

6.6 Using Statistical Classifications

Clinical terminologies and classifications serve different but complementary purposes and both are an important part of the healthcare environment. There are therefore some situations in which it is necessary to map SNOMED CT codes to a classification, such as ICD-9 or ICD-10, for analytics or reporting purposes. The differences between the two holds the key to their distinct purpose.

A classification is a hierarchical organization of terms that allows aggregation into categories which can be counted and compared. A statistical classification is mono-hierarchical which means that each code in the hierarchy is classified underneath a single code in the level above. This avoids codes being counted twice because they are grouped into two distinct groupings (i.e. double counting), but means that arbitrary decisions must be made as to where codes are grouped. For example, the ICD-10 code J12 |viral pneumonia, not elsewhere classified| is classified under "Diseases of the respiratory system", but is not classified under "Certain infectious and parasitic diseases". Therefore, a query that asks "Is J12 a respiratory disease?" will return "Yes", while a query that asks "Is J12 an infectious disease?" will return "No".

Unlike clinical terminologies, classifications also explicitly enumerate 'known unknowns' (e.g. 'not otherwise specified (NOS)' and 'not elsewhere classified (NEC)'); they often use a single code to represent several closely related but clinically distinct entities (e.g. H65.9 represents 'allergic otitis media', 'exudative otitis media', 'mucoid otitis media' and others); and they are often presented in the form of coding manuals with rigid, well defined rules of use. Classifications emphasize coding discipline (rather than expressivity). This is helpful for driving formal billing and reimbursement. The lower number of codes also makes assigning prices to each code tractable (e.g. using either ICD-9, ICD-10, or one of the Diagnosis Related Group systems). Classifications are also deployable in low tech environments, including paper or simple spreadsheet based systems.

Classifications are primarily used for purposes in which terms must be grouped into categories, and double counting must be avoided. These purposes may include:

- Statistical reporting on major diagnoses, procedures or primary cause of morbidity
- Epidemiological reporting involving counting of disease categories
- Other administrative reporting based on specific WHO reporting requirements
- Billing and reimbursement

In contrast, SNOMED CT is a clinical terminology, in which each concept identifier represents a distinct clinical meaning. By providing a more detailed level of granularity than classifications, SNOMED CT enables clinicians to use SNOMED CT to record healthcare information at the clinically appropriate level of detail. Unlike statistical classifications, SNOMED CT uses a polyhierarchy, in which each concept may be grouped under more than one supertype, reflecting possible alternate ways of categorizing each clinical meaning. SNOMED CT also provides defining relationships between concepts, which further enhances its ability to support flexible and powerful analytics capabilities.

It is generally recommended that clinical data is recorded using a clinical terminology, such as SNOMED CT, and then mapped for reporting purposes to one or more classifications, such as ICD. SNOMED International publishes a map from SNOMED CT to both ICD-9 and ICD-10. This supports epidemiological, statistical and administrative reporting needs of the member countries and WHO Collaborating Centers. The collaborative work between SNOMED International and the WHO on the alignment of ICD-11 with SNOMED CT is in progress and promises tighter integration of the distinct use cases in the future.

Example

The following example illustrates the rows of the Extended Map reference set that supports the mapping from the SNOMED CT concept 15296000 |sterility| to an appropriate ICD-10 code. The set of map rules associated with each SNOMED CT concept are grouped together into 'map groups' and then ordered within each map group by a 'map priority'. The map rule provides a machine readable rule that indicates whether this map should be selected within its map group, and the map advice provides human readable advice. The correlation indicates the type of match between the source and the target (e.g. 'exact match' or 'narrow to broad') and the map category indicates the kind of map being represented.

Referenced component	Map target	Map group	Map priority	Map rule	Map advice	Correlation ID	Map Category Id
15296000 sterility	N97.9 female infertility, unspecified	1	1	IFA 10114008 Female sterility (finding)	IF FEMALE STERILITY CHOOSE N97.9	Not specified	Context dependent
15296000 sterility	N46 male infertility	1	2	IFA 49408009 Male sterility (finding)	IF MALE STERILITY CHOOSE N46	Not specified	Context dependent
15296000 sterility		1	3	OTHERWISE TRUE	MAP SOURCE CONCEPT CANNOT BE CLASSIFIED WITH AVAILABLE DATA	Not specified	Context dependent

Implementation

Mapping to Classifications using SNOMED CT

Maps from SNOMED CT to classifications are generally represented in SNOMED CT's RF2 using a Complex or Extended map reference set. Mappings are then performed by matching each SNOMED CT code in a patient's record with the corresponding row of the map reference set, and using the classification code found in the 'mapTarget' field.

Case Studies

The [UK Terminology Centre's Data Migration Workbench](#) demonstrates the use of maps from SNOMED CT to ICD-10 International Edition (using the UK maps) and OPCS Classification of Interventions and Procedures (OPCS-4). The National Library of Medicine (NLM) has also developed a demonstration tool, which demonstrated the key principles of implementing map rules and advice. This tool, called I-MAGIC

¹ (Interactive Map-Assisted Generation of ICD Codes) uses the SNOMED CT to ICD-10 map in a real-time, interactive manner to generate ICD-10 codes. It simulates a problem list interface in which the user enters problems with SNOMED CT terms, which are then used to derive ICD-10 codes using the map. A number of vendor products, such as [Cerner](#) Millenium, also use maps from SNOMED CT to ICD-10 to enable statistical analysis.

Footnotes

RefNotes

1 <http://imagic.nlm.nih.gov/imagic2/code/map>