The “Common Ontology”
between ICD 11 and SNOMED CT
to ensure semantic interoperability

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Abstract The panel will present and discuss the progress of work in the harmonization of the upcoming revision of the ICD 11 and the SNOMED CT. The creation of a “Common Ontology” has been agreed by the WHO (World Health Organisation) and IHTSDO (International Health Terminology Standard Development Organisation) which formally shares the same entities with the same entity names, same definitions and similar parent-child relationships between a selected subset of the ICD 11 Foundation and the corresponding SNOMED CT terms. To achieve this goal a pilot work has been completed on the cardiovascular system disorders. The common ontology is beyond and above the conventional mapping SNOMED CT to ICD entities as it also includes compatibility of the ontological IS_A relations. When complete this ontology will enable end-users employ SNOMED CT and ICD interchangeably. Due to the current differences between the two systems in terms of goals, uses, hierarchies and granularity levels it is necessary to base the alignment on a thorough analysis of the intended meaning of their representational units. The panel will present the underlying principles and methods used for defining and creating a common ontology, its potential applications such as its use in Health Information Systems and particularly the Electronic Health Record.

Keywords. ICD, SNOMED CT, Ontology, Terminology, Classification, Standard
Introduction of the topic

1.1. Outline of panel objectives

The objectives of the panel are:

a. to present and discuss the on the harmonisation between the WHO’s upcoming ICD 11 and the IHTSDO’s SNOMED CT among a worldwide biomedical informatics and e-Health researchers and practitioners community;

b. to receive feedback from developers and ontology, terminology and classification specialists on the strategy;

c. to discuss whether the use of ontology-driven approaches can help enhance the semantic interoperability between different information models used in different legacies.

1.2. In-depth analysis of the issue

e-Health Information Systems are useful as they enable the exchange of data between different users. Lack of common formats and meaning is a great barrier to different health information systems exchanging data among each other: hence the need for established standard mechanisms for syntactic and semantic interoperability. Semantic interoperability relies on structured data which uses some kind of controlled vocabulary. As multiple systems exist, such as classifications, terminologies or ontologies, the key question remains whether they mean the same thing when they exchange data.

This issue is critically addressed by the 2010 collaboration agreement between the WHO (World Health Organisation) and IHTSDO (International Health Terminology Standard Development Organisation). This agreement covers on the one hand the IHTSDO mapping process between SNOMED CT and ICD-10 which is a good example of a classical mapping approach [On the other hand, it focuses on the creation of a “Common Ontology” as agreed by the WHO/ IHTSDO Joint Advisory Group. [01-03] The Common Ontology formally shares the same entities with the same fully specified names, same definitions and similar parent-child relationships between a selected subset of the ICD 11 Foundation and the corresponding SNOMED CT terms. To achieve this goal, a pilot work has been completed on the cardiovascular system disorders. The common ontology is beyond and above the conventional mapping SNOMED CT to ICD entities as it also includes compatibility of the ontological IS_A relations. When complete, this Common Ontology will enable end-users employ SNOMED CT and ICD interchangeably.
1.3. Overview of the discussion topics

The panel will begin with a presentation on the development of a Common Ontology between the Foundation Component of ICD 11 and SNOMED CT in the last two years. It will point out the architecture needs and challenges in achieving convergence, stability and timely evolution in terminology and classifications.

1. Focus of Speaker A: T. Bedirhan Üstün & Kent Spackman
   - Brief overview of the architecture and status of development
   - Hopes and Fears for ICD and SNOMED CT
   - Common resource rather than competing standards

2. Focus of Speaker B: Christopher Chute
   - The Foundation of ICD11 a compilation for convergence of various classification systems: One foundation-multiple linearizations

3. Focus of Speaker C: Jean Marie Rodrigues
   - Issues for coding and classification
   - What is it hard for conventional classification users, why will it be easier in the long run?

4. Focus of Speaker D: Stefan Schulz
   - How to achieve an ontologically sound model whose hierarchies correspond to usual medical usage: combinations, negation, exclusions?
   - The distinction between queries and classes

5. Focus of Speaker D: Alan Rector
   - Can we make coding part of the solution rather than part of the problem for implementers? Can we make extension and support easier? Can we avoid duplication of SNOMED and ICD?
   - Can we make evolution systematic and verifiable? Can we provide graceful migration pathway to a longterm stable solution?

6. Question and Answer Session

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References


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