SNOMED Advanced

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Scottish Clinical Information
Management In Practice

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NHS
SCOTLAND

Content

- SNOMED Identifiers
- SNOMED Components
- Namespaces
- Subsets/Refsets
- Crossmaps

SNOMED Identifiers

SNOMED CT Identifier

- Treat it as a meaningless 64-bit integer

- 6-26 numeric digits

- Primary identifier of all components

- Made up of:
    - Item ID
    - Namespace ID
    - Partition ID
    - Check digit

Partition ID

SNOMED-Issued

- 00 - concept
- 01 - description
- 02 - relationship
- 03 - subset
- 04 - cross map set
- 05 - cross map target

Extension

- 10 - extension concept
- 11 - extension description
- 12 - extension relationship
- 13 - extension subset
- 14 - extension cross map set
- 15 - extension cross map target

Item ID

- Integer between 100 (3 digits) and 999,999,999,999,999 (15 digits)
- Unique identifier within partition

Extension and Namespace

- Namespace ID is always 7 digits
- Partition ID indicates an extension
- E.g. 9999 1000000 10 8
- NHS Terminology Service uses 1000000

Concept ID

SNOMED CT Concept Identifier for *Pneumonia*

5 5 6 7 9 | [EMPTY] | 0 0 | 8

Item ID   Namespace ID Partition ID Check-digit

Description ID

Description and Concept Identifiers for the Concept *Myocardial infarction*

	Item ID	Namespace ID	Partition ID	Check-digit
The concept itself	22298	[EMPTY]	00	6
Preferred term: "Myocardial infarction"	580939	[EMPTY]	01	1
Synonym: "Heart attack"	37443	[EMPTY]	01	5

Snomed components

Concepts Table

Concept ID	Concept Status	FullySpecifiedName	CTV3ID	SNOMEDID	IsPrimitive
55679008	0	Pneumonia ()	X100E	D2-0007F	1
45598009	0	Laparoscopic cholecystectomy (procedure)	78105	P1-5C340	0
193656002	6	Subjective visual disturbance NOS	F481z	DA-7441D	1
178932007	0	Rotational osteotomy ()	7K145	P1-1013C	1

Concept Status Codes Used in the Concepts Table			
0 – Current	2 – Duplicate	4 – Ambiguous	6 – Limited
1 – Retired	3 – Outdated	5 – Erroneous	

Concepts with a status of 1, 2, 3, 4 or 5 are no longer current SNOMED CT concepts.
Status 6 concepts have a "Limited classification" status. These are concepts that might need to be used in a subset or retired.

Description

- Description ID
  - SCTID

- Description Status
  - 0 current, 1 retired, 2 duplicate, 3 outdated, 4 ambiguous, 5 erroneous, 6 limited
- Term
  - Up to 255 characters
  - Initial capital status (e.g. pH or Alzheimer)

- Language Member
  - Language or dialect code
  - Description type (e.g. Preferred Term)

Fully Specified Name (FSN)

- Phrase that names a concept in a way that is:
  - Unique
  - Unambiguous
- Each FSN contains a suffix (hierarchy tag) that indicates its primary hierarchy
  - Gastric ulcer (disorder)

Preferred Term

- Common phrase or word used by clinicians to name a concept
- Used as default display term
- One Preferred Term per concept in any dialect
- Same Preferred Terms are not unique within a language
- Often the FSN without its suffix (hierarchy tag)

Synonyms

- Each concept may have multiple synonyms and translations

- E.g. Gastric Ulcer
  - Gastric ulcer (disorder) [FSN]
  - Gastric ulcer [preferred term]
  - Stomach ulcer
  - GU - Gastric Ulcer
  - Gastric ulceration

Homonyms

- The same description term can be used for different concepts
- E.g. "cold"
  - Common cold (disorder)
  - Cold sensation quality (qualifier value)

Relationship

- Attribute-Value pair
- Attribute is a concept
- Value is a concept
- Other properties of Relationship
  - Relationship ID (SCTID)
  - Characteristic Type
  - Refinability

Characteristic Type

- Defining (0)
  - appendicectomy: procedure site = appendix
- Qualifying (1) specifies allowable qualifiers
  - appendicectomy: approach = laparascopic
- Historical (2) used to relate inactive concepts to active concepts
  - absent hand: may be a = congenital absence of hand
- Additional (3) characteristics which are not part of definition
  - Amoxil 500mg capsule: legal category = Prescription Only Medicine

Refinability

- Specifies whether further qualifiers are allowed
  - not refinable
  - optional
  - mandatory

Types of Relationship

- Defining Relationships
  - Sub-type hierarchies (IS_A)
  - Attributes
- Qualifying Relationships
- Post-Coordinated Expressions

24 Built-in Hierarchies

- clinical finding (includes disorders)
- procedure
- context-dependent categories
- observable entity
- body structure
- organism
- substance
- pharmaceutical/biologic product
- morphologic abnormalities
- specimen
- physical object
- physical force

- event
- environments and geographical locations
- social context
- staging and scales
- attribute
- qualifier value
- special concept
- record artefact
- core metadata concept
- foundation metadata concept
- namespace concept
- linkage concept

Relationship Table

Relationship ID	ConceptID #1	Relationship type	ConceptID #2	Characteristic Type	Refin-ability	Relation-ship Group
nnnnn02m	52734007	363704007	55679008	0	1	0
ID of the row in the database table where this relationship is recorded.	Total replacement of hip	Procedure-site	Entire hip joint			

Notes:
1. In the Relationship ID column: nnnn = ConceptID, m = the check digit, 02 = Partition ID for Relationships.
2. In the Characteristic Type column, 0 = Refinable.
See below for details about the Relationships Table.

Namespaces

Namespaces

- To allow for local extensions to SNOMED
- May be additions to existing SNOMED
- May be a substitute for International SNOMED
- Or a bit of both

Namespaces

- Any member/affiliate/organisation may apply to IHTSDO for a Namespace Identifier
- Standard Application form
- Supposed to follow SNOMED Editorial rules (not policed)
- Two in UK: NHS and EMIS

SUBSETS

Subsets

- A Subset
  - Set of references for a specified purpose
  - **Not** a standalone resource

- A Subset may be
  - Huge (e.g. >100,000 component references)
  - Medium (e.g. 100s or 1,000's component references)
  - Small (e.g. <100 component references)

- Subset Members may have a status
  - Preferred/Synonym
  - High/Low Priority

- Subsets may relate concepts to one another
  - In a hierarchy
  - By varying subset membership according to context

Requirements of Subsets

- Language and dialect
  - Indicate the valid and preferred descriptions in …
    - UK/US English, German, Spanish …
- Content filtering
  - Value Sets to match HL7 V3 Vocabulary Domains
    - Examples
      - Inclusion: NHS PMIP "Pathology Bounded List"
      - Exclusion: "Non-human" concepts used by vets
  - Restricting available concepts by
    - User and or data entry context
- Content prioritisation
  - Making some concepts/descriptions more accessible

Subset Types

- Language and Dialect
- General (inclusion/exclusion/priority)
- Context specific (inclusion/exclusion/priority)
- Navigation
- Refsets

crossmaps

Cross Maps

- ICD-10
- OPCS-4
- Nursing Terminologies
- Read Codes - SNOMED
- CTV3 - SNOMED

Further Reading

- SNOMED Implementation in Primary Care
  - SCIMP Website
- Clinical Safety and SNOMED
  - SCIMP Website
- Technical Reference Guide
  - IHTSDO Website
- Editorial Reference Guide
  - IHTSDO Website