SNOMED CT vocabulary domain constraints

2.1.1 Introduction

This section proposes a family of schemas to specify the value sets for relevant coded attributes in the Clinical Statement Message Pattern (CSMP) for messages developed using SNOMED CT as the Code System, as well as proposing a set of coarse-grained (‘universal’) constraints for the value sets themselves. The suggested mechanism draws on a blend of features of SNOMED CT and HL7, with the implementation technology taken from the SNOMED CT subset mechanism and normal form transformation rules.

The value set specifications (**Content specifications**) provided are to be regarded as ‘universal’ – that is, they define the coarsest-grained SNOMED CT content recommended as suitable as a value set for each Class.Attribute considered, whether represented as pre- or post-coordinated Expression. The intention is that specifications could be further constrained for refined model designs. In order to achieve these latter goals their representation is:

1. More complex than might have been anticipated, reliant on both the an expressive formalism (not currently available in the HL7 v3 specification) and SNOMED CT Normal Form transformation rules, for value set specification and testing.
2. To some degree a set of caveats rather than absolute specifications. For current realistic usage ‘simplified’ value set specifications will often be adequate, however general guidance on ‘legitimate’ variants (that would otherwise result in message rejection) is also provided.

2.1.2 Requirements

The requirements identified are as follows:

* Specify component value sets from SNOMED CT content for relevant attributes presented in the CSMP Act Choice box and Entity Choice Boxes
* Do so in a way that optimally uses already published ‘standards’, notably:
  + SNOMED CT core tables
  + SNOMED CT subset mechanisms
  + HL7 Common Terminology Service specification
* Specify value sets in a way that is consistent with current guidance on Post-coordination in SNOMED CT, including the use of the ‘context wrapper’.

2.1.3 Scope

This chapter will not provide a mechanism for specifying all possible patterns and combinations of SNOMED CT-based vocabulary usage in HL7 messaging, however it should be able to cover many frequently-used patterns. The following identified restrictions on and features of scope are offered.

**Inter-attribute bindings**

No mechanism exists in the current formalism of HL7 to constrain attribute value sets conditionally on values used in other attributes. Although such a binding is desirable, this section does not add a mechanism to achieve this, instead narrative and occasional tabular bindings are used:

*Narrative bindings example:*

In an Observation, the Act.code and Act.value value sets are conditionally bound, such that:

* If Act.code is equivalent to a legitimate SNOMED CT ‘clinical finding’, Act.value should be NULL.
* If Act.code is equivalent to a SNOMED CT ‘observable entity’ or ‘measurement procedure’, Act.value must contain a value.

Here narrative sections need to be included as annotations to the formal specification.

*Tabular bindings example:*

In several Act classes there is a need for a binding between Act.moodCode and the SNOMED CT ‘finding context’ or ‘procedure context’ value (if either of these aspects of context is specified in the Act.code). In these cases reference is made to tables elsewhere in the paper (e.g. the Act.moodCode/SNOMED CT context binding tables). In the same way, bindings between increasingly refined classCodes can be bound to appropriate Entity.code values in a tabular form. Such instructions may be represented as textual guidance referring the implementer to relevant tables. However, it the relationship between moodCode and SNOMED CT context can also be applied through extensions to machine processable SNOMED CT Normal Form transformation rules.

**Specification of an optimal formalism**

This standard does not specify an optimal formalism for the representation of SNOMED CT value set specifications. Instead, in the section below a number of ‘value set-specifying clauses’ are listed – any workable formalism will need to be able to represent these in combination.

**Use of the SNOMED CT subset mechanism**

The SNOMED CT Subset Mechanism is being explored as one suitable candidate formalism for representing the complex value sets for SNOMED CT in HL7 messages. This may not be the ‘best’ formalism, but is offered in the absence of an alternative. The Subsets of most general utility for ‘SNOMED CT in HL7’ specification are Realm and Context Concept Subsets. It should be noted that mechanisms for specifying particular ‘Terms’ for recording and communication purposes could be a frequent requirement, and therefore specifications akin to Description Subsets will also be desirable. Whilst (because of SNOMED CT Core Table design) it is possible to infer a Concept Subset from a Description Subset, it is recommended that both a Concept and a Description Subset are specified where ‘Term’ constraints are required.

**Translations**

It is the assumption of this chapter that any value set specifications produced can be used to constrain, or be tested against, any coded content where the codeSystem is specified as SNOMED CT. This may therefore occur where SNOMED CT is the ‘translated from…’ codeSystem (e.g. to ICD – not defending this but I know it takes place) or where SNOMED CT is the ‘translated to…’ codeSystem (e.g. from the NHS Read Codes).

**Non-current content**

Whilst it is a reasonable constraint that new record entries should not be made using inactive SNOMED CT Concepts, it is possible that communications will be made containing content that was active at the time the original record entry was made, and have subsequently been rendered inactive. In these cases, if it can be demonstrated that the inactive concept has an appropriate historical relationship to a valid active Concept, then it should be valid for communication. For example, if the Concept 274638001 Asthenia (now inactive but previously active) was encountered, it should be possible to identify the ‘SAME AS’ relationship to the active 13791008 Asthenia concept, and test this latter (active) concept for suitability.

2.1.4 Schematic Proposal

For a fuller justification to the proposal shown please see Appendix A which explores in greater detail issues which can be summarised in the following way:

Even if Expressions communicated in HL7 v3 messages are limited to those made using pre-coordinated SNOMED CT Concepts, the organisation of its existing corpus of content means that the same ‘statements’ can validly be made using Concepts that are ‘hierarchically remote’ (i.e. are not related by ‘is-a-kind-of’ relationships). In addition, once statements are communicated using post-coordinated SNOMED CT Expressions, further representational variations of the same ‘statement’ will be encountered.

The first pattern of ‘equivalence’ is encountered with the use of ‘naked’ finding and procedure concepts and their counterpart ‘context-dependent categories’. This can be illustrated by the examples 73879007 Nausea (finding) and 162057007 Nausea present (context-dependent category): the former, if used in an otherwise un-modified form to make a record entry, is generally assumed to mean ‘nausea present’ – however these two concepts have no hierarchical relationship to one another. A vocabulary that specifically allowed ‘Nausea (finding)’ may inappropriately reject ‘Nausea present (context-dependent category)’.

The latter pattern of ‘equivalence’ takes two general forms:

1. a post-coordinated variant of the first ‘context-dependent pattern’ (the context-wrapping of ‘Nausea (finding)’ to re-state the soft default equivalent ‘Nausea present’)
2. the generation of ‘communication valid’ Expressions by sub-type refinement post-coordination (e.g. the generation of an expression that ‘means’ ‘total pancreatectomy’ by the refinement of a more general Concept such as ‘Operation on pancreas’).

Current HL7 v3 conventions for specifying vocabulary value sets in messages will not easily represent this sort of complexity. The SNOMED CT ‘definitional’ subset mechanism can express many of the ‘clause’ requirements, but to date has not been fully tested for this kind of use.

Given that post-coordination is inevitable if guidance offered elsewhere in this paper is followed (e.g. favoring the use of SNOMED CT attributes over HL7 v3 Act attributes), a representational solution that can handle such complexity is needed. As is explained below, a complex solution that includes ‘normalised’ value set representations (along with corresponding ‘normalisation’ of candidate Expressions as part of the ‘test’ process), as well as value set specifications that use a sufficiently expressive formalism is likely to be required. At the time of writing no such ‘complete’ solution exists. Instead it is recommended that more simple ‘achievable’ specifications are used at the moment, whilst development work is progressed by SNOMED and HL7 groups.

Reliance on a ‘simpler’ interim solution risks the use of value specifications that are either too permissive (allowing false positives) or restrictive (false negatives), but raising the issue should catalyse the production of more satisfactory solutions, as well as increase awareness of the possible problems that might be encountered.

Consistent with this, an extensible notation for SNOMED CT value set where post-coordination is taking place, specifications needs to be of the following general forms:

2.1.4.1 Pattern 1: Primitive ‘value-only’ concepts:

These may be specified by reference to individual SNOMED CT ConceptIds. Explicit value sets could either be represented as sets of ConceptIds (with version information held elsewhere) or as a SNOMED CT Subset referencing these Concepts. For example, ‘organisms’ could be specified as:

1. A list of organism ConceptIds { 39866004, 36272005,…}
2. A SNOMED CT Concept Subset that references the relevant ConceptIds explicitly.
3. An implicit notation in HL7 of <= 410607006 Organism (organism)
4. A SNOMED CT Concept Subset definition file that references the relevant conceptId(s) implicitly, of the form:

Base clause=“Include 410607006 Organism (organism) and all appropriate [3](file:///C:\\Users\\Lisa\\Documents\\05%20Professional\\90%20HL7\\00%20Standard%20-%20TermInfo\\HL7PubTermInfo\\HL7PubTermInfo\\html\\terminfo\\terminfo.htm" \l "fn3) subtypes”.

OR logic between subsumption nodes can be handled within the same clause, even if the nodes come from different high level chapters of SNOMED CT.

To maintain consistency with the other patterns, and to provide access to the version and history mechanisms, option 4 is the preferable notation.

**Top-level value-only concepts include:**

 105590001 Substance (substance)

 254291000 Staging and scales (staging scale)

 48176007 Social context (social concept)

 362981000 Qualifier value (qualifier value)

 260787004 Physical object (physical object)

 105590001 Substance (substance)

 254291000 Staging and scales (staging scale)

 48176007 Social context (social concept)

 362981000 Qualifier value (qualifier value)

 260787004 Physical object (physical object)

 410607006 Organism (organism)

 272379006 Events (event)

 308916002 Environments and geographical locations (environment / location)

2.1.4.2 Pattern 2: ‘Potentially fully-defined’ concepts that are not directly wrapped in the ‘context wrapper’ as part of the normal form transformation

These can only be specified as implicit (definitional) SNOMED CT Subsets of the following form:

‘Following normal form transformation, valid Expressions will be specified by:

Base clause=“Include the proximal primitive supertype(s) of the most abstract concept(s) required, and all appropriate subtypes)” AND:

* For each Attribute.Name=Attribute.Value ((1 to n)) in the normal form definitions of the concept(s) in the base clause, a set of Sub-clauses (related by AND logic) that state:
* Sub-clause 1= ”Of these Concepts, include only those whose Attribute 1 has values that equal or are subtypes of Value 1”
* AND Sub-clause 2= ”Of these Concepts, include only those whose Attribute 2 has values that equal or are subtypes of Value 2”
* AND Sub-clause n= ”Of these Concepts, include only those whose Attribute n has values that equal or are subtypes of Value n”’

For many (otherwise un-modelled) abstract concepts this form will be the same as a primitive ‘value-only’ subset, but as the vocabulary domains become more refined, more sub-clauses will be included. Note, where Values are themselves ‘potentially fully-defined’ Concepts (e.g. Procedures as values for ‘Specimen Procedure’ attributes) non-context-wrapping normal form transformation will also have been applied at this level.

Where subsumption nodes in the base clause are from differing ‘top-level’ categories (that is, are from differing parts of the SNOMED CT definitional model), differing base clauses should be used (related by OR logic). If this was not the case, for example, if both ‘Specimen’ and ‘Pharmaceutical / biologic product’ Concepts are included in the same Base Clause, value set valid ‘Specimen’ Concepts might be tested for suitability against Attribute=Value pairs that should only apply to ‘Pharmaceutical / biologic product’ concepts.

**Top-level concepts of this sort are:**

 123037004 Body structure (body structure)

 373873005 Pharmaceutical / biologic product (product)

 123038009 Specimen (specimen)

2.1.4.3 Pattern 3: ‘Potentially fully-defined’ concepts that are directly/already wrapped in the ‘context wrapper’ as part of the normal form transformation

These can only be specified as implicit (definitional) SNOMED CT Subsets of the following form:

‘Following normal form transformation, valid Expressions will be specified by:

(for concepts behaving as findings):

* Base clause=“Include 243796009 Context-dependent categories (context-dependent category), and all appropriate subtypes)” AND: A set of Sub-clauses (related by AND logic) that state:
  + Sub-clause 1= ” Of these Concepts, include only those whose Associated finding has a Value that is specified in the Focus Subset (see below)”
  + AND Sub-clause 2= ” Of these Concepts, If specified in relevant parts of the information model, include only those whose Findings Context has Values that are subtypes of those specified according to the table of Act.moodCode=Finding Context mapping table”
  + AND Sub-clause 3= ” Of these Concepts, If specified in relevant parts of the information model, include only those whose Temporal context has Values that are subtypes of those specified according to the table of Act.moodCode=Finding Context mapping table”
  + AND Sub-clause 4= ” Of these Concepts, If specified in relevant parts of the information model, include only those whose Subject Relationship Context is determined by relevant Participations[4](file:///C:\\Users\\Lisa\\Documents\\05%20Professional\\90%20HL7\\00%20Standard%20-%20TermInfo\\HL7PubTermInfo\\HL7PubTermInfo\\html\\terminfo\\terminfo.htm" \l "fn4)”’

**Focus Subset.** The intention of a Focus subset would be to allow the specification of detailed Finding or Procedure Context targets, and would take the general form of the non-directly wrapped potentially defined clause structure. This is due to a limitation in the nesting capabilities of single subsets. This would allow the following to be specified:

‘Following normal form transformation, valid Expressions will be specified by:

* Base clause=“Include Context-dependent categories & subtypes AND
  + Sub-clause 1= ”Associated finding = Focus Subset (where focus subset =
    - Focus Base clause=“Include the proximal primitive supertype(s) of the most abstract concept(s) [behaving as findings] required, and all appropriate subtypes)” AND:
      * For each Attribute.Name=Attribute.Value ((1 to n)) in the normal form definitions of the concept(s) in the base clause, a set of Sub-clauses (related by AND logic) that state:
        + Sub-clause 1= “Of these Concepts, include only those whose Attribute 1 has values that equal of are subtypes of Value 1” AND Sub-clause 2=…)”
  + AND Sub-clause 2= “If specified in relevant parts of the information model, include only those whose Findings Context has Values that are subtypes of those specified according to the table of Act.moodCode=Finding Context mapping table” AND …”

Note, where Values in the Sub-clauses of the ‘Focus Subset Clause’ are themselves ‘potentially fully-defined’ Concepts (e.g. ‘Body structures’ as values for ‘Procedure site’ attributes) non-context-wrapping normal form transformation will also have been applied at this level. Indeed, further levels of nested subsets may be required for deeply nested normal form expressions.

Where subsumption nodes in the Base Clause or Focus Subset clauses are from differing ‘top-level’ categories (that is, are from differing parts of the SNOMED CT definitional model), differing base clauses should be used (related by OR logic). Otherwise, for example, if both ‘findings’ and ‘procedures’ are specified, distinct base clauses are needed to prevent the inappropriate testing for suitable ‘Procedure context’ applied to ‘Context-dependent findings’.

**Top-level concepts of this sort are:**

 404684003 Clinical finding (finding)

 71388002 Procedure (procedure)

 363787002 Observable entity (observable entity)

The majority of .code specifications offered in Content specifications use this latter form (pattern 3), although examples of pattern 1 are seen in Entity.code specifications.

2.1.5 Content Proposal - CSMP Class-by-class specification

2.1.5.1 Nature of the specifications

Each specification is offered in the following general form:

* Class Name
* Relevant Class.Attribute Name
* For each relevant Class.Attribute
  + Vocabulary domain narrative description
  + Simple subsumption specification (and critique)
  + Formal Subset-based specification
    - Although these are described as ‘formal subset-based specifications’ they are documented here as sets of instruction clauses that might be turned into SNOMED CT Subset specifications by appropriate Subset generating applications
* Inter-attribute binding instructions

2.1.5.2 Class and attribute level influences on specifications

**classCode influences**

A limited number of classCode influences on value set specifications are offered – notably in the Entity class.

**moodCode influences**

Since the suggested notation for all SNOMED CT ‘findings and procedures’ value sets is ‘wrapped’ in the SNOMED CT context wrapper, and indeed the context wrapper is needed to communicate negation & uncertainty in message designs where SNOMED CT is the only permitted code system, it is required that the moodCode value used in the specification influences the allowable relevant values in the Subset specification.

**statusCode influences**

As indicated elsewhere (Section 2.2.3.5), for a dynamic messaging model, Act.statusCode does not influence SNOMED CT context attribute values.

2.1.5.3 Content specifications

**Observation**

|  |  |
| --- | --- |
| **Class Name:** Act.Observation | **Class Code: OBS** |
| **Attribute Name:** Observation.code | |
| **Narrative description of vocabulary domain:** The recognizing and noting of information about the subject. Observations often involve measurement or other elaborate methods of investigation, but may also be simply assertive statements. | |
| **Simple representation:** <= 404684003 Clinical finding (finding) [.value must be NULL] OR (122869004 Measurement procedure (procedure) OR 363787002 Observable entity (observable entity)’ [.value must NOT BE NULL]) OR 413350009 Context-dependent finding (context-dependent category). | **Critique:** Unable to specify the .value binding where .code is <= 413350009 Context-dependent finding (context-dependent category); Otherwise suitable at this abstraction, but would soon become un-specifiable for more refined domains and value sets |
| **Formal specification (preferred option):**  Pattern 3 notation –  ‘Following normal form transformation, valid Expressions will be specified by:  Base clause1=“Include 243796009 Context-dependent categories (context-dependent category), and all appropriate subtypes)” AND: A set of Sub-clauses (related by AND logic) that state: Sub-clause 1= ” Of these Concepts, include only those whose Associated finding has a Value that is specified in the Focus Subset” AND Sub-clause 2= ” Of these Concepts, If specified in relevant parts of the information model, include only those whose Findings Context has Values that are subtypes of those specified according to the table of Act.moodCode=Finding Context mapping table” AND Sub-clause 3= ” Of these Concepts, If specified in relevant parts of the information model, include only those whose Temporal context has Values that are subtypes of those specified according to the table of Act.moodCode=Finding Context mapping table” AND Sub-clause 4= ” Of these Concepts, If specified in relevant parts of the information model, include only those whose Subject Relationship Context is determined by relevant Participations” Where Focus Subset is specified as 404684003 Clinical finding (finding) or subtype OR Base clause2=as for Base clause1 Where Focus Subset is specified as 122869004 Measurement procedure (procedure) or subtype OR Base clause3=as for Base clause1 Where Focus Subset is specified as 363787002 Observable entity (observable entity) or subtype’ | |
| **Inter-Attribute instructions:**  **.moodCode:** Binding between .moodCode and Findings Context as specified in the Table relating Act.moodCode to SNOMED CT Finding Context  **.value:** (1) where Focus Subset is specified as 122869004 Measurement procedure (procedure) OR 363787002 Observable entity (observable entity) .value IS NOT NULL; (2) where Focus Subset is specified as 404684003 Clinical finding (finding) .value IS NULL | |

**Procedure**

|  |  |
| --- | --- |
| **Class Name:** Act.Procedure | **Class Code: PROC** |
| **Attribute Name:** Procedure.code | |
| **Narrative description of vocabulary domain:** An Act whose immediate and primary outcome (post-condition) is the alteration of the physical condition of the subject; exemplars being the | |
| **Simple representation:** <= 71388002 Procedure (procedure) OR 363787002 Observable entity (observable entity) OR 129125009 Context-dependent procedure (context-dependent category) | **Critique:** Suitable at this abstract level, however becomes quickly un-specifiable for more refined domains and value sets |
| **Formal specification (preferred option):**  Pattern 3 notation –  ‘Following normal form transformation, valid Expressions will be specified by:  Base clause1=“Include 243796009 Context-dependent categories (context-dependent category), and all appropriate subtypes)” AND: A set of Sub-clauses (related by AND logic) that state: Sub-clause 1= ” Of these Concepts, include only those whose Associated procedure has a Value that is specified in the Focus Subset” AND Sub-clause 2= ” Of these Concepts, If specified in relevant parts of the information model, include only those whose Procedure Context has Values that are subtypes of those specified according to the table of Act.moodCode=Procedure Context mapping table” AND Sub-clause 3= ” Of these Concepts, If specified in relevant parts of the information model, include only those whose Temporal context has Values that are subtypes of those specified according to the table of Act.moodCode=Procedure Context mapping table” AND Sub-clause 4= ” Of these Concepts, If specified in relevant parts of the information model, include only those whose Subject Relationship Context is determined by relevant Participations” Where Focus Subset is specified as 71388002 Procedure (procedure) or subtype OR Base clause2=as for Base clause1 Where Focus Subset is specified as 363787002 Observable entity (observable entity) or subtype’ | |
| **Inter-Attribute instructions:** Inter-Attribute instructions: **.moodCode:** Binding between .moodCode and Procedure Context as specified in the Table relating Act.moodCode to SNOMED CT Procedure Context | |

**Substance Administration**

|  |  |
| --- | --- |
| **Class Name:** Act.SubstanceAdministration | **Class Code:** SBADM |
| **Attribute Name:** SubstanceAdministration.code | |
| **Narrative description of vocabulary domain:** Introducing or otherwise applying a substance to the subject | |
| **Simple representation:** <= 225426007 Administration of therapeutic substance (procedure) | **Critique:** Will not cater for context-wrapped Expressions |
| **Formal specification (preferred option):**  Pattern 3 notation –  ‘Following normal form transformation, valid Expressions will be specified by:  Base clause1=“Include 243796009 Context-dependent categories (context-dependent category), and all appropriate subtypes)” AND: A set of Sub-clauses (related by AND logic) that state: Sub-clause 1= ” Of these Concepts, include only those whose Associated procedure has a Value that is specified in the Focus Subset” AND Sub-clause 2= ” Of these Concepts, If specified in relevant parts of the information model, include only those whose Procedure Context has Values that are subtypes of those specified according to the table of Act.moodCode=Procedure Context mapping table” AND Sub-clause 3= ” Of these Concepts, If specified in relevant parts of the information model, include only those whose Temporal context has Values that are subtypes of those specified according to the table of Act.moodCode=Procedure Context mapping table” AND Sub-clause 4= ” Of these Concepts, If specified in relevant parts of the information model, include only those whose Subject Relationship Context is determined by relevant Participations” Where Focus Subset is specified as 225426007 Administration of therapeutic substance (procedure) or subtype’ | |
| **Inter-Attribute instructions:** **.moodCode:** Binding between .moodCode and Procedure Context as specified in the Table relating Act.moodCode to SNOMED CT Procedure Context | |

**Supply**

|  |  |
| --- | --- |
| **Class Name:** Act.Supply | **Class Code:** SPLY |
| **Attribute Name:** Supply.code | |
| **Narrative description of vocabulary domain:** The provision of a material by one entity to another | |
| **Simple representation:** <= NO SUITABLE CODE EXISTS, but would be XXX Supply of therapeutic substance (procedure) | **Critique:** Will not cater for context-wrapped Expressions |
| **Formal specification (preferred option):**  Pattern 3 notation –  ‘Following normal form transformation, valid Expressions will be specified by:  Base clause1=“Include 243796009 Context-dependent categories (context-dependent category), and all appropriate subtypes)” AND: A set of Sub-clauses (related by AND logic) that state: Sub-clause 1=: ” Of these Concepts, include only those whose Associated procedure has a Value that is specified in the Focus Subset” AND Sub-clause 2=: ” Of these Concepts, If specified in relevant parts of the information model, include only those whose Procedure Context has Values that are subtypes of those specified according to the table of Act.moodCode=Procedure Context mapping table” AND Sub-clause 3=: ” Of these Concepts, If specified in relevant parts of the information model, include only those whose Temporal context has Values that are subtypes of those specified according to the table of Act.moodCode=Procedure Context mapping table” AND Sub-clause 4=: ” Of these Concepts, If specified in relevant parts of the information model, include only those whose Subject Relationship Context is determined by relevant Participations”: Where: Focus Subset is specified as ??? Supply of therapeutic substance (procedure) or subtype’  This concept does not exist in the current release of SNOMED CT | |
| **Inter-Attribute instructions:** **.moodCode:** Binding between .moodCode and Procedure Context as specified in the Table relating Act.moodCode to SNOMED CT Procedure Context | |

**Organiser**

|  |  |
| --- | --- |
| **Class Name:** Act.Organiser | **Class Code:** ORGANIZER |
| **Attribute Name:** Organiser.code | |
| **Narrative description of vocabulary domain:** Record section headings | |
| **Simple representation:** <= 419891008 Record Artifact (record artifact) | **Critique:**Form suitable (primitives in value set) |
| **Formal specification (preferred option):**  Pattern 1 notation –  Base clause= Include 419891008 Record Artifact (record artifact) (or any appropriate subtype). | |
| **Inter-Attribute instructions:** | |

**Entity**

Whilst not impossible, it is perhaps confusing to try and specify a suitable SNOMED CT value set the most abstract Entity class (‘A physical thing, group of physical things or an organization…’), so instead a more specialised Entity is offered:

|  |  |
| --- | --- |
| **Class Name:** Entity | **Class Code:** ANM |
| **Attribute Name:** Entity.code | |
| **Narrative description of vocabulary domain:** An organism or complex animal, alive or not. | |
| **Simple representation:** <= 410607006 Organism (organism) | **Critique:** Form suitable (primitives in value set) |
| **Formal specification (preferred option):**  Pattern 1 notation –  Base clause= Include 410607006 Organism (organism) (or any appropriate subtype). | |
| **Inter-Attribute instructions:** | |