The “Common Ontology” between ICD 11 and SNOMED CT

medical plausibility vs. ontological soundness

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ICD-11 – SNOMED CT harmonization

• **Background:**
  – ICD: *Classification* maintained by WHO, currently under revision → ICD-11
  – SNOMED CT: *Ontology-based clinical terminology* maintained by IHTSDO (International Health Terminology Standards Development Organisation)

• **Large content overlap between ICD and SNOMED CT disorder / findings hierarchy**

• **Joint Advisory Group (WHO and IHTSDO), based on institutional agreement:**
  – Synergistic and not antagonistic terminology development
  – Jointly develop a *common ontological basis* for both ICD-11 and SNOMED CT
  – Maximum of interoperability between ICD and SNOMED coded data
Inventory of clinicians’ language: words, terms, phrases

Purpose-specific reporting units:
- billing,
- health statistics

Categorization and formal description of domain entities:
- clinical situations,
- information entities,
- taxonomies, partonomies
Inventory of clinicians' language: words, terms, phrases

Purpose-specific reporting units: billing, health statistics, research, ...

Ontology
Categorization and formal description of domain entities: clinical situations, information entities, taxonomies, partonomies

Vocabulary

Classification

SNOMED CT
ICD-11
SNOMED CT
ICD-11
Inventory of clinicians’ language: words, terms, phrases

Purpose-specific reporting units: billing, health statistics, research, ...

Vocabulary

Desiderata: Ready-to-use terms, one-click encoding of complex statements

Classification

Desiderata: pragmatic orderings for specific purposes

Ontology

Desiderata: context-independent, precise categorizations

Categorization and formal description of domain entities: clinical situations, information entities, taxonomies, partonomies

Vocabulary

Classification

Ontology
SNOMED CT Findings/Disorders and WHO – IHTSDO Common Ontology

Formal taxonomies of clinical situations
(life periods in which one or more clinical conditions are present)

ICD-11
Linearizations
Hierarchical orderings of reporting units into disjoint “classes”
Multiple hierarchies:

- Mitral valve disease
- Rheumatic heart disease
- Rheumatic mitral valve stenosis

Single hierarchies + exclusions

- Mitral valve disease
- Rheumatic heart disease
- Rheumatic mitral valve stenosis
- Excl: Heart valve diseases

SNOMED CT Findings/Disorders and WHO – IHTSDO Common Ontology

Formal taxonomies of clinical situations
(life periods in which one or more clinical conditions are present)

ICD-11 Linearizations
Hierarchical orderings of reporting units into disjoint “classes”
**Strict taxonomic relations**

Fibrosis of the skin

Disorder of skin of lower limb

Lipodermatosclerosis

**Approximate taxonomies**

**ICD-11**

Linearizations

Chronic peripheral venous insufficiency

Lipodermatosclerosis

**SNOMED CT Findings/Disorders and WHO – IHTSDO Common Ontology**

Formal taxonomies of clinical situations
(life periods in which one or more clinical conditions are present)
Tuberculosis of the respiratory system

- Respiratory tuberculosis, confirmed
- Respiratory tuberculosis, suspected

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**SNOMED CT Findings/Disorders and WHO – IHTSDO Common Ontology**

**Formal taxonomies of clinical situations**
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**Mapping as Querying**
Query mechanism, e.g.
- \( X = \text{select } A \text{ minus select } B \)
- \( Y = \text{select } A \text{ and } B \)
- \( Z = \text{select } A \text{ and (rel } C) \)

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