

THE SINGAPORE DRUG DICTIONARY

Developing and integrating a
national drug extension in
SNOMED CT

Orsolya Bali

Balázs Bánfai,

B2i Healthcare



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

Drug Hierarchy




FEMOSTON 2/10

- ▼  Estradiol Hemihydrate 2 mg Film-Coated Tablet (& Estradiol Hemihydrate 2 mg + Dydrogesterone 10 mg Film-Coated Tablet)
 - ▼  Estradiol Hemihydrate 2 mg Film-Coated Tablet
 -  Estradiol Hemihydrate 2 mg
 - ▼  Estradiol Hemihydrate 2 mg + Dydrogesterone 10 mg Film-Coated Tablet
 -  Estradiol Hemihydrate 2 mg
 -  Dydrogesterone 10 mg




▼ Packaging

Packaging Hierarchy

FEMOSTON

- ▼  Blister Strip (1 x 28 tablets) Estradiol Hemihydrate 2 mg Film-Coated Tablet (& Estradiol Hemihydrate 2 mg + Dydrogesterone 10 mg Film-Coated Tablet)
 -  14 tablets (1 x 14 tablets): Estradiol Hemihydrate 2 mg Film-Coated Tablet
 -  14 tablets (1 x 14 tablets): Estradiol Hemihydrate 2 mg + Dydrogesterone 10 mg Film-Coated Tablet

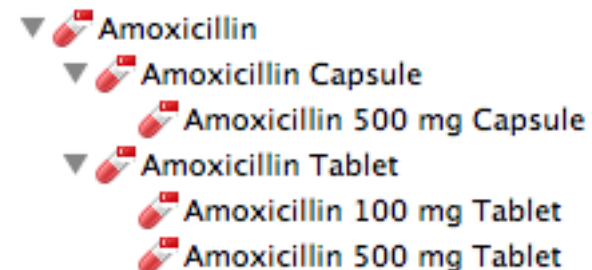
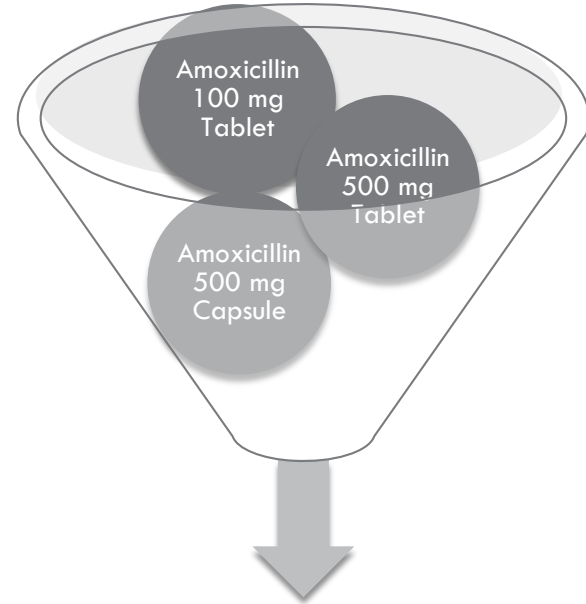
FEMOSTON 1 pack

- ▼  Blister Strip (3 x 28 tablets) Estradiol Hemihydrate 2 mg Film-Coated Tablet (& Estradiol Hemihydrate 2 mg + Dydrogesterone 10 mg Film-Coated Tablet)
 -  42 tablets (3 x 14 tablets): Estradiol Hemihydrate 2 mg Film-Coated Tablet
 -  42 tablets (3 x 14 tablets): Estradiol Hemihydrate 2 mg + Dydrogesterone 10 mg Film-Coated Tablet

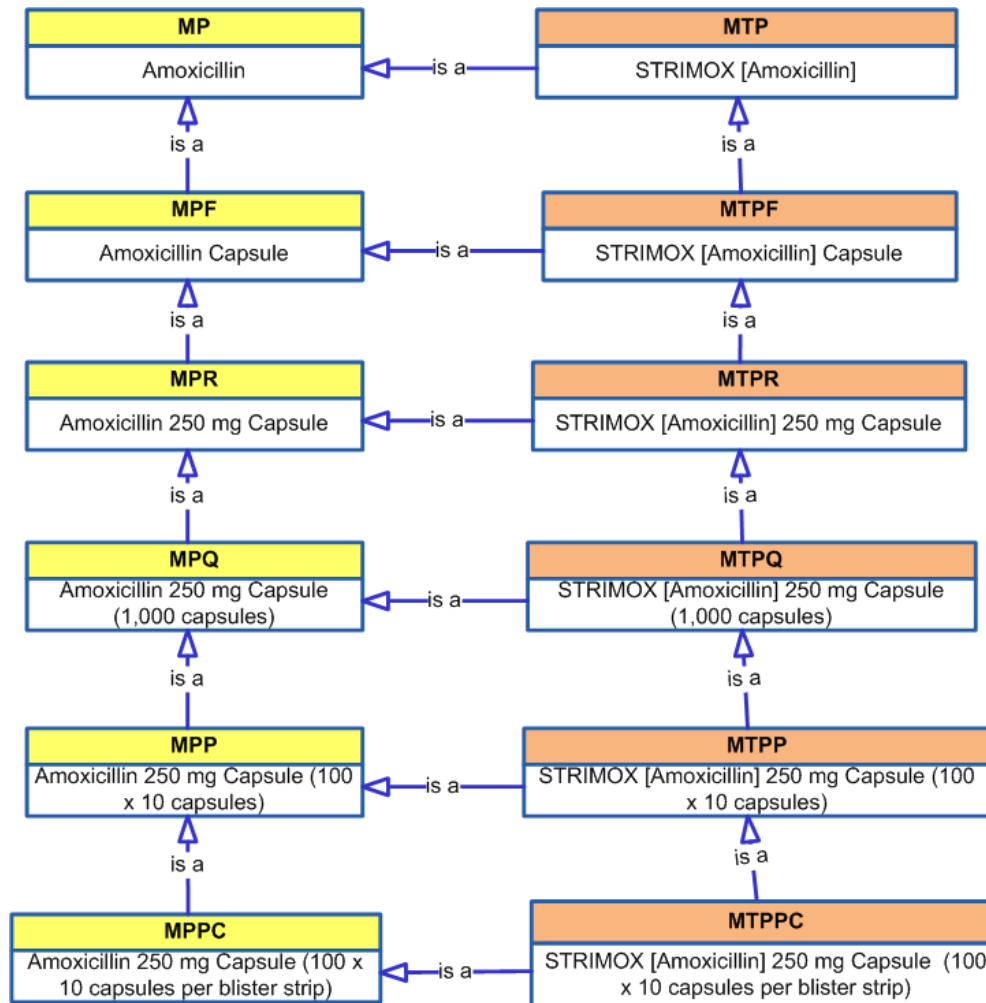
The ontology generation



- ❑ 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



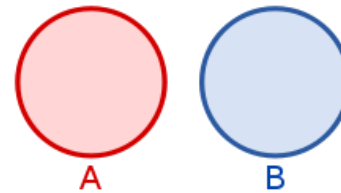
Classification issues



- Extended attribute types

- Float
- String
- Boolean

- Extended DL expressibility

- Disjointness of substances (?)
- Universal restriction $\forall R.C$
- Union groups





Attribute	Destination	Group	Union group	Modifier
☞ Active ingredient	 Clavulanate	0	1	∇ All
☞ Active ingredient	 Amoxicillin	0	1	∇ All

Maintaining the SDD extension within Snow Owl







▣ Namespace and module

▼ SNOMED CT Properties

Concept ID:  60292471000132107

Module:  SNOMED CT Singapore Drug Dictionary Extension

--

Type	Term	Status	Language code
 Full Name	Amoxicillin Oral Capsule	 active	 en-sg
 Fully Specified Name	Amoxicillin Oral Capsule (SG product)	 active	 en-sg

▣ Reference sets

▣ Queries by attributes

Index Search ESCG Query

```
<<551000991000133100|Singapore medicinal product|:411116001|Dose form|= <<385055001|Tablet|
```

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!

