THE SINGAPORE DRUG DICTIONARY

Developing and integrating a national drug extension in SNOMED CT

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Agenda

- Introduction to the Singapore Drug Dictionary and the Singapore SNOMED CT Extension
- A profile for pharmacists to enter drug definitions in Snow Owl
- Transforming pharmacy data into ontology
- Extensions to SNOMED CT
- Future plans
- Demo
The Singapore Drug Dictionary

- Support semantic interoperability across care settings and use cases
- Utilize the Singapore SNOMED CT Extension
  - Supporting data reference sets assist drug definition
- Integrate detailed drug definitions into SNOMED CT’s ontological representation

"I had trouble reading your doctor’s handwriting, but I think I figured it out. However, if you start to drool uncontrollably or gain more than 15 pounds in a week, stop taking them."
Built on top of the Snow Owl platform

- Snow Owl is a terminology authoring tool developed by B2i Healthcare
- Besides SNOMED CT it supports various other terminologies and code systems, value sets and mappings
- Provides a collaborative authoring environment for ontologists
Entering a source drug definition

- Form based editor designed for pharmacists
- Fields are restricted by modeling rules (available values are defined by reference sets and concept attributes)
- Validation aids QA
- Preview provides a glance at the concepts to be generated
Structure of a source drug
The ontology generation

- Transformation from source data to fully defined SNOMED CT concepts
- Different types of descriptions are generated by pre-defined algorithms
- Equivalent concepts are filtered and merged by the classifier
Core medication classes

MP
Amoxicillin

MPF
Amoxicillin Capsule

MPR
Amoxicillin 250 mg Capsule

MPQ
Amoxicillin 250 mg Capsule (1,000 capsules)

MPP
Amoxicillin 250 mg Capsule (100 x 10 capsules)

MPPC
Amoxicillin 250 mg Capsule (100 x 10 capsules per blister strip)

MTP
STRIMOX [Amoxicillin]

MTPF
STRIMOX [Amoxicillin] Capsule

MTPR
STRIMOX [Amoxicillin] 250 mg Capsule

MTPQ
STRIMOX [Amoxicillin] 250 mg Capsule (1,000 capsules)

MTPP
STRIMOX [Amoxicillin] 250 mg Capsule (100 x 10 capsules)

MTTPC
STRIMOX [Amoxicillin] 250 mg Capsule (100 x 10 capsules per blister strip)

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Classification issues

- Extended attribute types
  - Float
  - String
  - Boolean

- Extended DL expressibility
  - Disjointness of substances (?)
  - Universal restriction \( \forall R.C \)
  - Union groups
Maintaining the SDD extension within Snow Owl

- Namespace and module

- Reference sets

- Queries by attributes
Future plans

- Automatic regeneration of descriptions
- Withdrawing drugs – adjust the generated concepts
- Medication groupers
- Enhanced concept editors
- Query by concrete domain
- Online browser
THANK YOU!