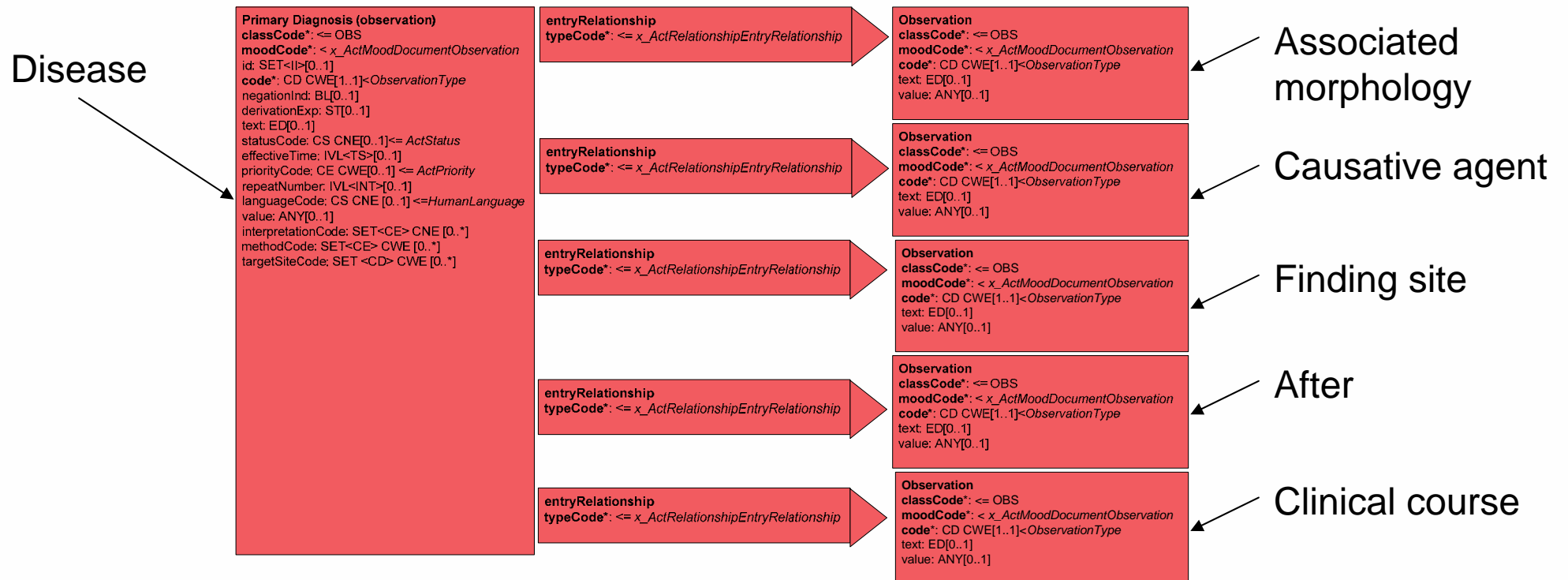
<pre>&lt;identifier (ST)&gt; ^ &lt;text (ST)&gt; ^ &lt;name of coding system (IS)&gt; ^ &lt;alternate identifier (ST)&gt; ^ &lt;alternate text (ST)&gt; ^ &lt;name of alternate coding system (IS)&gt;</pre>	<pre>213286009 : {116676008=11263309, 246075003=36272005,363698007=29836001, (255234002=71388002:260686004=129284003)} SCT Deep wound infection following hip fracture surgery</pre>
--	--

### CWE data type

<pre>&lt;identifier (ST)&gt; ^ &lt;text (ST)&gt; ^ &lt;name of coding system (IS)&gt; ^ &lt;alternate identifier (ST)&gt; ^ &lt;alternate text (ST)&gt; ^ &lt;name of alternate coding system (IS)&gt; &lt;original text (ST)&gt;</pre>	<pre>213286009 : {116676008=11263309, 246075003=36272005,363698007=29836001, (255234002=71388002:260686004=129284003)} SCT Deep wound infection following hip fracture surgery</pre>
---	--



## Option 2b : Normal form in individual data elements : CDA



## Option 2b – Mapping to V2.4

- Implementation depends upon current definitions of relevant segments.
- DG1 segment cannot carry each component individually.



## Option 2c – Aligning expressions with the message model

- Is the subject of the HL7 Terminology project

"Diagnosis":

Result of a cognitive process: Could potentially be Indicated by post-coordinating a SNOMED CT finding method attribute with a procedure such as "cognitive process".



## How to get involved

Email [terminologies@nehta.gov.au](mailto:terminologies@nehta.gov.au)

