Drug Concept Model Development and Deployment: A Long Journey

Kuala Lumpur, Malaysia
Farzaneh Ashrafi, Toni Morrison
October 31, 2019
Where we started
Where we started

- Substance hierarchy
  - Overloaded Is A relationships
  - Groupers that produced incorrect inferences because Is A relationships were not always true
Where we started

- Product hierarchy
  - Primitive hierarchy that manually duplicated substance model
  - Unable to leverage classifier to manage content
  - Blockers (e.g. concrete domains, universal restrictions)
  - Missing foundational components required to create concept model
  - Unable to use Product concept to model in SNOMED CT hierarchies
Where we started

- Other concerns
  - Supporting hierarchies such as Pharmaceutical dose forms
  - Evolving international standards
- Documentation lacking
Where we are
Substance Hierarchy

- Resolution for groupers that resulted in overloaded or incorrect Is A relationships
  - Has disposition attribute introduced and populated
  - High level groupers reviewed

- Resolution for conflicting use cases requiring the representation of substances both as a flat list and as a hierarchy
  - Is modification of attribute introduced and populated

- Updates to terming for substances to reflect INN in FSN and correct US/GB preferred terms
Pharmaceutical Dose Forms

● Concept model
  ○ Compatible with ISO 11239 IDMP Standard lists regulated information on pharmaceutical dose forms, units of presentation, routes of administration and packaging
  ○ Guidelines for modeling and terming; existing content updated accordingly
  ○ Based on analysis of existing concepts, created new Pharmaceutical dose form concepts required to remodel Medicinal Product concepts
Representation of numeric values and universal restrictions

- Numeric values
  - Support future transformation to concrete domains
  - Guidance from Modeling Advisory Group
  - Result was to create a new “temporary” Number subhierarchy

- Universal restrictions
  - Implemented ingredient count to support classification needs
Pharmaceutical Dose Forms

- Created concept model and editorial guidelines
- Updated existing content, validating against existing member data (primarily dm+d, RxNorm) to determine attribute values
Where we’re going next
Next areas

- Quality Improvement Project
  - Subproject for patterns modeled with substances
  - Starting with “Allergy to X” and “Adverse reaction caused by X” patterns

- Vaccine Product Concept Model
  - Concept model, terming, editorial guidelines
  - Address Substance vaccine concepts

- Concrete Domains
  - Modeling AG leading this effort

- Address feedback received from implementers and stakeholders
Links to further information

Medicinal Products, Substances, and Vaccines
  • https://confluence.ihtsdotools.org/display/IAP/Drugs+Project

Modeling Advisory Group (concrete domains)
  • https://confluence.ihtsdotools.org/display/mag/Modeling+Advisory+Group

QI Project
  • https://confluence.ihtsdotools.org/display/IAP/QI+Project
Thank you.