



eHealth Masterminds

# IHTSDO Default National Drug Concept Model

for use by Member countries



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# **PROJECT OVERVIEW**



# Project Overview

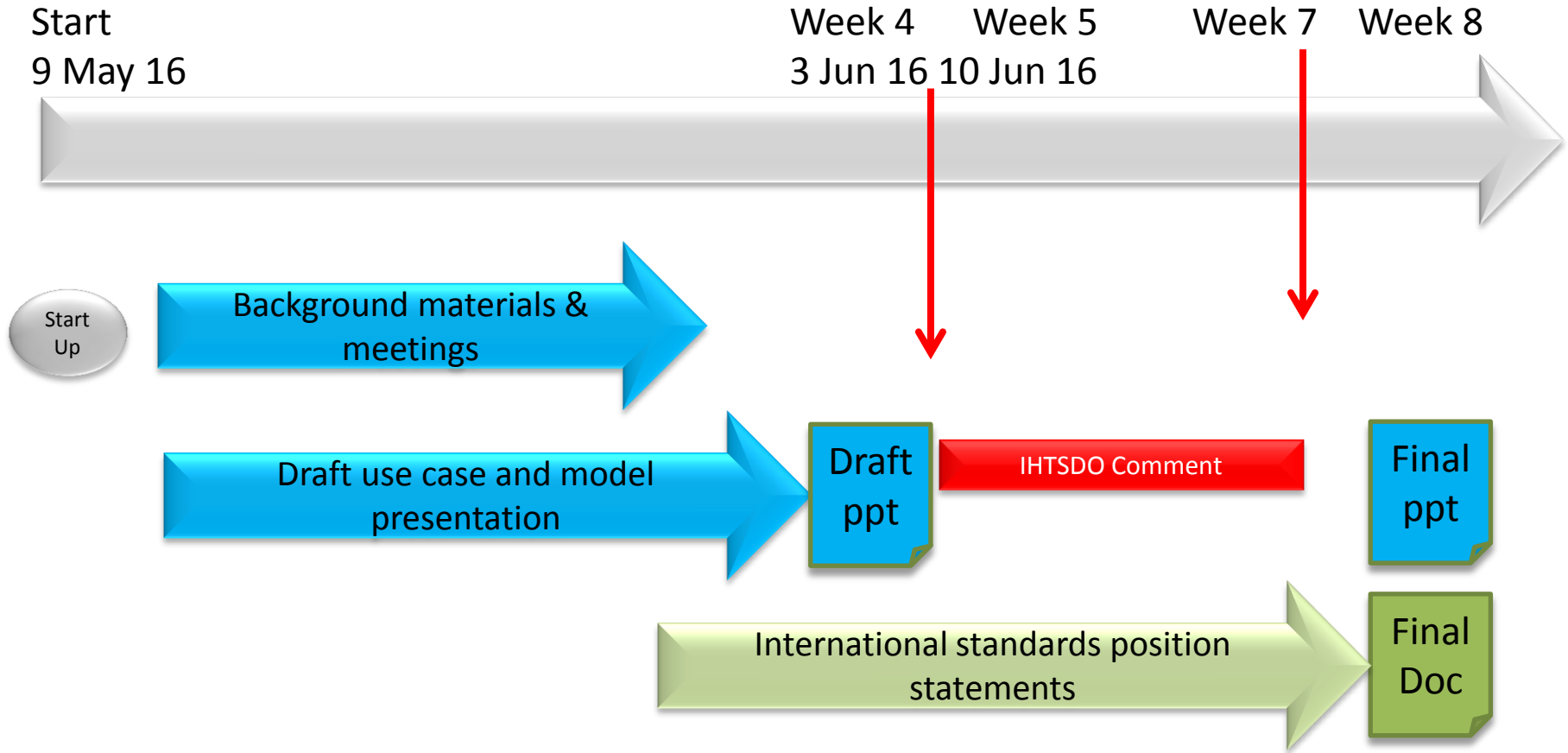
The objective of this project is to document a default drug concept model and use cases for use by IHTSDO Member countries creating their own national drug extensions. It includes recommended maps to other international standards including:

- GS1 - GTIN
- ATC
- IDMP

# Project assumptions

- It does **NOT** include:
  - editorial guidance for the representation of drugs ( in the member extension or international release) or
  - Guidance on any changes for the International Drug model within the SNOMED CT International Release
- The issue of concrete domains will be addressed in the documentation but the model will need to align to RF2 current specification which does not include concrete domains
- It does **NOT** include recommendations of National drug dictionaries development processes or tooling requirements, however the model needs to be pragmatic in relation to how it can be easily developed and implemented
- The work was developed based on information provided by IHTSDO, the member countries, with some (limited) stakeholder engagement
- All work items were completed with input from IHTSDO staff covering the areas of Content and Collaborations

# Timeline



# Contributions & Acknowledgements

The work was developed based on information provided by IHTSDO and the member countries. Meetings were held with member countries who have drug extensions and provided documentation and other key stakeholders.

Documentation included:

- Use Cases ( Canada, Latin America & New Zealand)
- Existing Models documentation /presentations (Australia – AMT, Canada, New Zealand – NZULM, Singapore – SDD, UK – dm+d)
- International Standards - IDMP from IHTSDO

Meetings included:

- Australia – Kate Ebrill, Dion McMurtrie, Matt Cordell and other members of AMT team
- Canada - Beverly Knight & Linda Parisien
- New Zealand - David Mitchell
- Singapore - Priscilla Chua & Jing Jing Wong
- UK - Jo Goulding
- OpenMedicine- William Goossen
- Netherlands - Leonora Grandia
- Brandon Ulrich – B2i



# **NATIONAL DRUG CONCEPT MODEL OVERVIEW & SCOPE**



# What is the problem we are trying to solve?

- **Different in-house drug terminologies**, codes and IT systems limits the extent to which **information can be exchanged**– for post-market monitoring, integrated care, healthcare efficiency, decision support and patient safety;
- **Lack of consistent naming** and interpretation
- **Limited decision support** and may be **inconsistent** between **facilities**

# National Medication Dictionary - What is it?

- A directory or repository containing standardised data which can be accessed by authorised applications
- Data about medicines and their components
- Single, constant, unique ID for all concepts
- Includes **the application ( tools)** for managing development, storage and access
- Includes supporting infrastructure and services such as Quality Assurance and editorial rules
- May includes maps to other identifiers & relevant classifications:
  - *SNOMED CT international release*
  - *ATC – Anatomical Therapeutic Chemical Classification (WHO)*
  - *Country regulation code*
  - *Reimbursement codes*
  - *GTIN*

It is **NOT** a decision support system or a data exchange standards

# Scope of model product types

## In scope

- single ingredient & multi-ingredient & multi-component
  - Medications
  - Medications with devices as a container
  - Vaccines
  - Vitamins
  - Feeds

## Currently out of scope

- Different Model(s)
  - Devices
  - Devices with medications
  - Extemporaneous Recipes ( eg creams & infusion, TPN, Chinese traditional medicines)
  - Blood
- May require additional attributes
  - Blood products
  - Clinical trials
  - Radiopharmaceuticals
  - Herbal & Health supplements



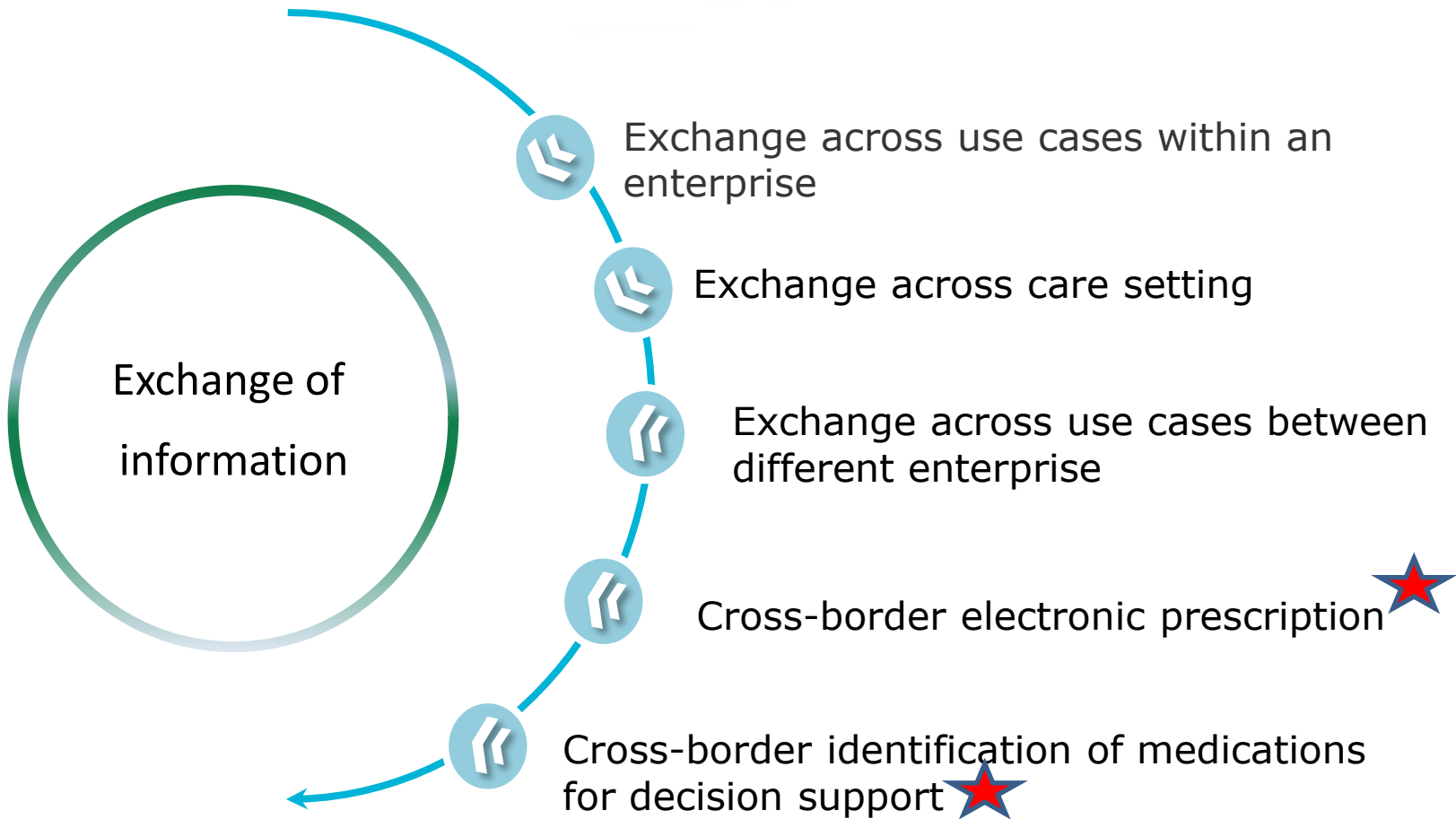
# CURRENT USE CASES

## NOTES

- Use cases represent the major range of use case examples and are not representative of best practice
- Where issues may arise from the practice they are coloured in grey

# Use cases





★ These have a dependency for a shared reference terminology for the core elements

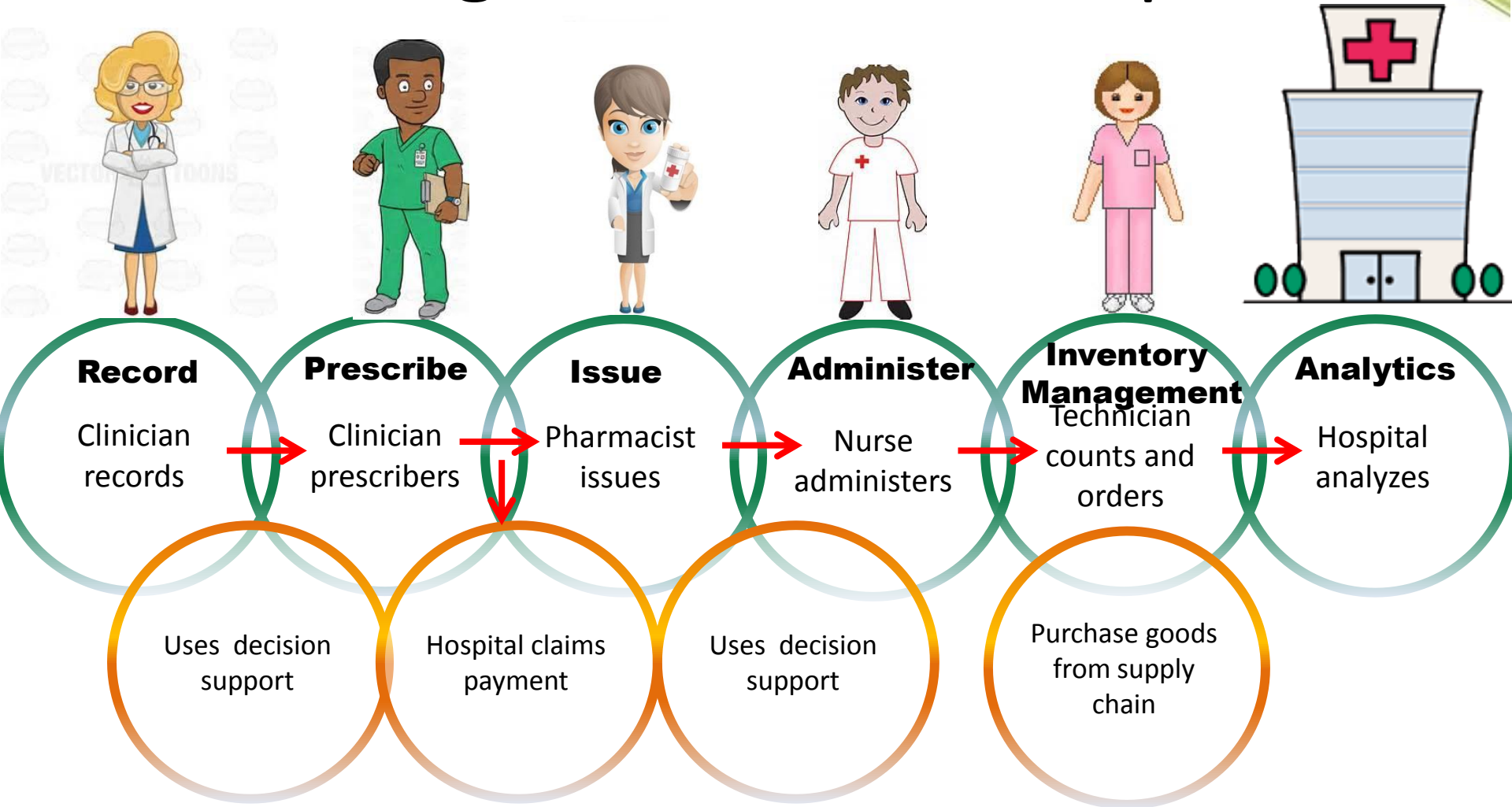
# Exchange Implementation

Major Implementation options include:

- Mapping the local EMR or application drug codes either:
  - locally prior to exchange
  - During the exchange
  - On receipt of the information
- Native use as a value set within the local EMR or application

Example

# Exchange within an enterprise





Example

# Exchange across enterprises



**Specialist Centre**



**Primary care**



**Community Pharmacy**



**Aged care**



**Community Pharmacy**



**Record**  
Specialist writes Discharge summary

**Prescribe**  
General practitioner prescribes

**Issue**  
Pharmacist issues

**Administer**  
Nurse administers

**Inventory Management**  
Pharmacist counts and orders

**Analytics**  
All enterprises analyze

Uses decision support

Pharmacist claims payment

Uses decision support

Purchase goods from supply chain

Example

# Prescribing across care setting



amoxicillin capsule

Take 1 g 3 times per day



**Hospital**



**Primary  
care**



**Specialist  
Centre**

Prescription		X
Patient	<input type="text" value="John Smith"/>	V
Medication	<input type="text" value="amoxicillin"/>	V
Route	<input type="text" value="Oral"/>	V
Dose form	<input type="text" value="capsule"/>	V
Dose	<input type="text" value="1 gram"/>	V
Frequency	<input type="text" value="3 times a day"/>	V
Duration	<input type="text" value="1 week"/>	V
<input type="button" value="Cancel"/>		<input type="button" value="OK"/>

Prescription		X
Patient	<input type="text" value="John Smith"/>	V
Medication	<input type="text" value="amoxicillin 500 mg cap"/>	V
Dose	<input type="text" value="2"/>	V
Frequency	<input type="text" value="3 times a day"/>	V
<input type="button" value="Cancel"/>		<input type="button" value="OK"/>

Prescription		X
Patient	<input type="text" value="John Smith"/>	V
Medication	<input type="text" value="amoxicillin cap"/>	V
Route	<input type="text" value="Oral"/>	V
Dose	<input type="text" value="1 gram"/>	V
Frequency	<input type="text" value="3 times a day"/>	V
Duration	<input type="text" value="1 week"/>	V
<input type="button" value="Cancel"/>		<input type="button" value="OK"/>



# Prescribing variations

## Primary care

Prescription		X
Patient	<input type="text" value="John Smith"/>	V
Medication	<input type="text" value="amoxicillin 500 mg cap"/>	V
Dose	<input type="text" value="2"/>	V
Frequency	<input type="text" value="3 times a day"/>	V
<input type="button" value="Cancel"/>		<input type="button" value="OK"/>

Prescription		X
Patient	<input type="text" value="John Smith"/>	V
Medication	<input type="text" value="Moduretic tablets"/>	V
Dose	<input type="text" value="1"/>	V
Frequency	<input type="text" value="Each morning"/>	V
<input type="button" value="Cancel"/>		<input type="button" value="OK"/>

Prescription		X
Patient	<input type="text" value="John Smith"/>	V
Medication	<input type="text" value="COUMADIN 1 mg tablet"/>	V
Dose	<input type="text" value="2"/>	V
Frequency	<input type="text" value="Each morning as directed"/>	V
<input type="button" value="Cancel"/>		<input type="button" value="OK"/>

Prescription		X
Patient	<input type="text" value="John Smith"/>	V
Medication	<input type="text" value="chloramphenicol 0.5% eye drops, 10 mL"/>	V
Dose	<input type="text" value="2 drops"/>	V
Frequency	<input type="text" value="3 times a day in each eye"/>	V
<input type="button" value="Cancel"/>		<input type="button" value="OK"/>

Prescription		X
Patient	<input type="text" value="John Smith"/>	V
Medication	<input type="text" value="Salbutamol 100 microgram/puff inhaler"/>	V
Dose	<input type="text" value="2 puffs"/>	V
Frequency	<input type="text" value="Every 4 hours"/>	V
<input type="button" value="Cancel"/>		<input type="button" value="OK"/>

Prescription		X
Patient	<input type="text" value="John Smith"/>	V
Medication	<input type="text" value="Influenza vaccine"/>	V
Dose	<input type="text" value="1"/>	V
Frequency	<input type="text" value="stat"/>	V
<input type="button" value="Cancel"/>		<input type="button" value="OK"/>



# Prescribing variations

## Primary care

**discrete**

Prescription X

Patient: John Smith

Medication: amoxicillin 500 mg cap

Dose: 2

Frequency: 3 times a day

Cancel OK

**Brand as synonym**

Prescription X

Patient: John Smith

Medication: Moduretic tablets

Dose: 1

Frequency: Each morning

Cancel OK

**Brand is significant**

Prescription X

Patient: John Smith

Medication: COUMADIN 1 mg tablet

Dose: 2

Frequency: Each morning as directed

Cancel OK

**Pack significant**

Prescription X

Patient: John Smith

Medication: chloramphenicol 0.5% eye drops, 10 mL

Dose: 2 drops

Frequency: 3 times a day in each eye

Cancel OK

**Container significant**

Prescription X

Patient: John Smith

Medication: Salbutamol 100 microgram/puff inhaler

Dose: 2 puffs

Frequency: Every 4 hours

Cancel OK

**Medication group**

Prescription X

Patient: John Smith

Medication: Influenza vaccine

Dose: 1

Frequency: stat

Cancel OK



**Prescribe**

concept that represent

products with a specific combination of active ingredients \* eg amoxicillin (or)

products with a specific combination of active ingredients and clinically significant dose form eg **amoxicillin capsule (or)**

products with a specific combination of active ingredients, strength and clinically significant dose form eg **amoxicillin 500 mg capsule**

products with a specific combination of active ingredients, strength and clinically significant dose form & pack size eg **chloramphenicol 0.5 % eye drops, 10 mL**

products with a specific combination of active ingredients, strength and clinically significant dose form, pack size & container eg **Salbutamol 100 microgram/dose pressurised inhalation solution 200 doses, inhaler**

the trade products of with a specific combination of active ingredients \* eg COUMADIN (or)

the trade products with a specific combination of active ingredients and dose form eg **COUMADIN tablet (or)**

the trade products with a specific combination of active ingredients, strength and dose form eg **COUMADIN 1 mg tablet**

the trade products with a specific combination of active ingredients, strength and dose form & pack size eg **CHOROMYCETIN 0.5 % eye drops, 10mL**

the trade product with a specific combination of active ingredients, strength and clinically significant dose form, pack & container eg **Ventolin 100 microgram/dose pressurised inhalation solution 200 doses, inhaler**

a medication group of products eg **Influenza vaccine**

\*may create decision support overload



**Issue**

concept that represent

products with a specific combination of active ingredients, strength and clinically significant dose form\* eg **amoxicillin 500 mg capsule**

products with a specific combination of active ingredients, strength and clinically significant dose form & pack size\* eg **chloramphenicol 0.5 % eye drops, 10 mL**

products with a specific combination of active ingredients, strength and clinically significant dose form, pack size & container\* eg **Salbutamol 100 microgram/dose pressurised inhalation solution 200 doses, inhaler**

the trade products with a specific combination of active ingredients, strength and dose form eg **COUMADIN 1 mg tablet**

the trade products with a specific combination of active ingredients, strength and dose form & pack size eg **CHOROMYCETIN 0.5 % eye drops, 10mL**

the trade product with a specific combination of active ingredients, strength and clinically significant dose form, pack & container eg **Ventolin 100 microgram/dose pressurised inhalation solution 200 doses, inhaler**





**Administer**

concept that represent

products with a specific combination of active ingredients, strength and clinically significant dose form\* eg **amoxicillin 500 mg capsule**

products with a specific combination of active ingredients, strength and clinically significant dose form & pack size\* eg **chloramphenicol 0.5 % eye drops, 10 mL**

products with a specific combination of active ingredients, strength and clinically significant dose form, pack size & container\* eg **Salbutamol 100 microgram/dose pressurised inhalation solution 200 doses, inhaler**

the trade products with a specific combination of active ingredients, strength and dose form eg **COUMADIN 1 mg tablet**

the trade products with a specific combination of active ingredients, strength and dose form & pack size eg **CHOROMYCETIN 0.5 % eye drops, 10mL**

the trade product with a specific combination of active ingredients, strength and clinically significant dose form, pack & container eg **Ventolin 100 microgram/dose pressurised inhalation solution 200 doses, inhaler**

products with a specific combination of active ingredients eg **amoxicillin**

products with a specific combination of active ingredients and clinically significant dose form eg **amoxicillin capsule**

products with a specific combination of active ingredients, strength and clinically significant dose form eg **amoxicillin 500 mg capsule**

products with a specific combination of active ingredients, strength and clinically significant dose form & pack size eg **chloramphenicol 0.5 % eye drops, 10 mL**

products with a specific combination of active ingredients, strength and clinically significant dose form, pack size & container eg **Salbutamol 100 microgram/dose pressurised inhalation solution 200 doses, inhaler**

the trade products of with a specific combination of active ingredients eg **COUMADIN**

the trade products with a specific combination of active ingredients and dose form eg **COUMADIN tablet**

the trade products with a specific combination of active ingredients, strength and dose form eg **COUMADIN 1 mg tablet**

the trade products with a specific combination of active ingredients, strength and dose form & pack size eg **CHOROMYCETIN 0.5 % eye drops, 10mL**

the trade product with a specific combination of active ingredients, strength and clinically significant dose form, pack & container eg **Ventolin 100 microgram/dose pressurised inhalation solution 200 doses, inhaler**

a medication group of products eg **Influenza vaccine** or a trade family group eg **PANADOL**



concept that represent





## Inventory Management

concept that represent

products with a specific combination of active ingredients, strength and clinically significant dose form\* eg **amoxicillin 500 mg capsule**

products with a specific combination of active ingredients, strength and clinically significant dose form & pack size\* eg **chloramphenicol 0.5 % eye drops, 10 mL**

products with a specific combination of active ingredients, strength and clinically significant dose form, pack size & container\* eg **Salbutamol 100 microgram/dose pressurised inhalation solution 200 doses, inhaler**

the trade products with a specific combination of active ingredients, strength and dose form eg **COUMADIN 1 mg tablet**

the trade products with a specific combination of active ingredients, strength and dose form & pack size eg **CHOROMYCETIN 0.5 % eye drops, 10mL**

the trade product with a specific combination of active ingredients, strength and clinically significant dose form, pack & container eg **Ventolin 100 microgram/dose pressurised inhalation solution 200 doses, inhaler**

products with a specific combination of active ingredients eg **amoxicillin**

products with a specific combination of active ingredients and clinically significant dose form eg **amoxicillin capsule**

products with a specific combination of active ingredients, strength and clinically significant dose form eg **amoxicillin 500 mg capsule**

products with a specific combination of active ingredients, strength and clinically significant dose form & pack size eg **chloramphenicol 0.5 % eye drops, 10 mL**

products with a specific combination of active ingredients, strength and clinically significant dose form, pack size & container eg **Salbutamol 100 microgram/dose pressurised inhalation solution 200 doses, inhaler**

the trade products of with a specific combination of active ingredients eg **COUMADIN**

the trade products with a specific combination of active ingredients and dose form eg **COUMADIN tablet**

the trade products with a specific combination of active ingredients, strength and dose form eg **COUMADIN 1 mg tablet**

the trade products with a specific combination of active ingredients, strength and dose form & pack size eg **CHOROMYCETIN 0.5 % eye drops, 10mL**

the trade product with a specific combination of active ingredients, strength and clinically significant dose form, pack & container eg **Ventolin 100 microgram/dose pressurised inhalation solution 200 doses, inhaler**

a medication group of products eg **Influenza vaccine** or a trade family group eg **PANADOL**



## **Analytics**

concept that represent



# National Drug Concept Model

This is presented in two major parts:

1. Base Drug Concept Model
2. Drug Concept Model extension options

It is anticipated that member countries will need to make necessary additions or modifications to the base drug model to support their specific use cases, regulatory requirements, tooling and implementation requirements, etc.



# 1. BASE NATIONAL DRUG CONCEPT MODEL

## NOTES

- Editorial guidance for the representation of drugs ( in the member extension or international release) is **NOT** part of this project. However, descriptions in examples are represented as a preferred terms or synonym ( unless more details are required to differentiate descriptions these parts of the description are in brackets)

# National Medication Dictionary Principles

- A **national standard** to unambiguously identify, code & interpret medicines
- Nationally **consistent unambiguous drug descriptions** based on clearly defined rules ( model and editorial) ( **NOTE: editorial guidance is NOT part of this project**)
- Can be used as a **reference and interface terminology** or available as the **standard for mapping and use within an EMR**
- **Support all use cases** and linkage between use cases concepts (e.g. prescribing to issuing drugs)
- **Facilitates seamless exchange** between systems and across systems
- **Extensibility** In both the drug content and data model to allow for innovations in pharmaceutical and device technology over time
- **Needs to be simple** ie complexity can be hidden from clinicians and most Electronic Medical Record (EMR) vendors
- Promotes implementation eg can easily create preferred use case value sets such as prescribing value set
- Optional extensions:
  - Support linkage to Decision Support Vendors
  - Linkage to international standards whenever possible (e.g. SNOMED CT and WHO ATC)
  - Can support mapping to Regulator Identifier and a linkage to Barcoding / GTIN and reimbursement system

# Base Data Model

The base data model includes the following medication classes:

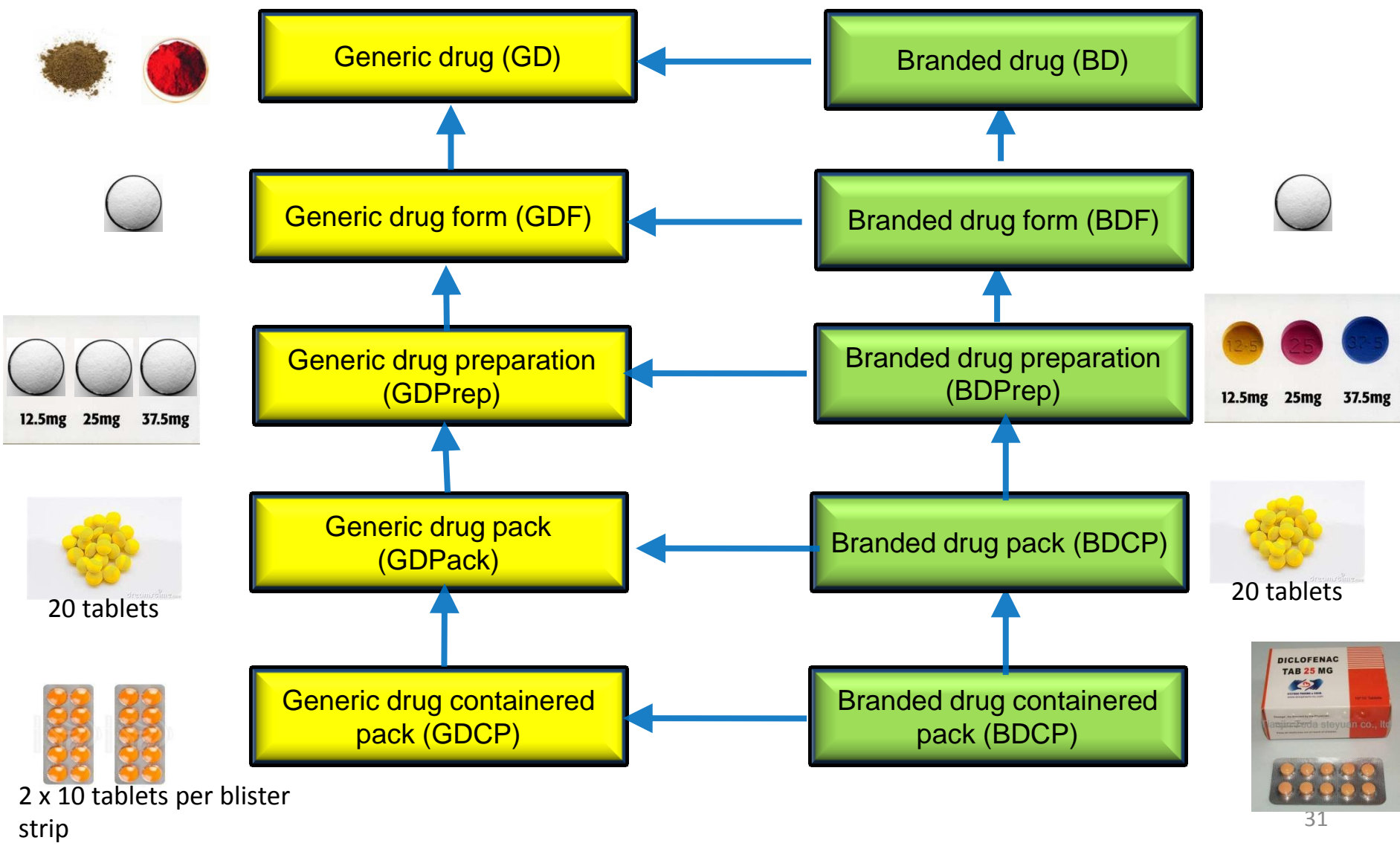
- Generic drug★
- Generic drug form★
- Generic drug preparation
- Generic drug pack
- Generic drug containered pack★
- Branded drug
- Branded drug form★
- Branded drug preparation
- Branded drug pack
- Branded drug containered pack

★ Not all classes need to be available for distribution unless a country has the associated use case for example Generic and branded drug form. These classes are required for alignment to international release.

★ May not be available for distribution for multi components concepts

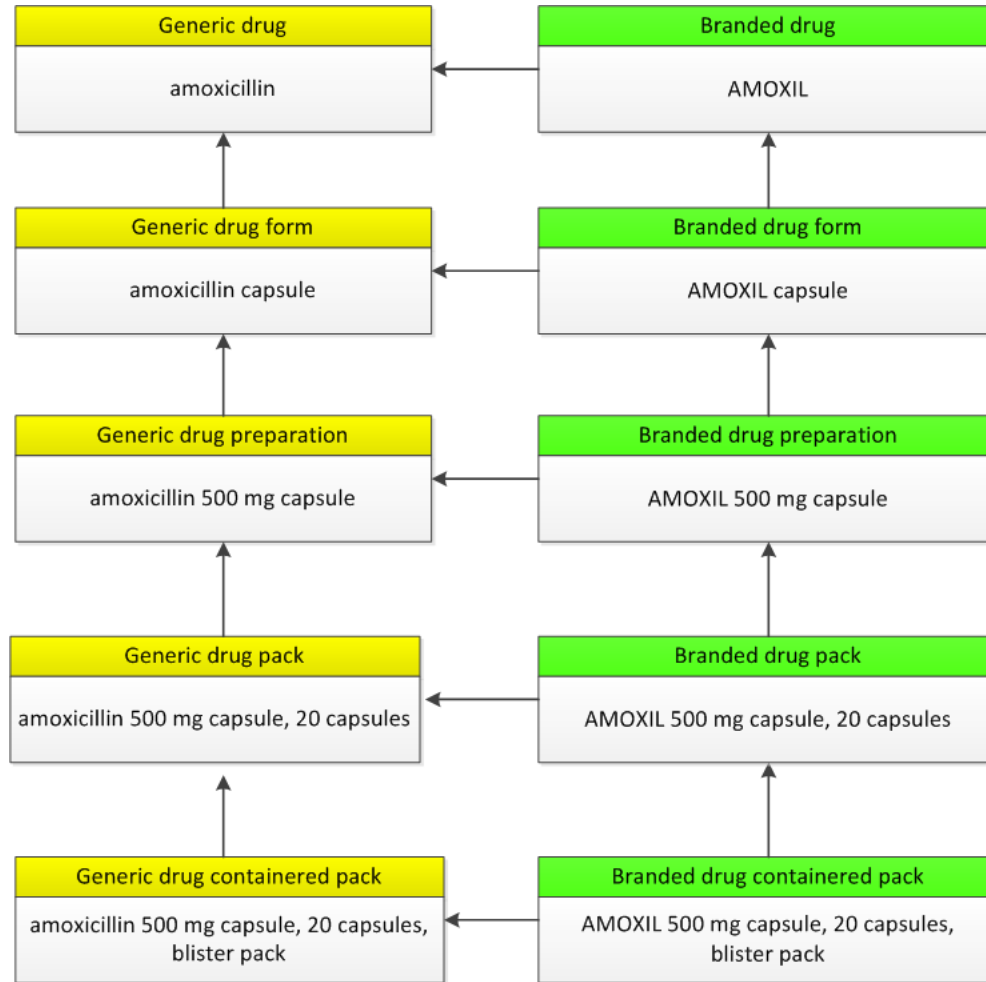
★ May only be populated for clinically relevant container types eg syringe & inhaler

# Base data model



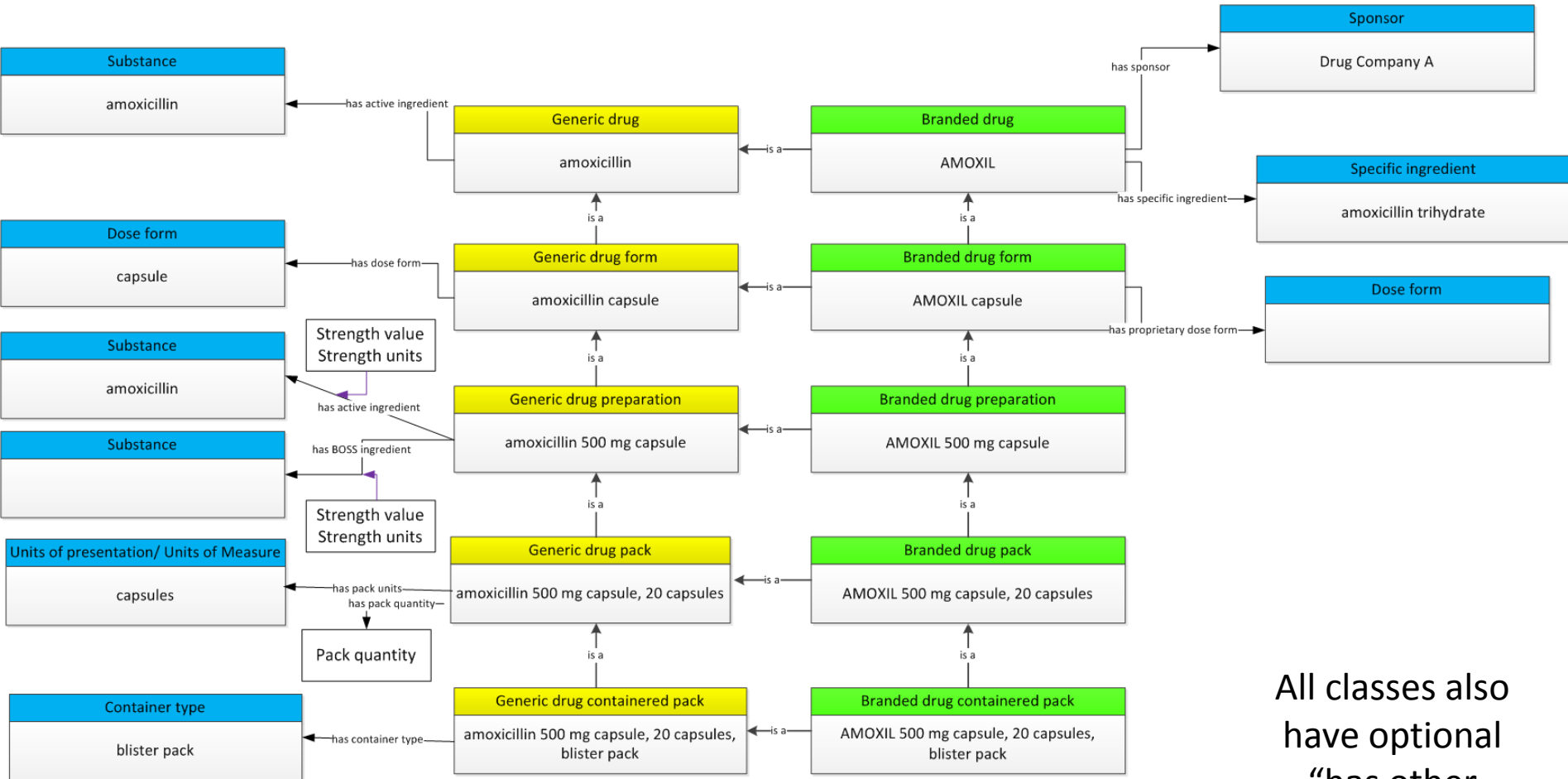


# Base Model - single ingredient





# Base model defining relationships

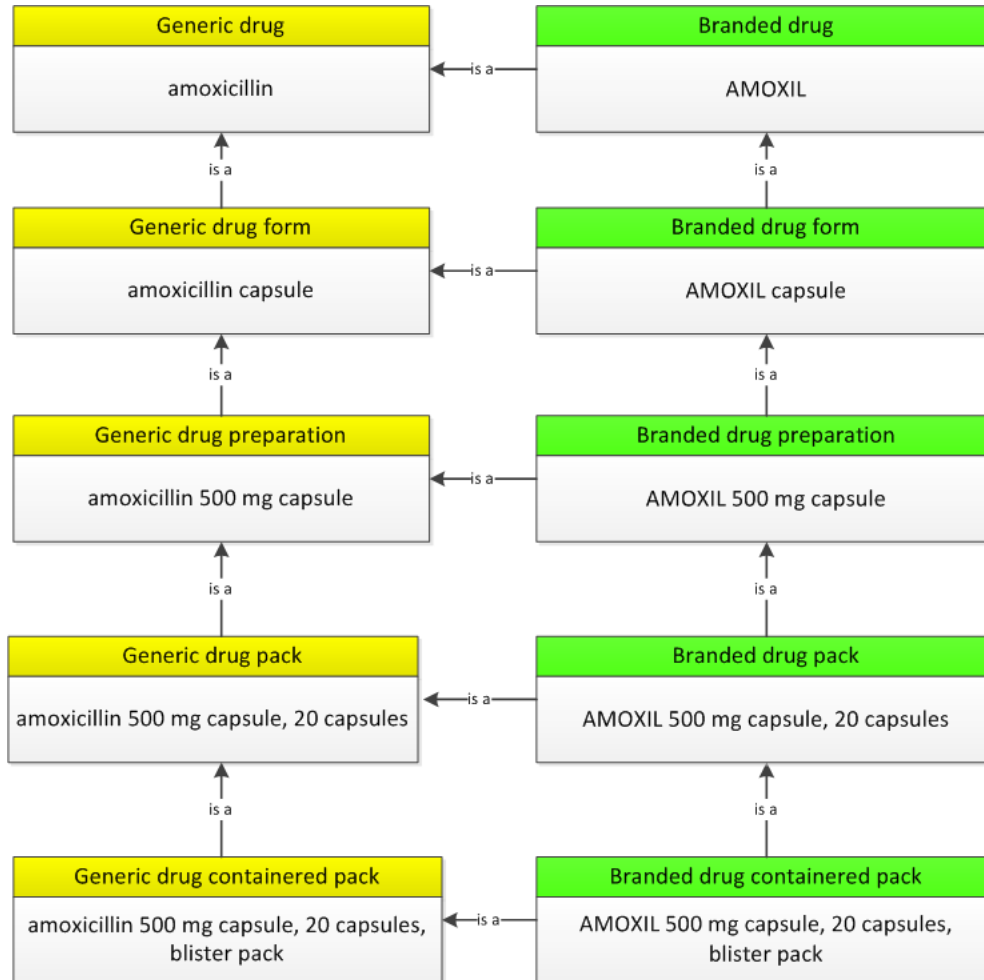


All classes also have optional "has other identifying information"

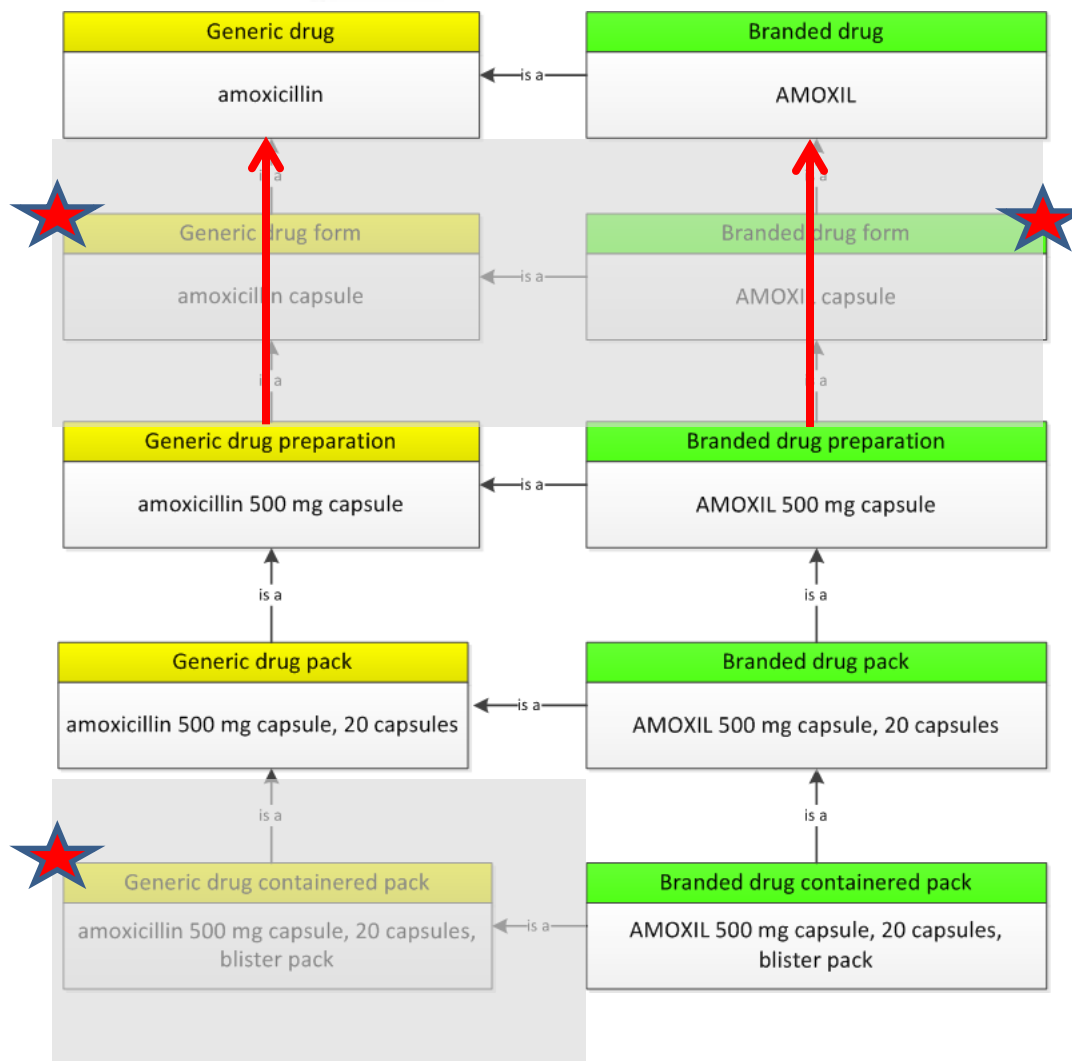
# Distribution options

1. Full terminology all concepts and descriptions
2. Clinically significant terminology where concepts and relationships used to maintain the integrity of the model are excluded.
3. Use case specific reference sets eg only those terms need for the prescribe use case in primary care

# 1. Full terminology



## 2. Clinically significant terminology



If country do not use these classes

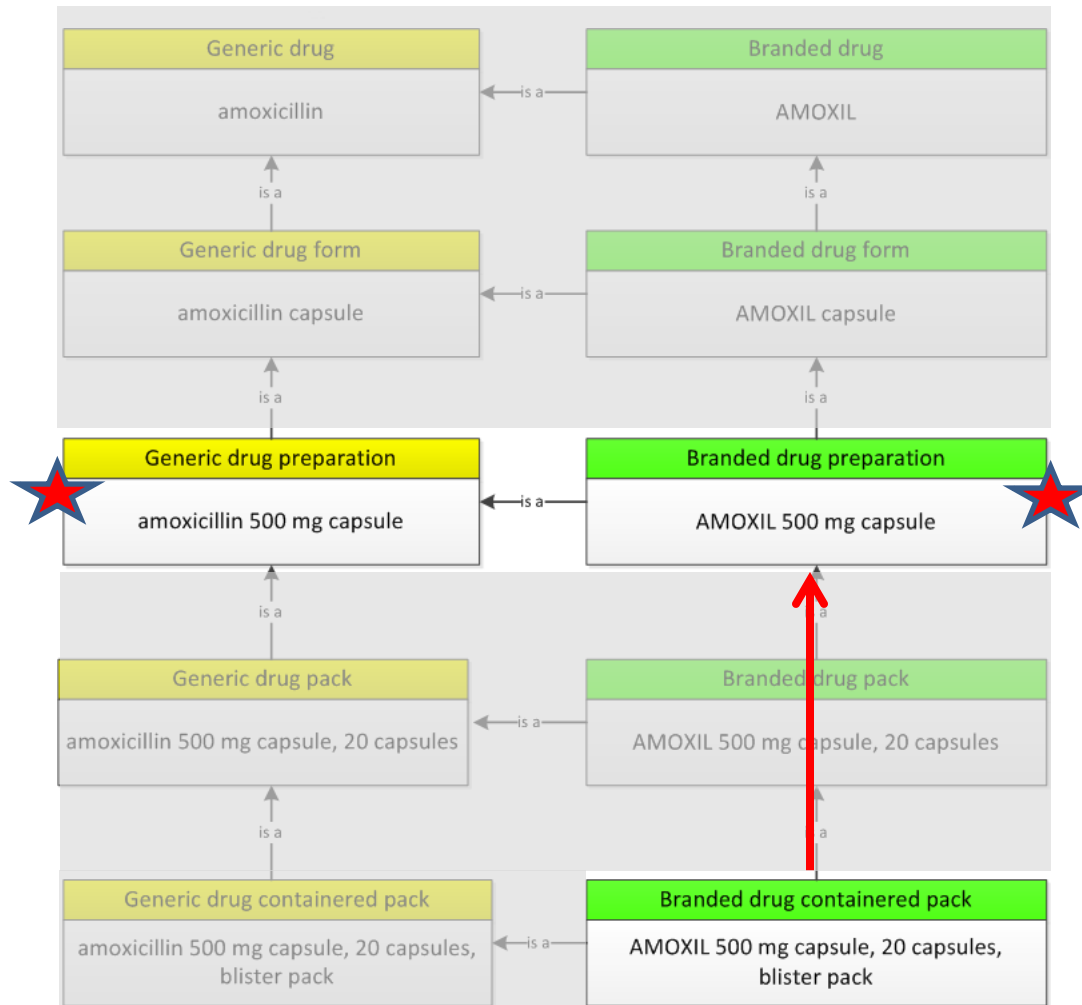
Transitive closure

# 3. Prescribe use case specific value set



May differ by country and product type

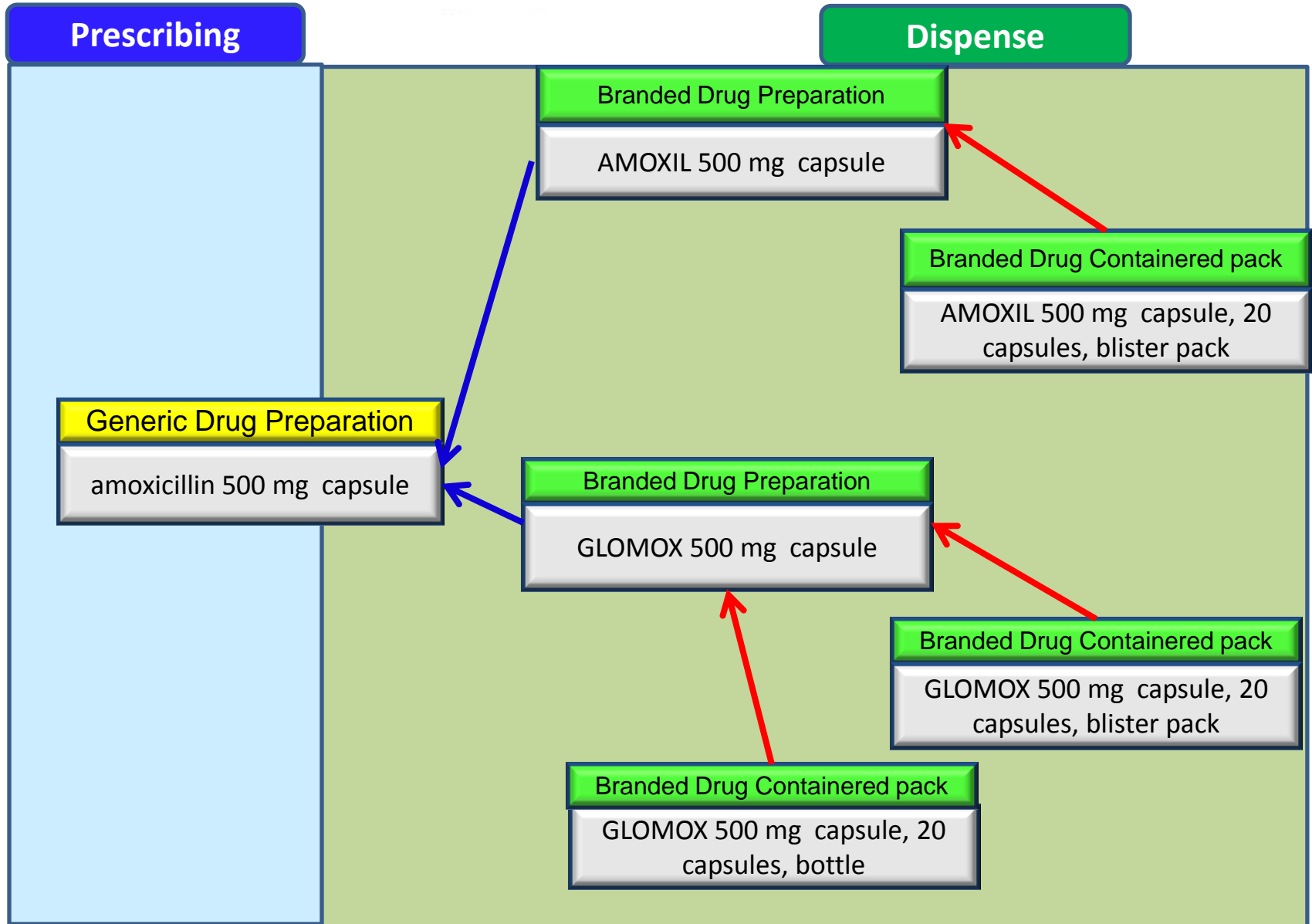
# 3. Dispense use case specific value set



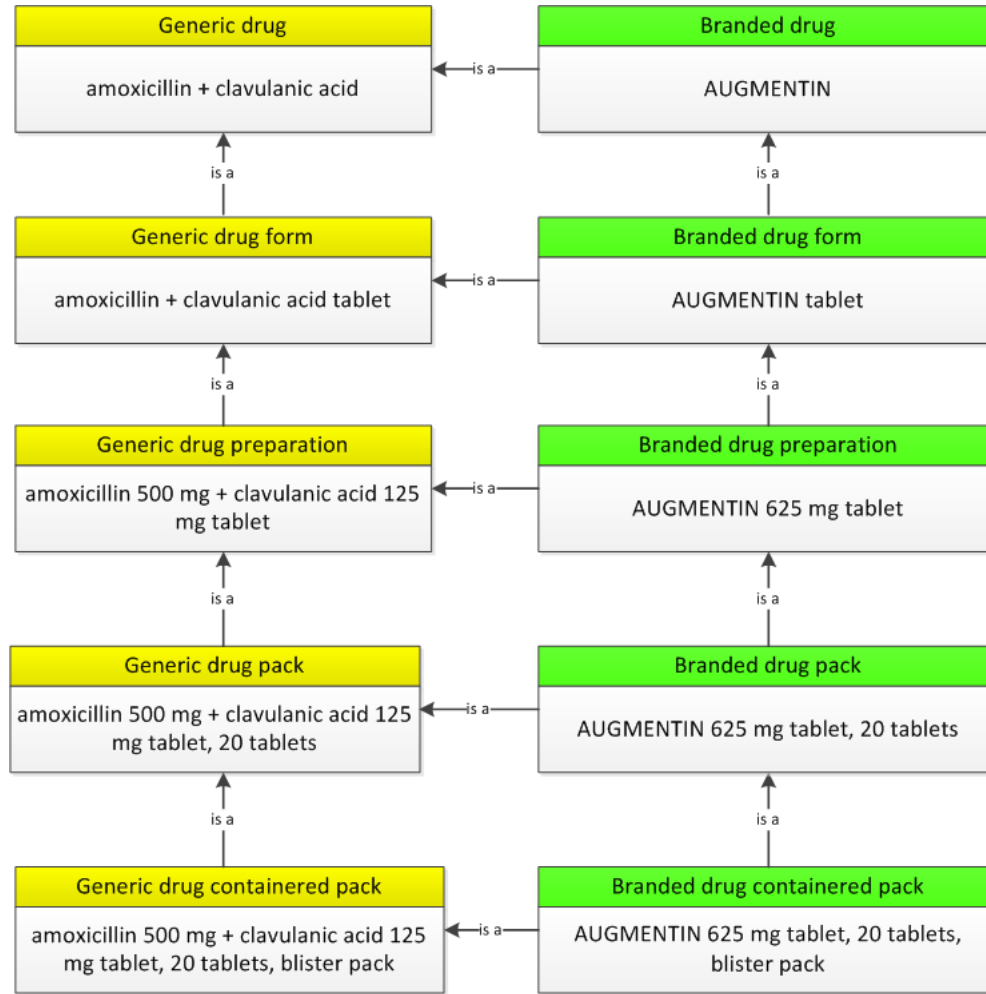
May differ by country and product type

Transitive closure

# 3. Use case specific value set

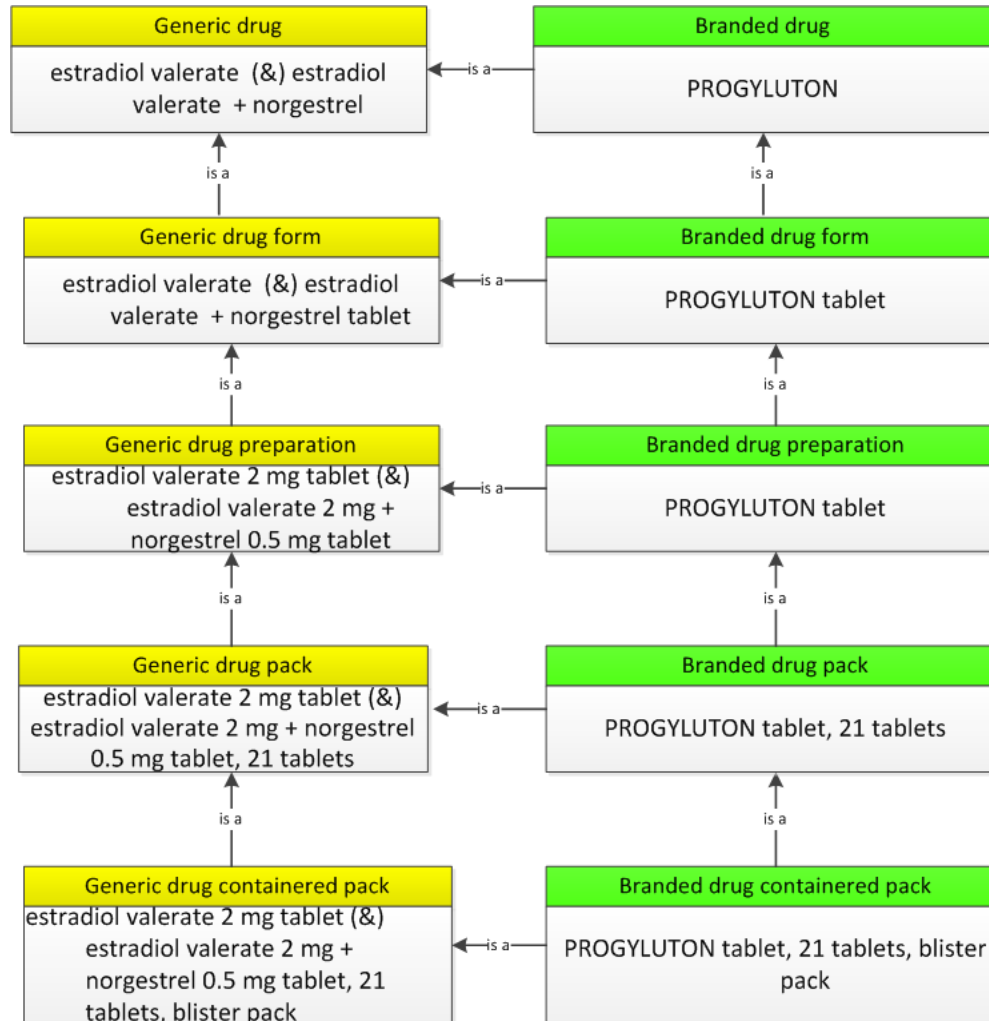


# Base Model – multi ingredient

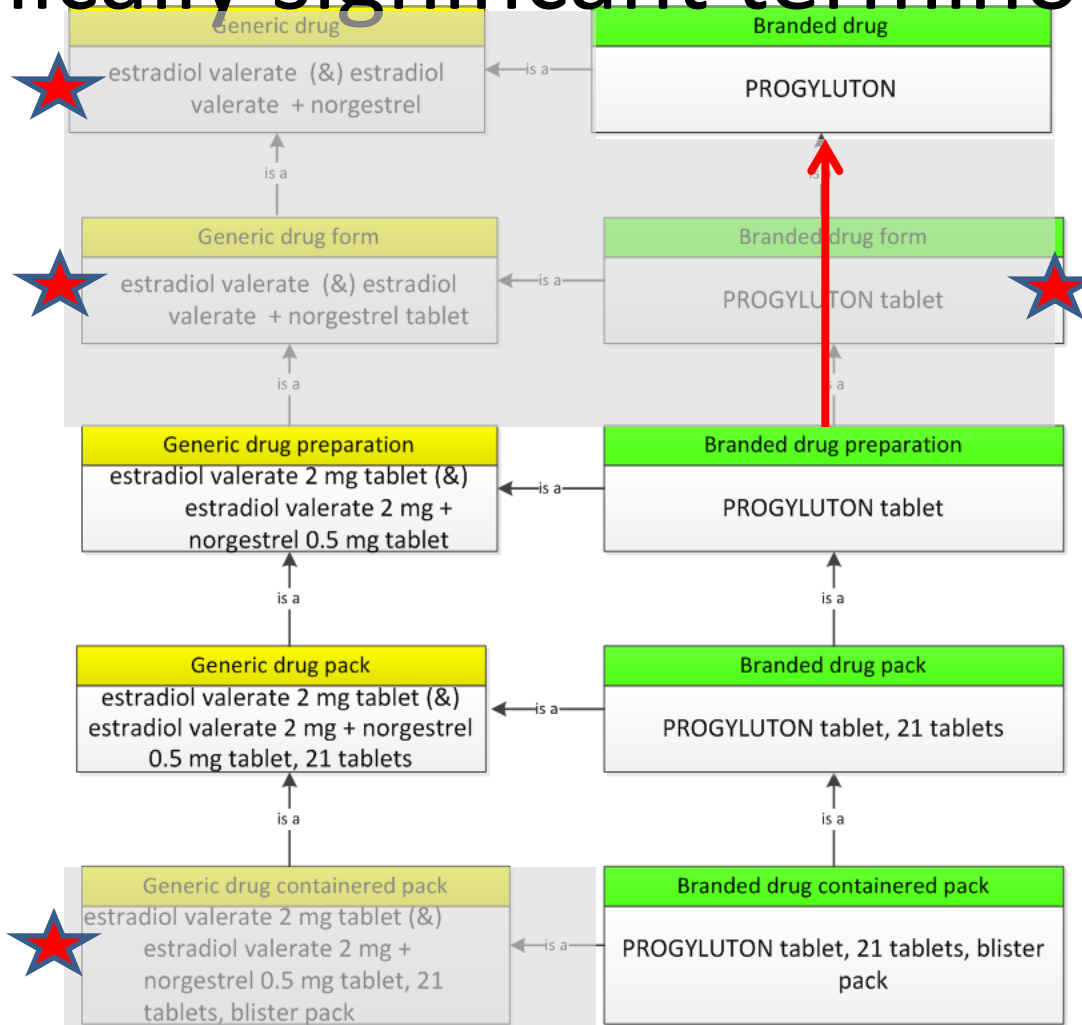




# Base model – Multi component



# Distribution Option 2: Clinically significant terminology



★ If country do not use these classes

Transitive closure

# Other relationships Base model

- Optional relationships to support implementation
  - has distribution status
  - has product type
  - has use case type
  - has class type (eg generic drug class)
- Additional relationships may be required after completion of the editorial rules to support an automated editorial process eg:
  - has other identifying information
  - has trade suffix
  - etc

# Model Assumptions

- Concrete domains will be resolved to:
  - reduce the complexity of the model
  - allow classification of all defining attributes including strength and pack size
- Ingredients and dose forms will be the clinically significant representations for all generic classes for example:
  - amoxicillin rather than amoxicillin trihydrate
  - tablet rather than hard tablet

Where inconsistencies exist in the marketplace this will be handled using the editorial rules and the addition of synonyms rather than the addition of multiple layers into the model to handle other types such as specific and/or clinically relevant ingredients or dose forms.
- Other items that will be handled using the editorial rules rather than a modeling solution:
  - Where inconsistencies exist in strength representation in the marketplace for example: amitriptyline 10 mg tablet where the basis of strength is amitriptyline hydrochloride but the clinically significant ingredient is amitriptyline
- Generic Drug preparation and Branded Drug preparation classes are concepts that represent products with these attributes and are **not** units of use ie they do not include unit of use information. It is assumed that this will be dealt with in the information model
- Classification approach supports universal restriction ( explanation follows)
- Substance hierarchy used for the active ingredient and BOSS ingredient relationships , which includes strength value and units, supports the selection of ingredient ONLY. ( explanation follows)

# Classification approach

- OWL 2 DL supports universal restriction
  - Using universal restriction, the active ingredient relationships say (for example) "An enalapril product is a product that has active ingredient **only** enalapril."
    - Classifies fewer relationships
    - Is slower to classifier

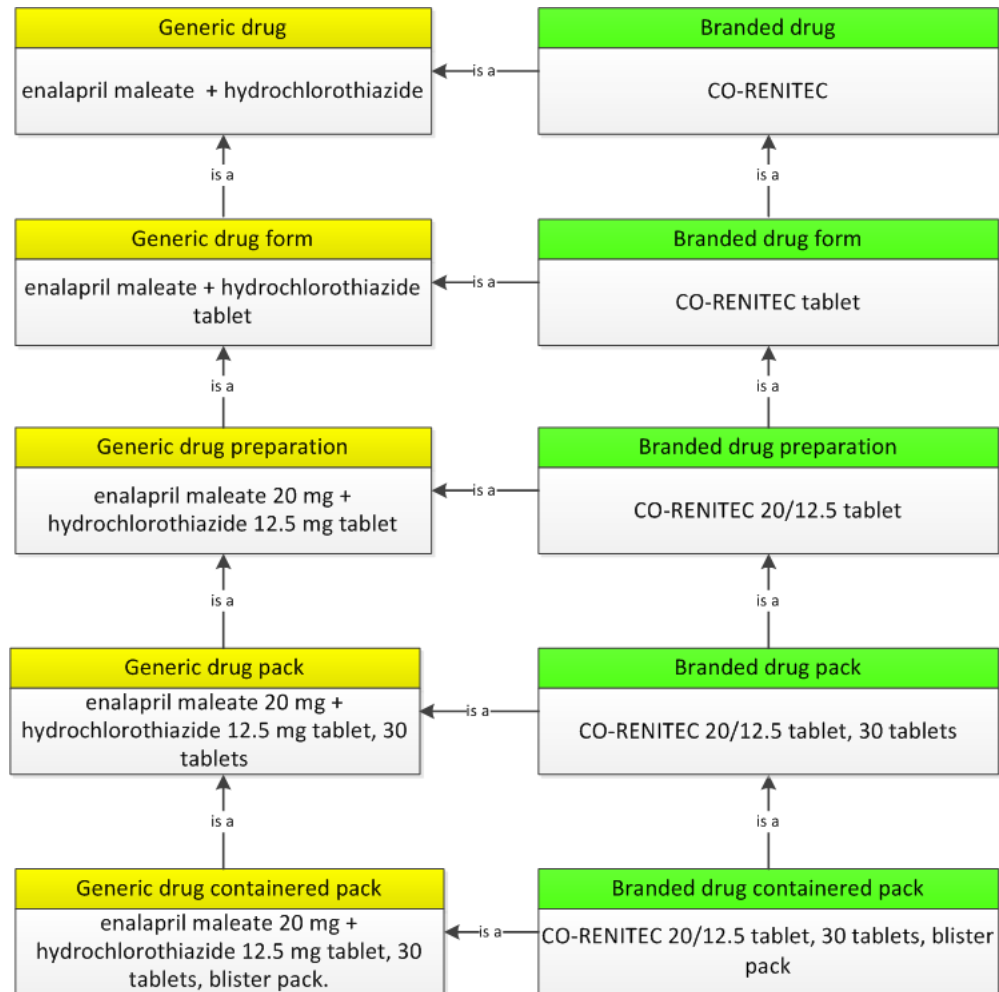
Note: For comparison this is not OWL 2 EL profile of description logic.

which uses existential restriction, the active ingredient relationships say (for example) "A enalapril product is a product that has active ingredient **some** enalapril". Because, a "enalapril + hydrochlorothiazide" product contains some enalapril it is classified as a type of "enalapril product" and a "hydrochlorothiazide product" .

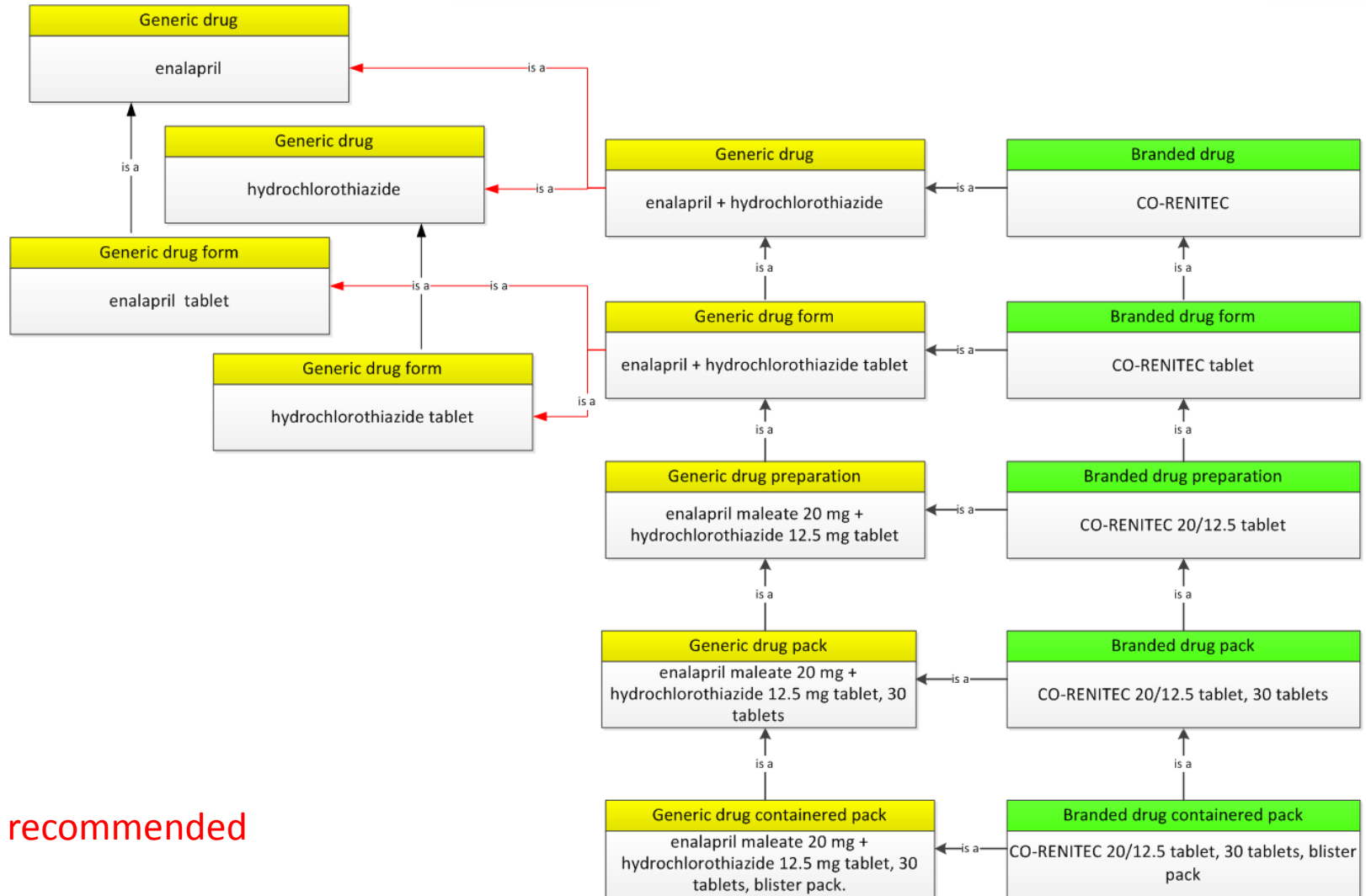
- Is quicker to classify
- No stated use case for extra relationships and these may have patient safety implications

**NOTE : the International Release uses OWL EL which does not support universal restrictions; there are no plans to change to OWL DL in the foreseeable future.**

# OWL 2 DL supports universal restriction



# OWL 2 EL profile of description logic.

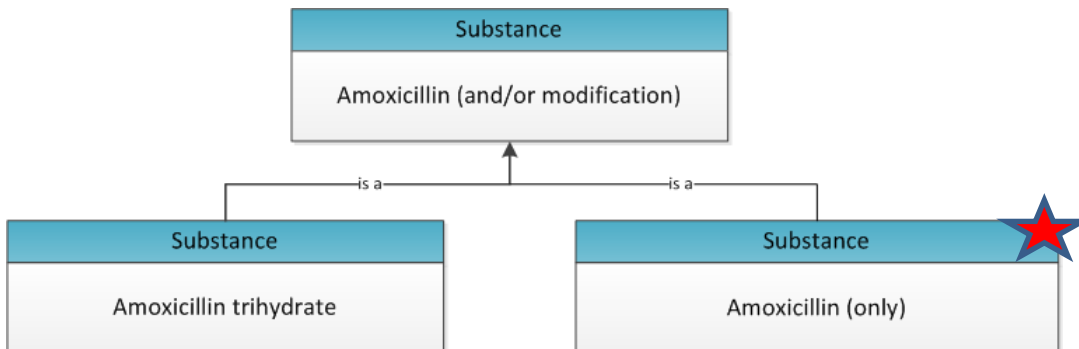
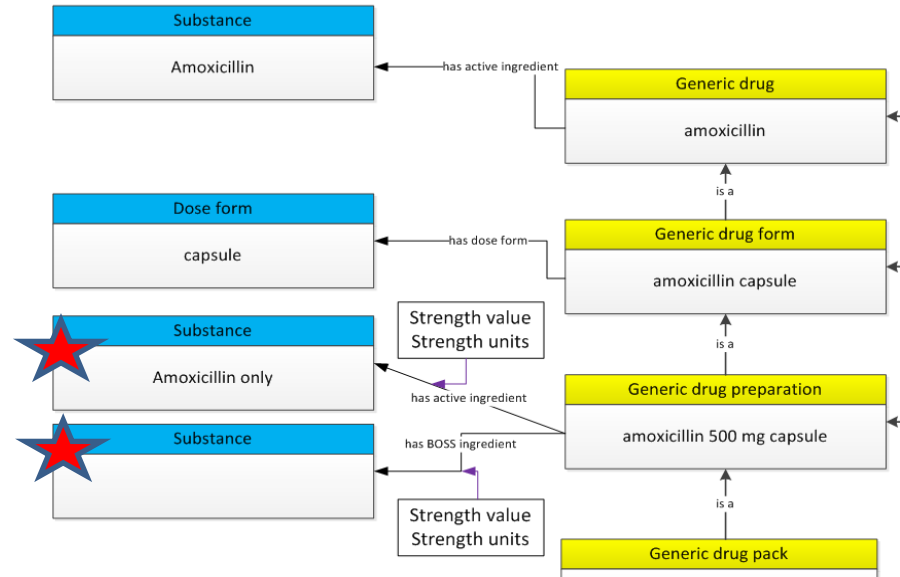


Not recommended

# Substance Only

- The selection of the substance in the TWO highlighted relationships needs to ensure that they do not have any children in the substance hierarchy. This is to ensure that a reasoner does not infer that if there is 500 mg of 'Amoxicillin' that there is also 500 mg of the child 'Amoxicillin trihydrate'.
- In the example below you would need to select the highlighted substance.

The parent Amoxicillin means "Amoxicillin and /or modification" because it has a child which is a modification.



**NOTE : the International Release does support this approach and there are no plans to change this in the foreseeable future.**





## **2. NATIONAL DRUG CONCEPT MODEL OPTIONAL EXTENSIONS**

# Additional optional model extensions

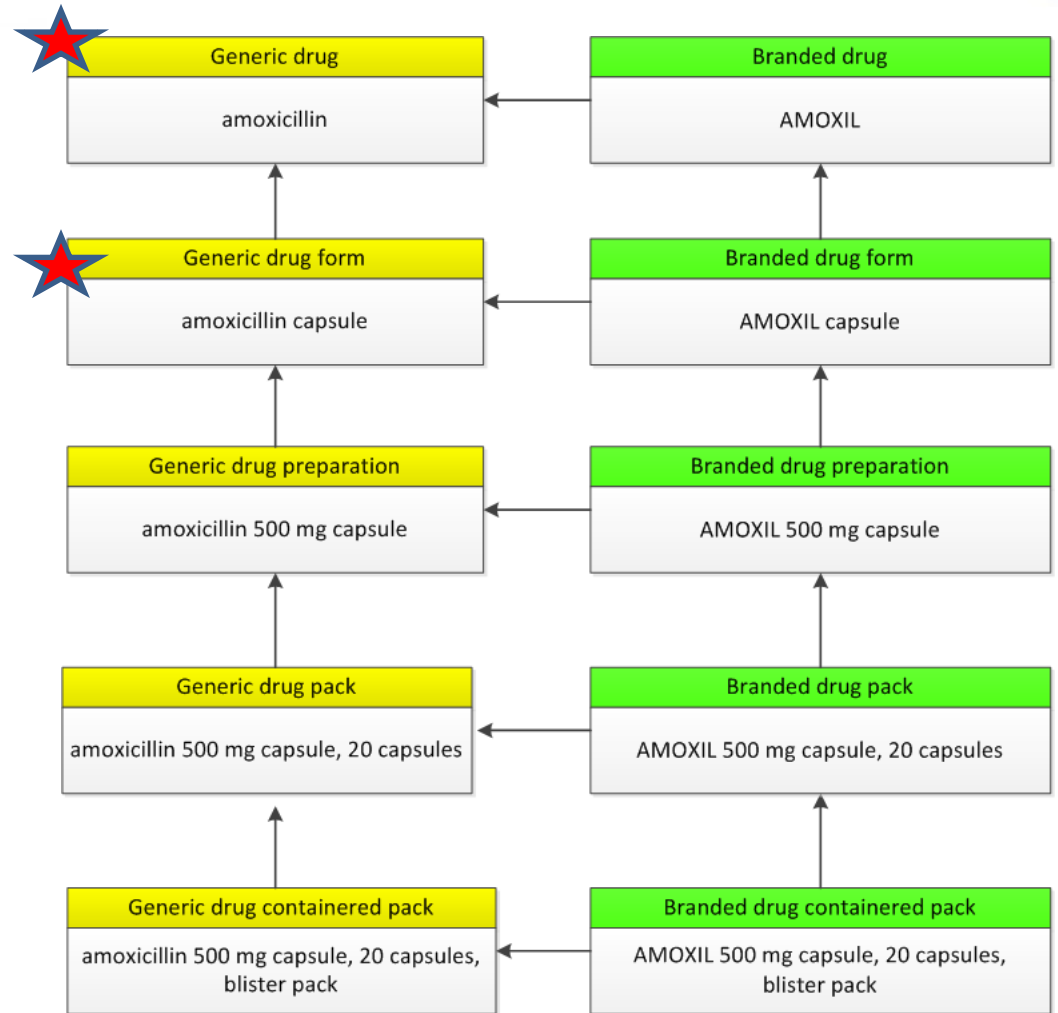
1. SNOMED CT International Release
2. Map to other identifiers and standards
  - GTIN
  - ATC
  - Regulator identifier
  - Decision support IDs
3. Components of multi component products
4. Reconstituted products
5. Clinically significant containers
6. Medication groups
7. Brand family group
8. IDMP alignment

**NOTE:** This represents the major extension options rather than all extension options.

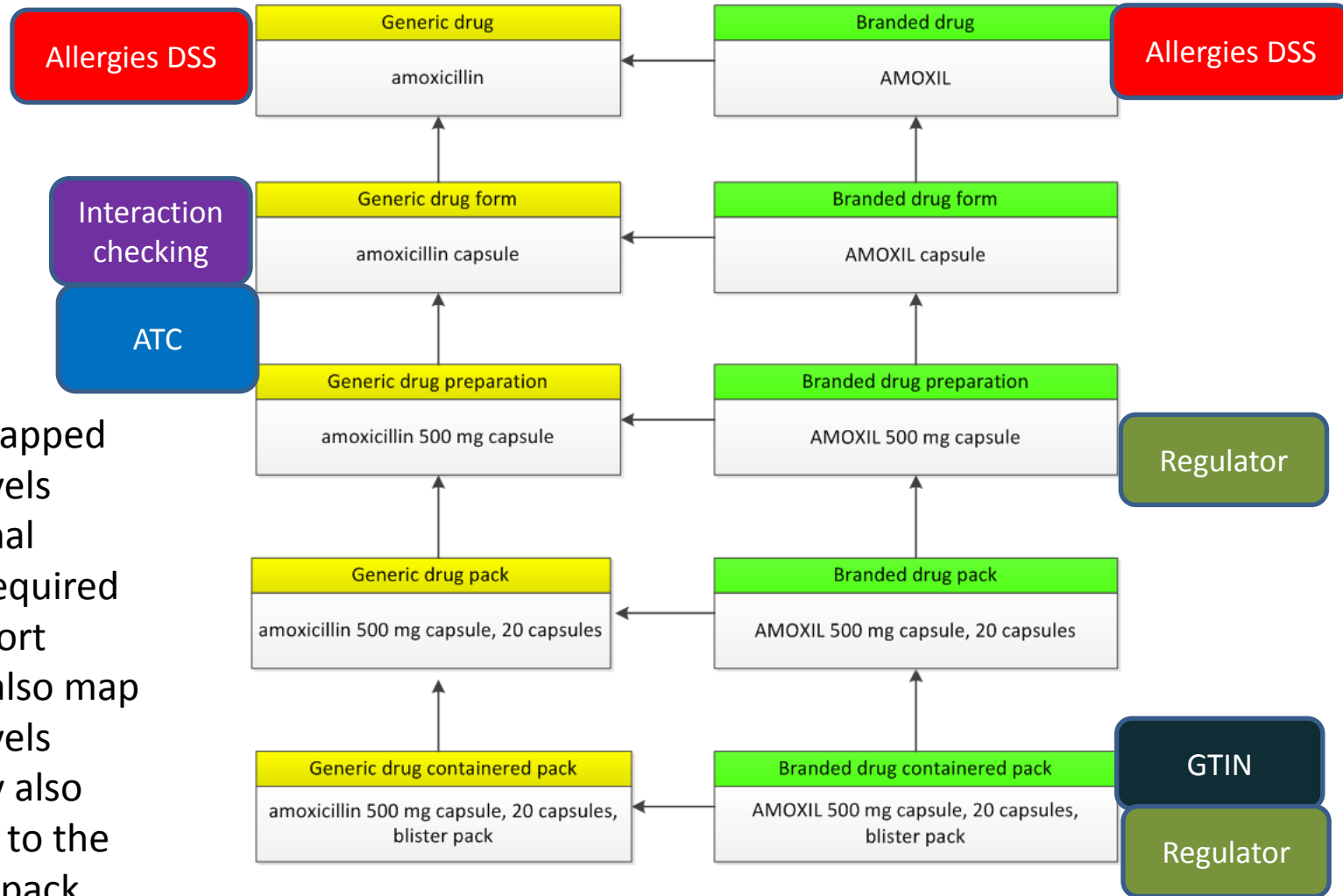
# 1. International Release

★ **Option 1:** where there is an equivalent concept in the International Release then this is used ( **Note: assuming no inheritance issues** )

**Option 2:** map to equivalent concept in the international release where they exist



## 2. Map to other identifiers and standards



### Notes:

- ATC may be mapped to multiple levels when additional specificity is required
- Decision support vendors may also map to multiple levels
- Regulator may also require a map to the Branded drug pack

# GTIN



The standard EAN/GTIN product code has 13 digits. For smaller sized products there is a short version of the EAN/GTIN code the EAN 8

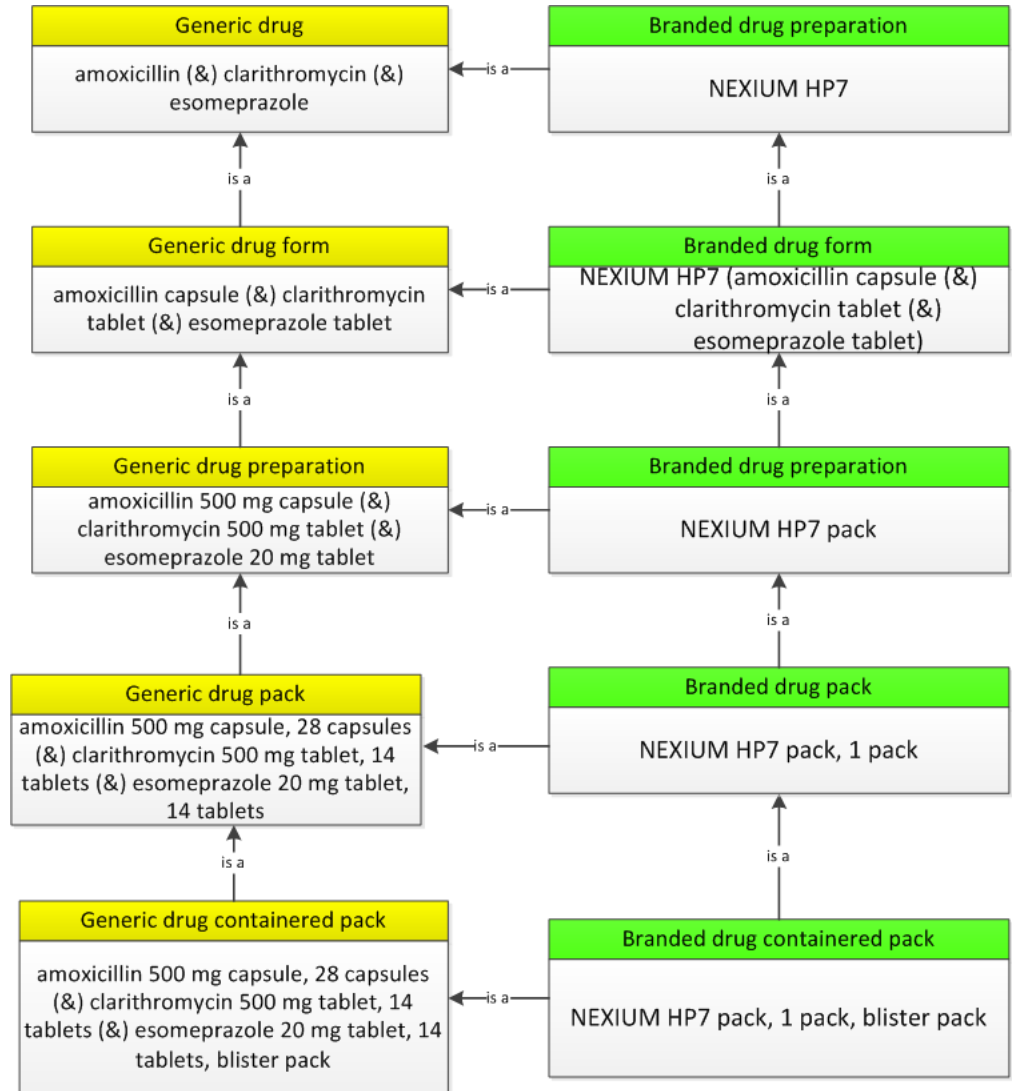
- The first 2 digits of the EAN-13 or GTIN (Global Trade Item Number) code are containing the country of the article. The country is coded with 2 or 3 numbers 629 represents UAE
- The next 4 to 5 digits code the producer of the article.
- The following 5 digits represent the article number which is given by the producer.
- The remaining last digit is the check digit.

# ATC code

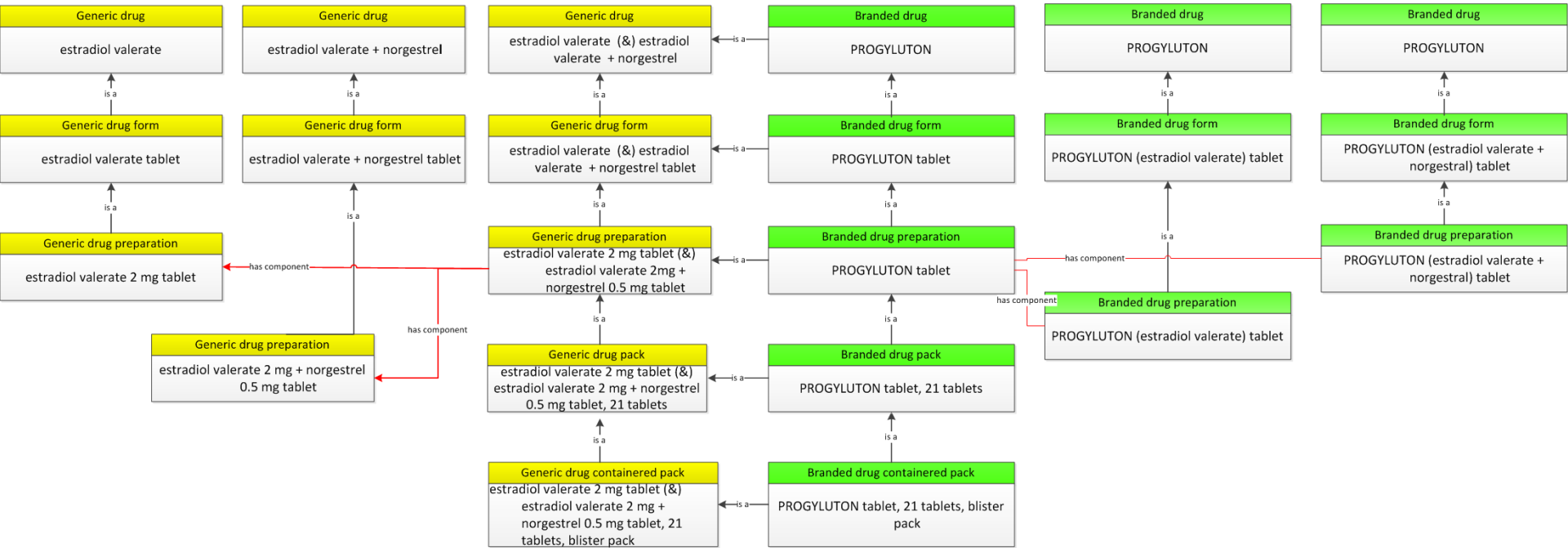
- A - Alimentary tract and metabolism (1st level, anatomical main group)
- A10 Drugs used in diabetes (2nd level, therapeutic subgroup)
- A10B Blood glucose lowering drugs, excl. insulins (3rd level, pharmacological subgroup)
- A10BA Biguanides (4th level, chemical subgroup)
- A10BA02 metformin (5th level, chemical substance)
- Thus, in the ATC system all plain metformin preparations are given the code A10BA02.

# 3. Components

- Create Generic drug concepts for the individual components (even if they do not exist in the market, as will be required for allergies)
- Components will only be added from the generic drug preparation and above ( unless they are commercially available as the individual components)
- The multi component generic drug preparation will be linked to its individual components by a has component relationship
- Will not be created if the products have two components and one is an inert

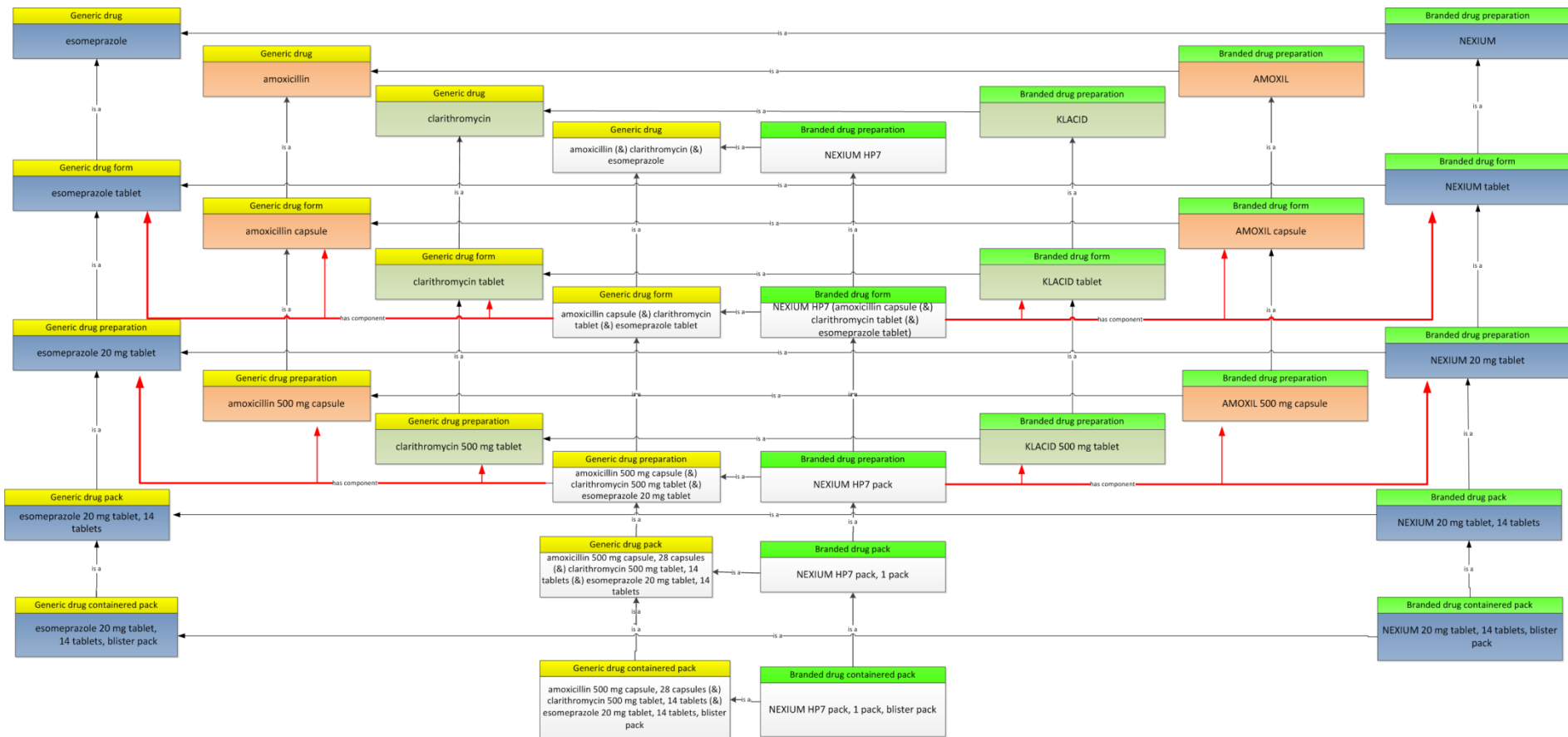


# 3. Components



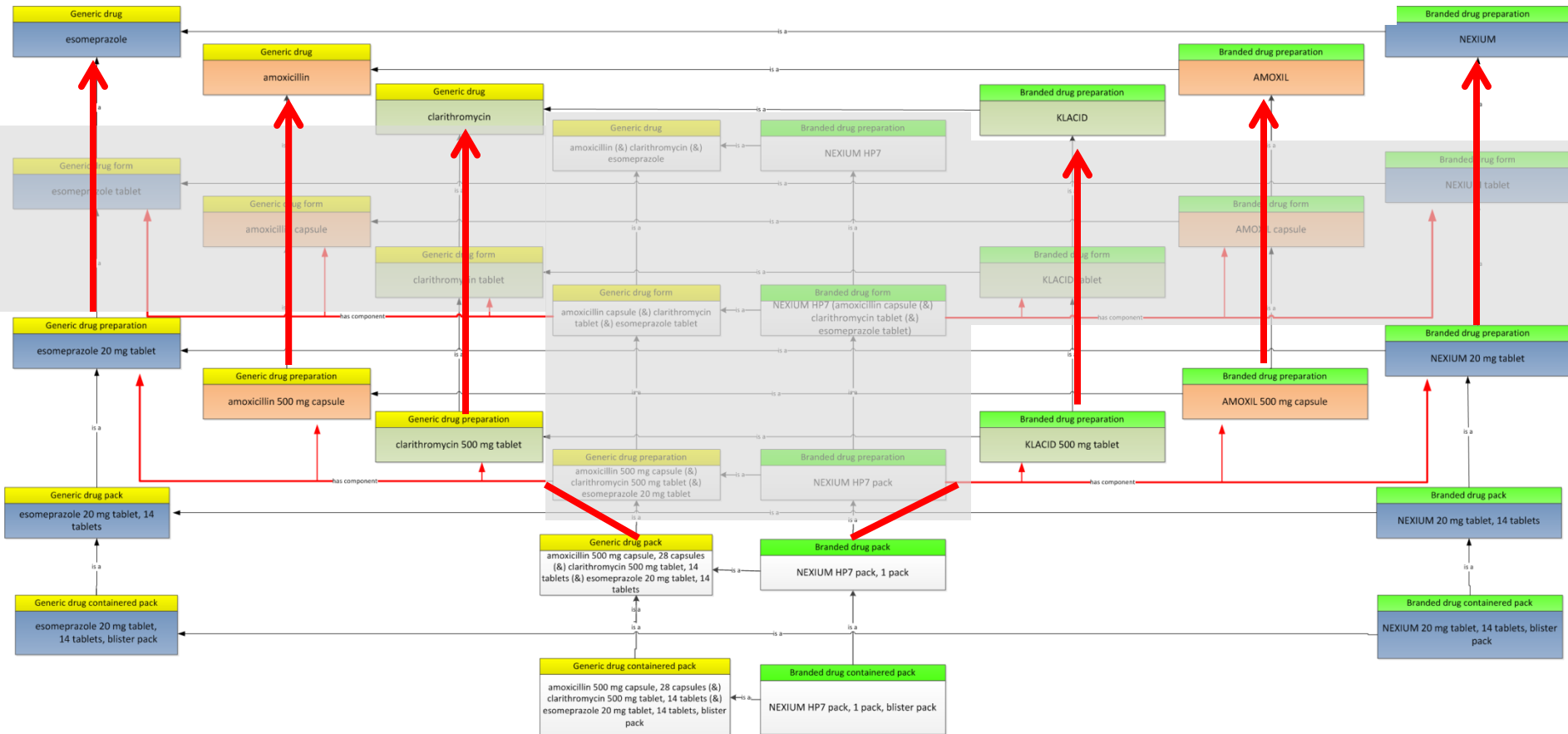


# 3. Components



Example assumes Nexium 20 mg tablets, 14 tablets, blister pack is available in the marketplace in addition to being a component within Nexium HP7

# Distribution Option 2: Clinically significant terminology



If country do not use these classes

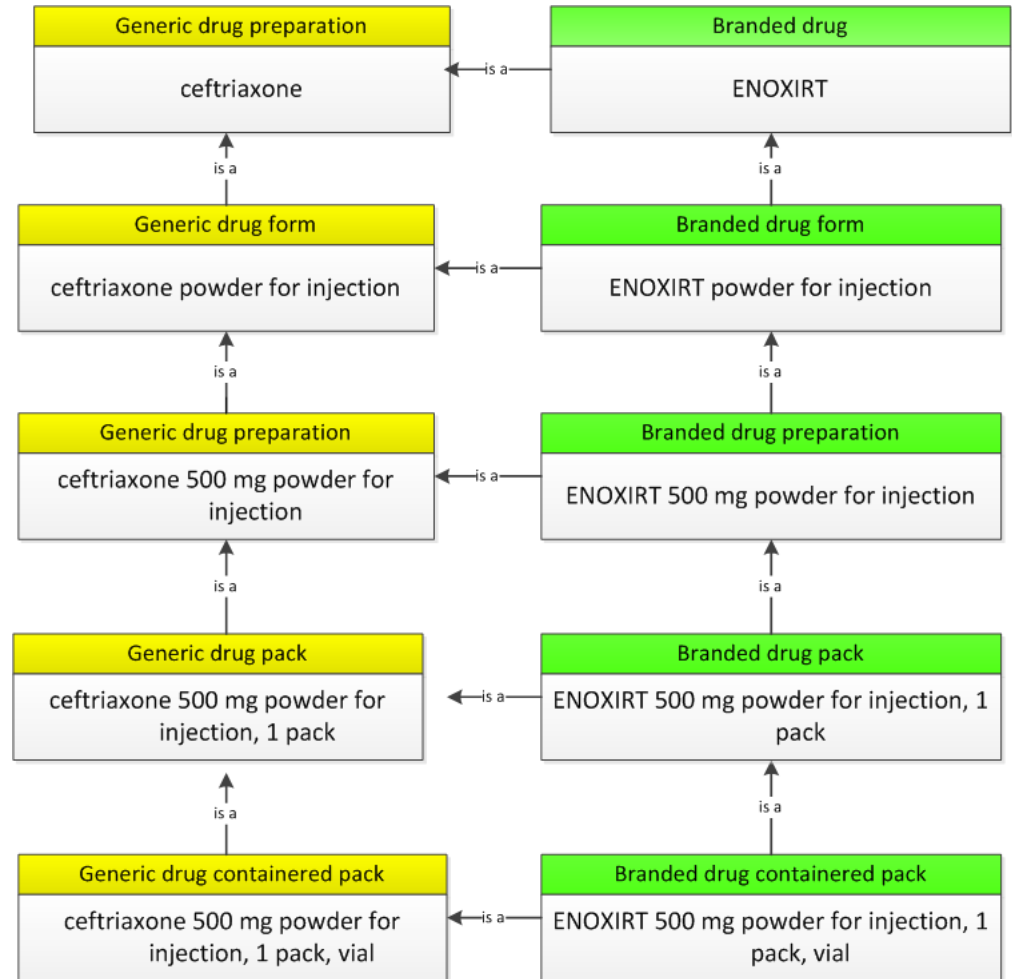
Transitive closure and extended  
has component relationships

# 4. Reconstituted products

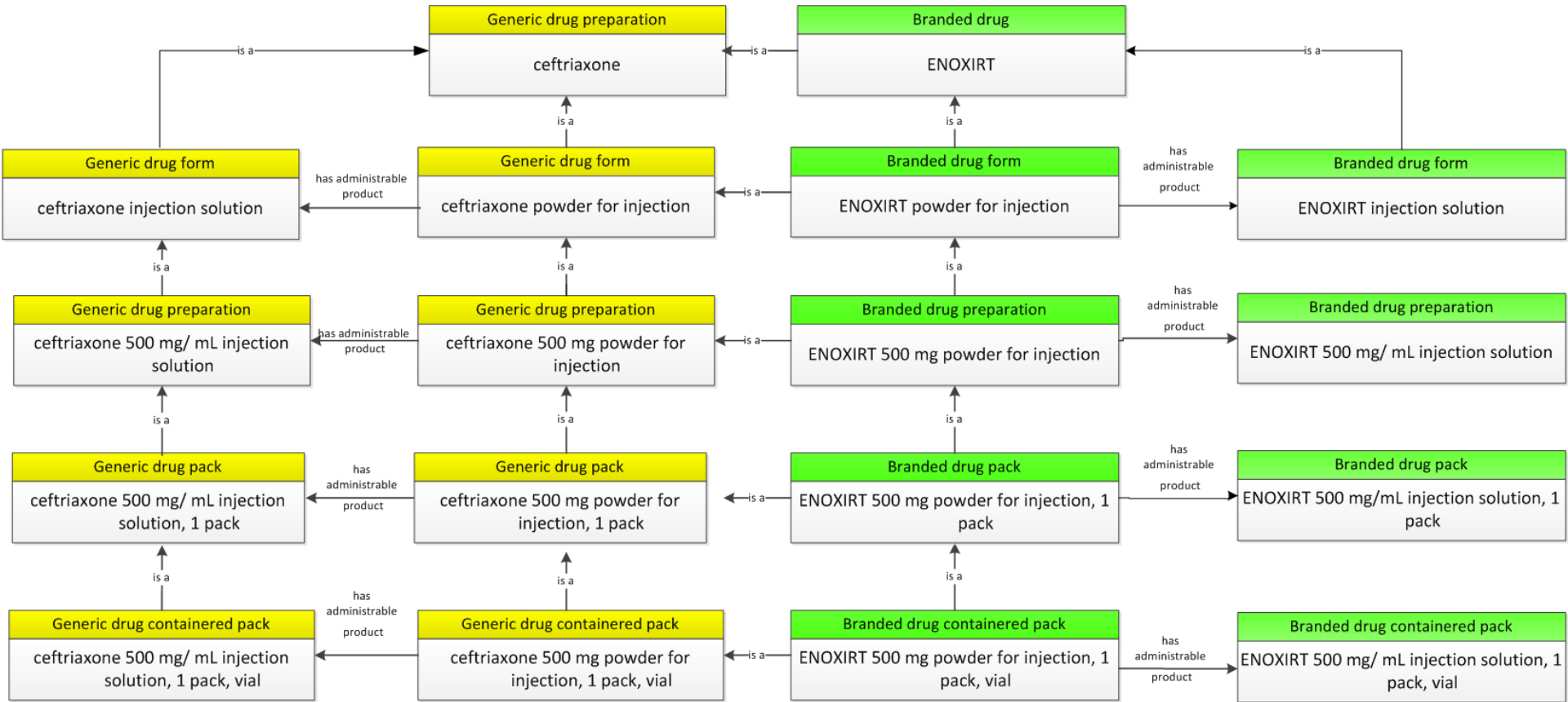
- Will be one of the following options

- a) The reconstituted product in recommended concentration (based on volume of included diluent or recommended volume required for reconstitution)
- b) The reconstituted product in recommended concentration (based on guidelines with no diluent included)

**NOTE: for IDMP compliance will need to be based on dilution recommended in product information.**



# 4. Reconstituted products



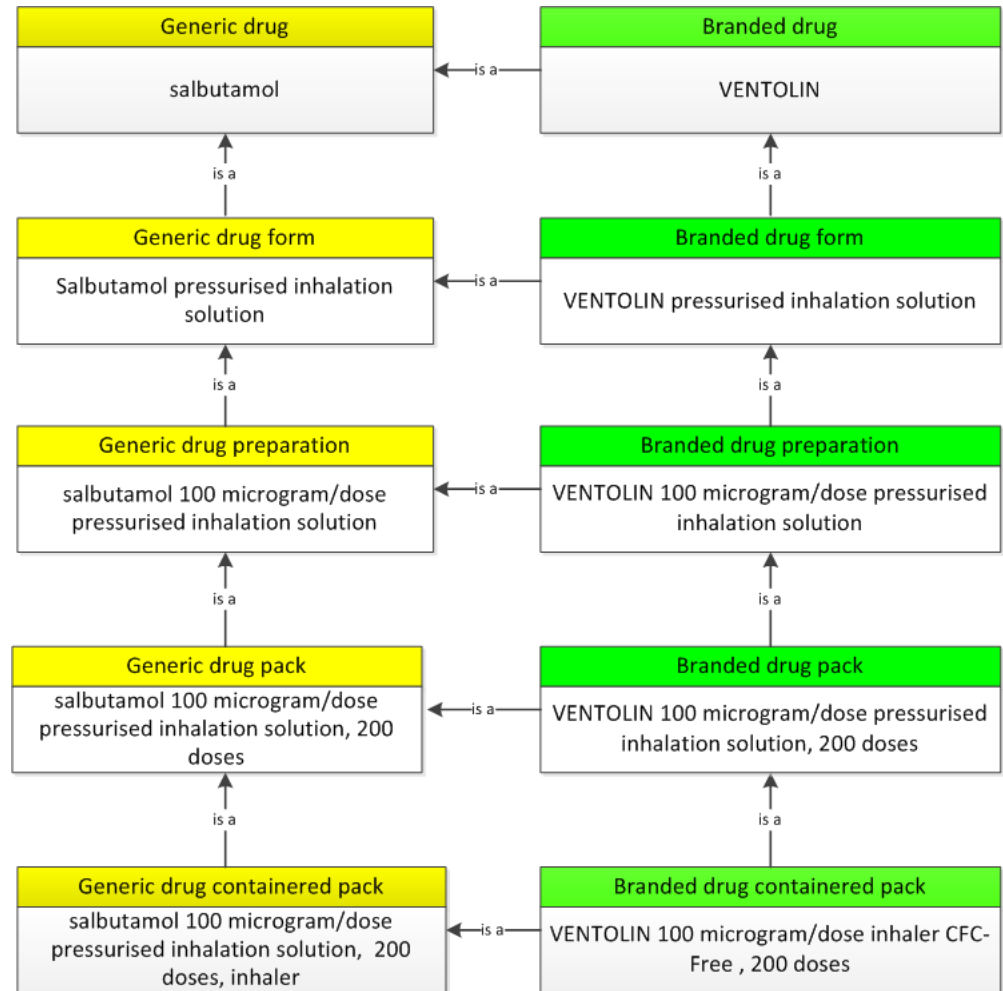
# 5. Clinically significant containers

**Option 1:** modify dose form to include clinically significant container

**Option 2:** Use only:

- Generic drug containered pack or
- Branded drug containered pack

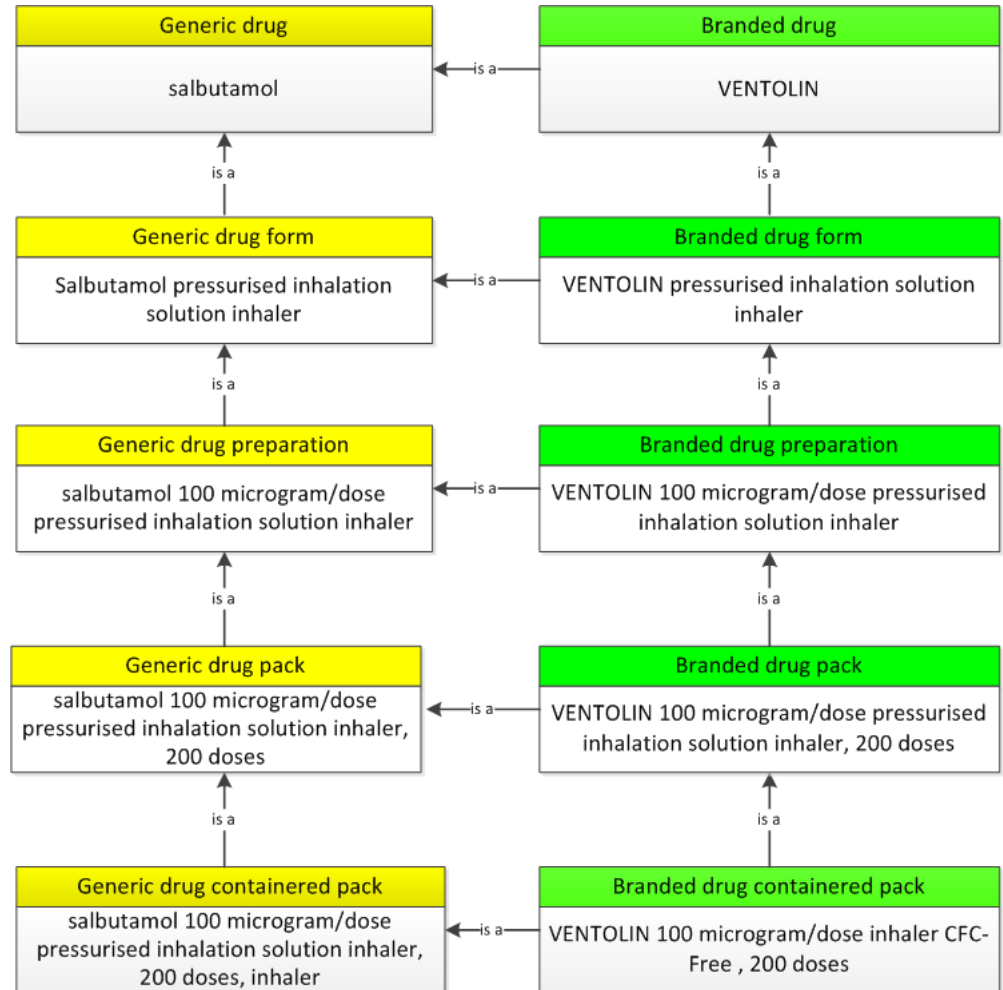
**Option 3:** Create containered classes . NOTE when these classes are created the equivalent classes without containers should be marked as not for distribution.



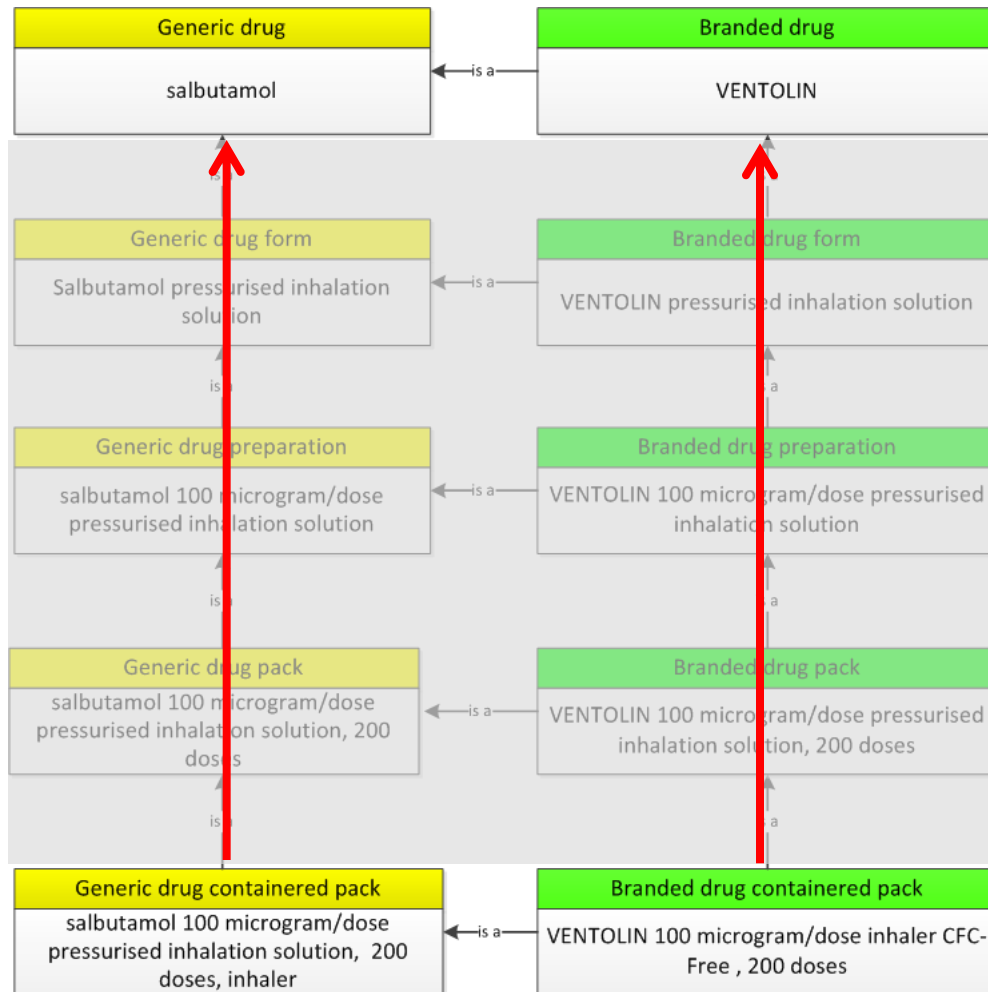
# 5. Option 1: modify dose form to include clinically significant container

Not recommended

Note: In this example “pressurised inhalation solution inhaler” is a dose form which will require a synonym at Generic drug containered pack class to avoid duplication of the word inhaler

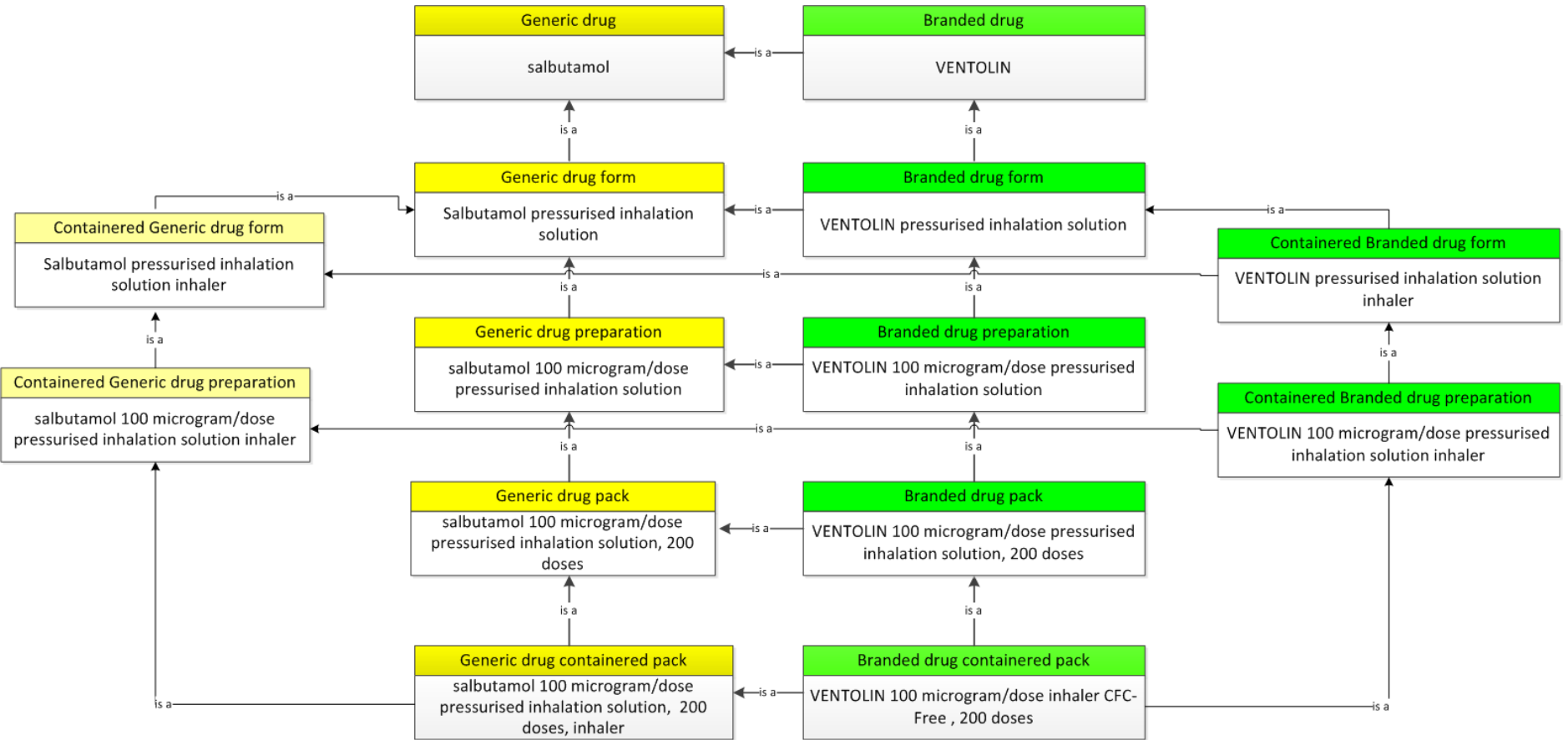


# 5. Option 2: Clinically significant terminology



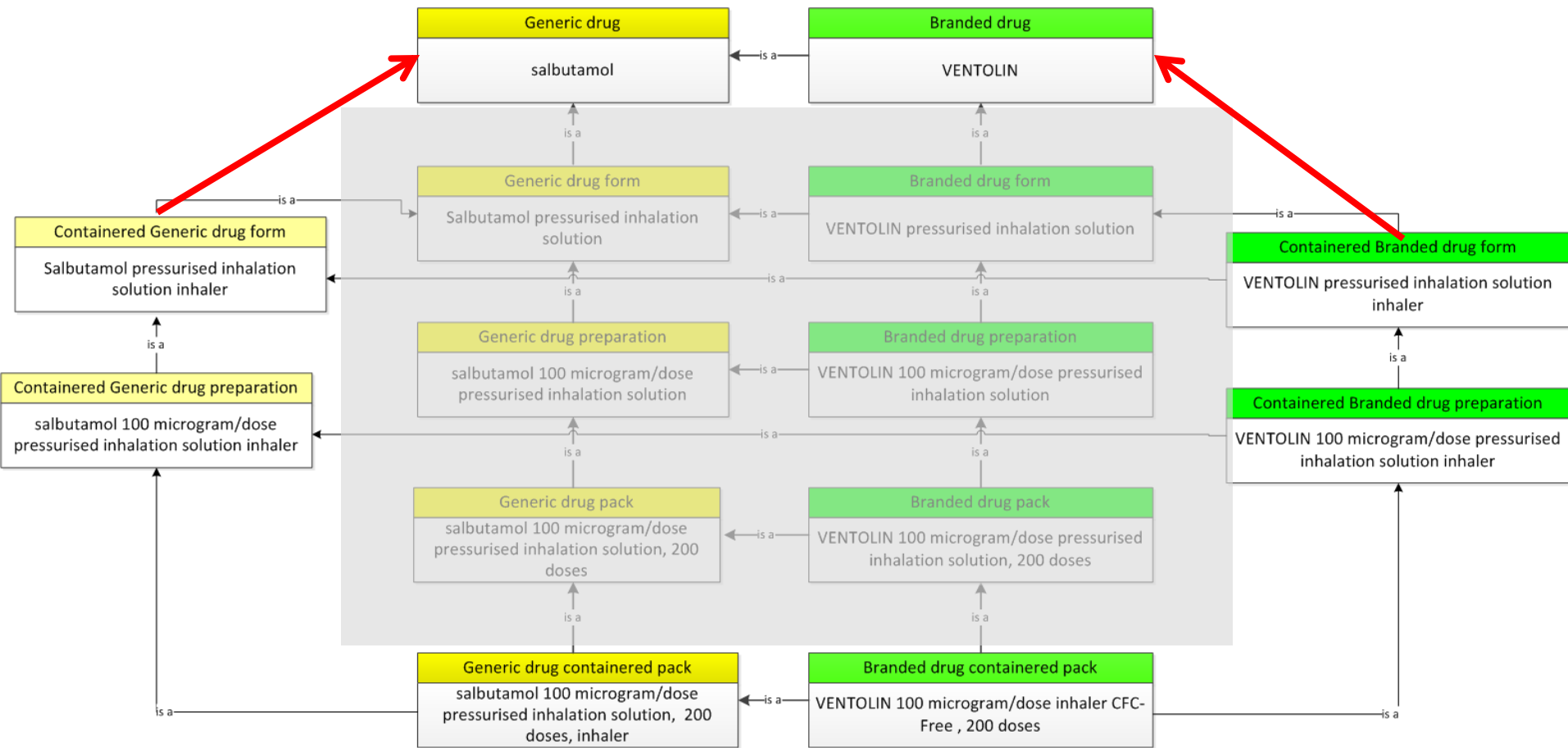
Transitive closure

# 5. Option 3: Clinically significant containers





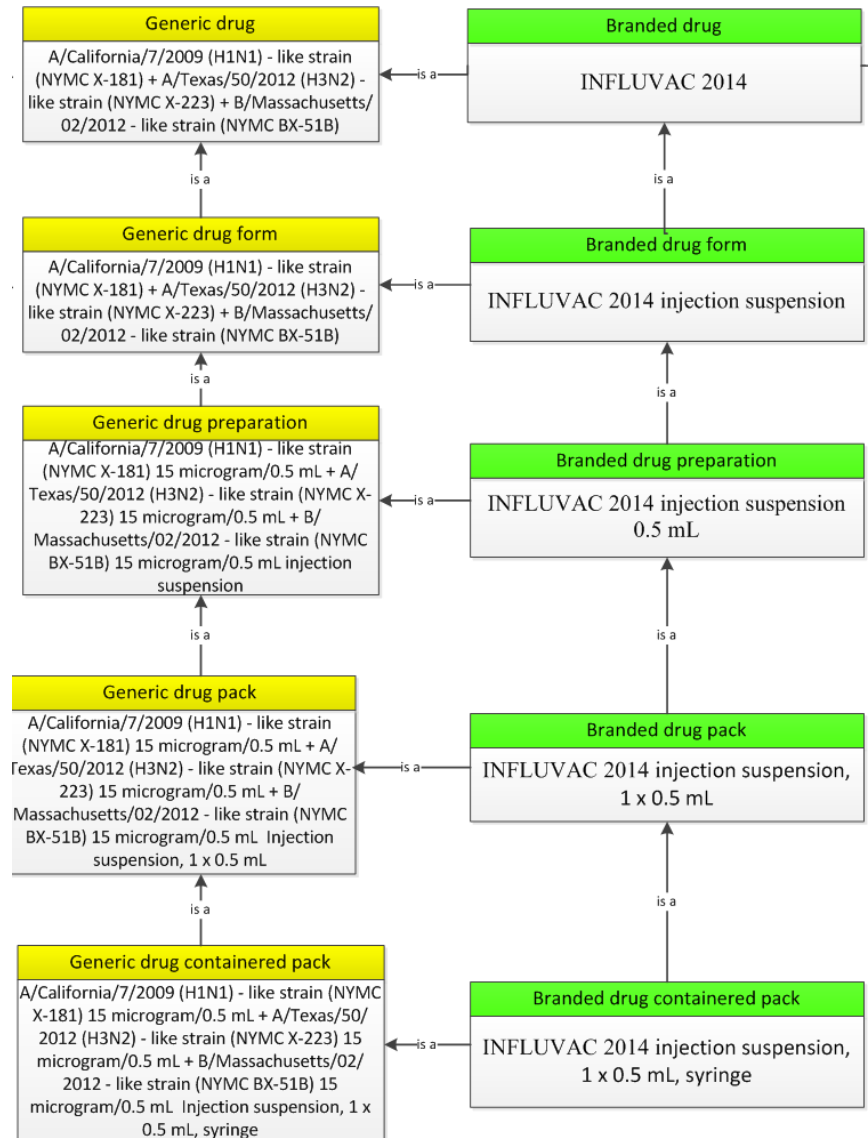
# 5. Option 3: Clinically significant terminology distribution option



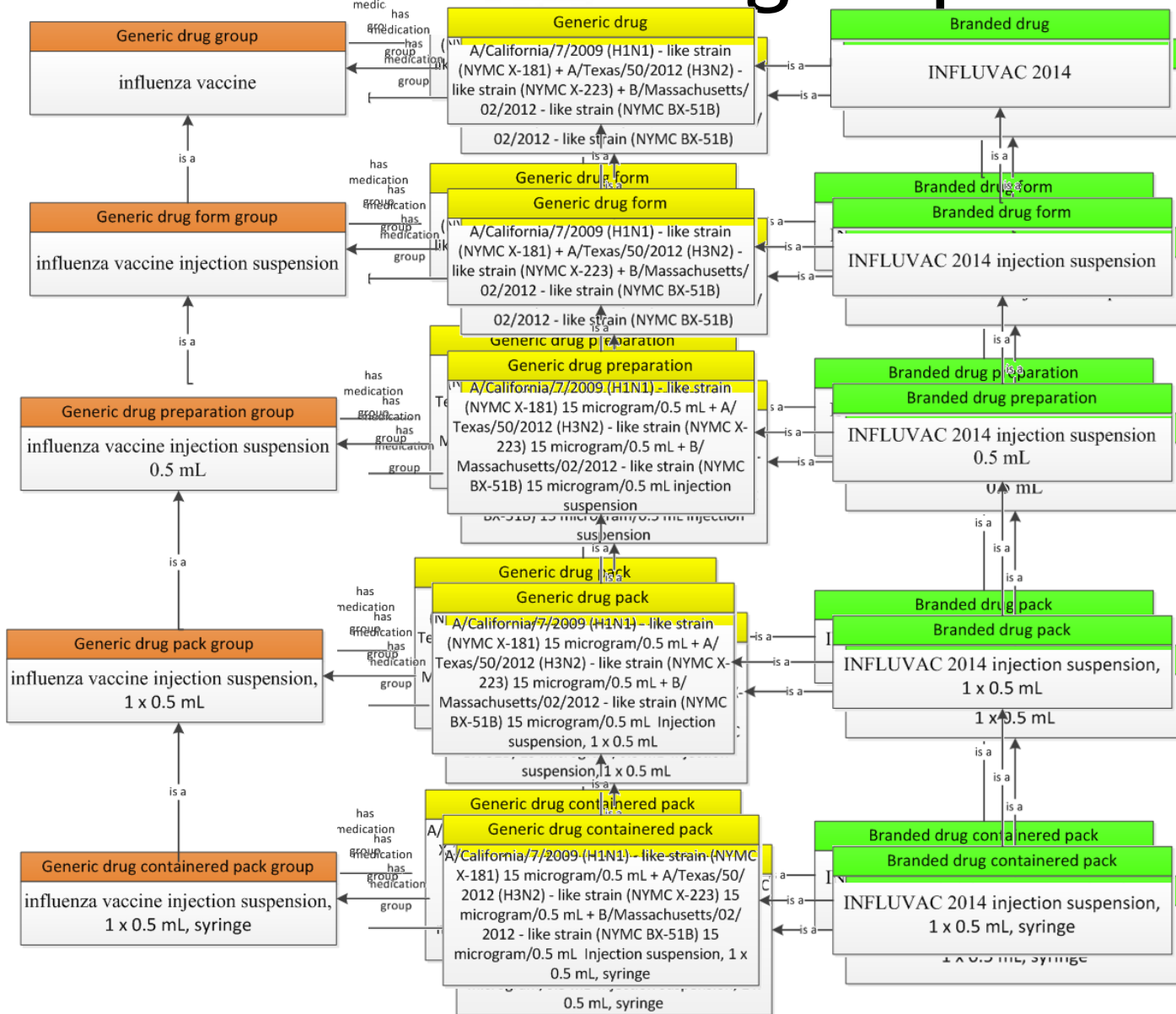
Transitive closure

# 6. Medication groups

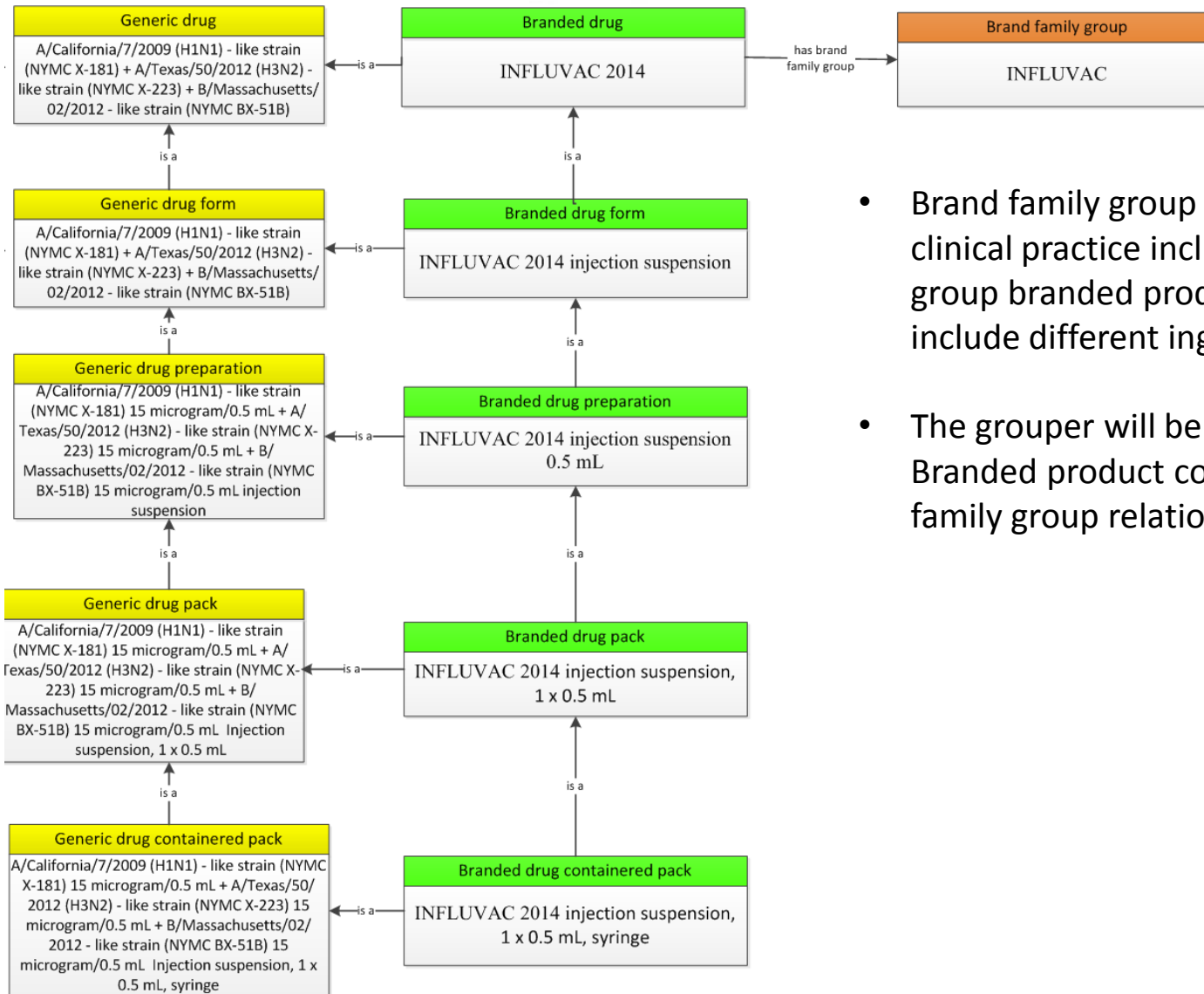
- Medication groups can be created where clinical practice includes a prescribing term that may group generic products eg Ingredient no strength eg Influenza vaccine
  - The grouper will be linked to the correct Generic product concepts by a has medication group relationship
  - This method could also be used to create strength and form groups although these currently not a stated use case, for example:
    - Ingredient with strength groups eg Chlorhexidine salts 1% cream
    - Strength groups eg. Aspirin 81 mg to 100 mg tablet
    - Form groups eg. Paracetamol 500 mg tablet/capsule
- This may be required for IDMP compliance with reconstituted products.



# 6. Medication groups



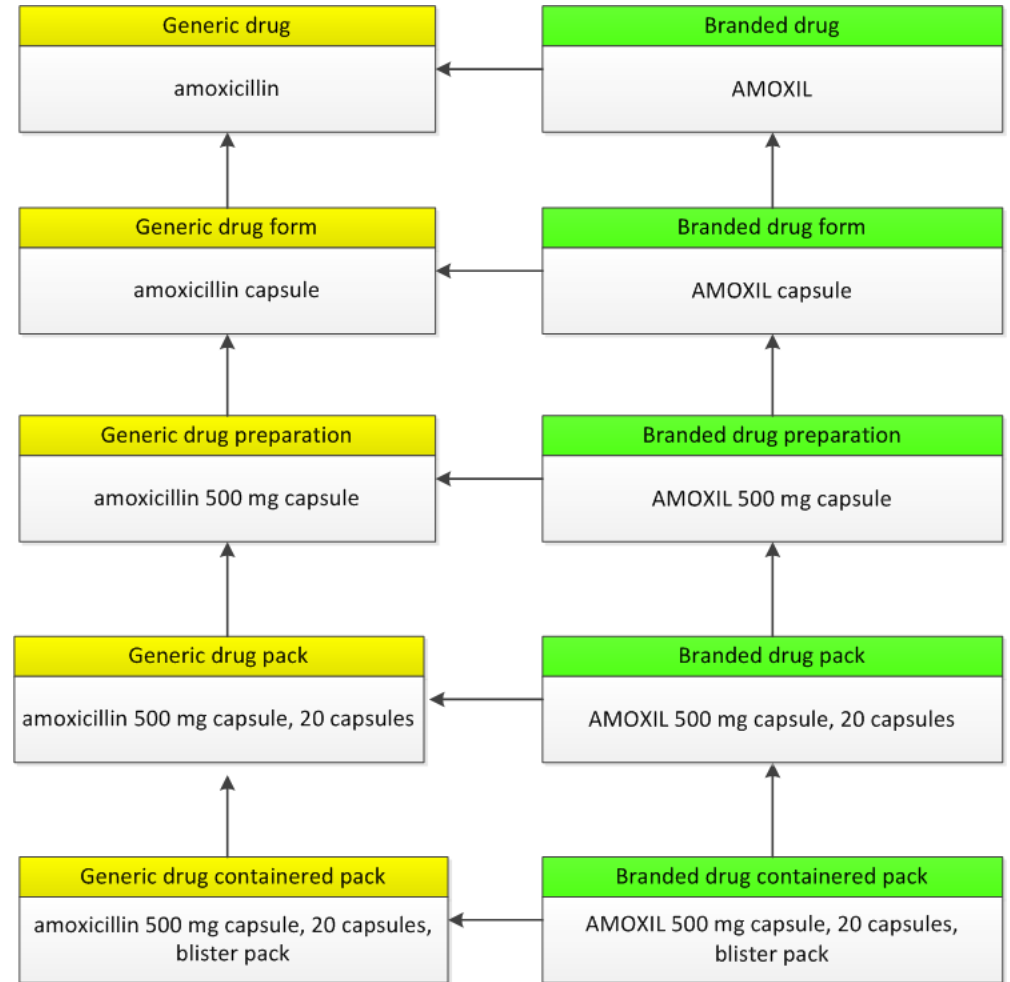
# 7. Brand family group



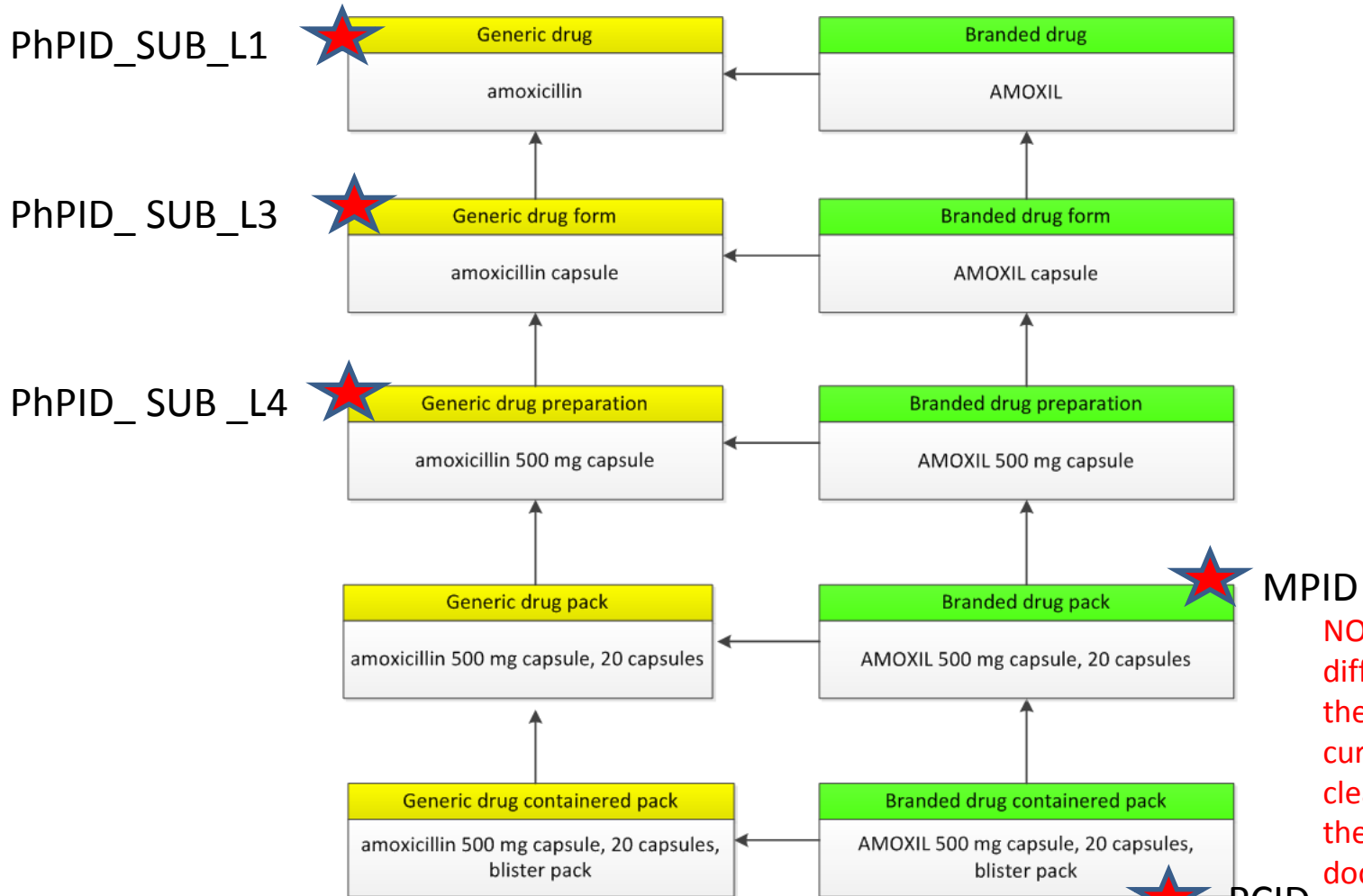
- Brand family group can be created where clinical practice includes a term that may group branded products which may include different ingredients.
- The grouper will be linked to the correct Branded product concepts by a has brand family group relationship

# 8. IDMP alignment

- Option 1: Map to IDMP concepts
- Option 2: Map to IDMP concepts AND add additional classes and relationships to ensure compliance to the data elements

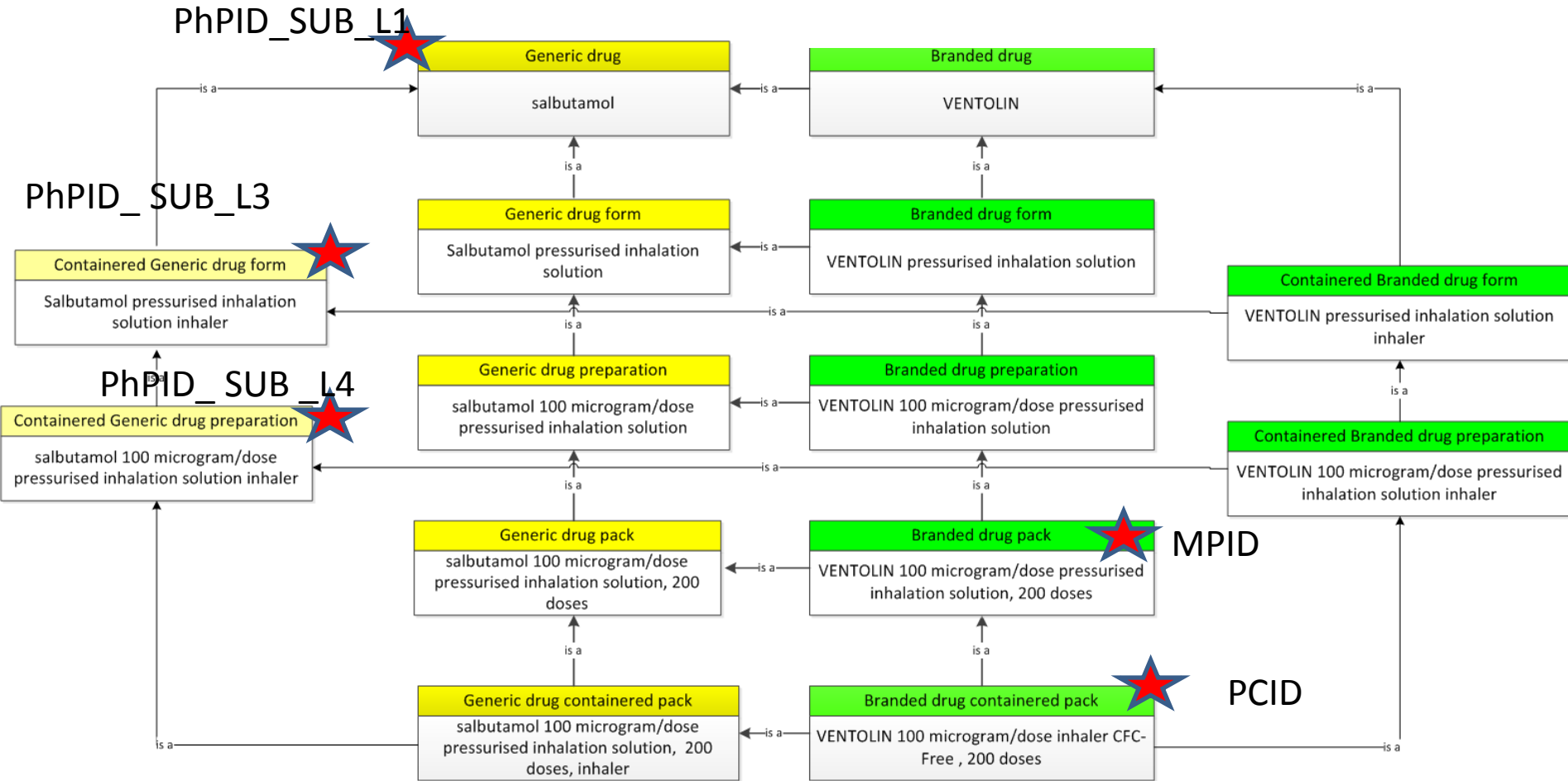


# 8. IDMP Option 1- Map example 1



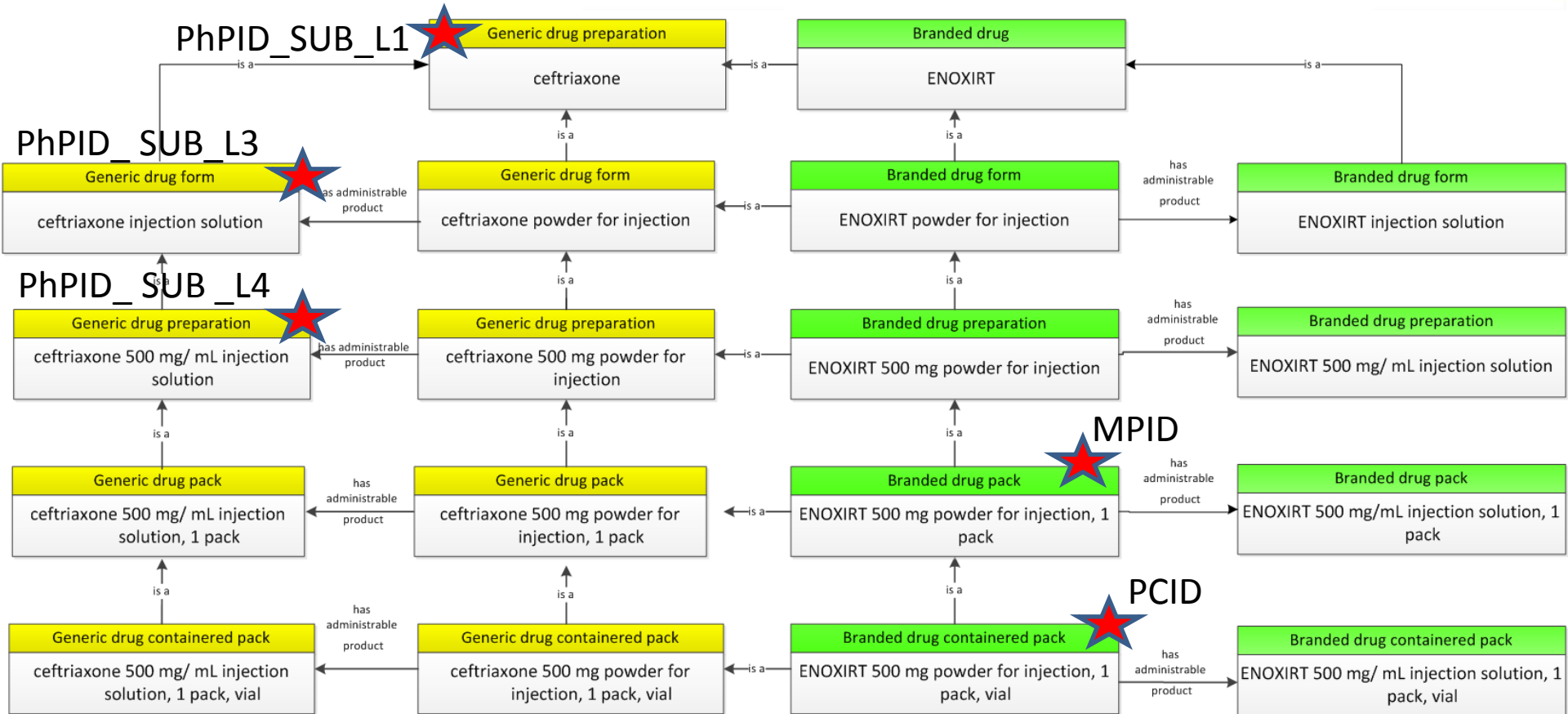
**NOTE:** The differentiation of these two levels is currently not clearly defined in the ISO documentation and may need review at a later stage

# 8. IDMP Option 1: Map example 2





# 8. IDMP Option 1: Map example 3



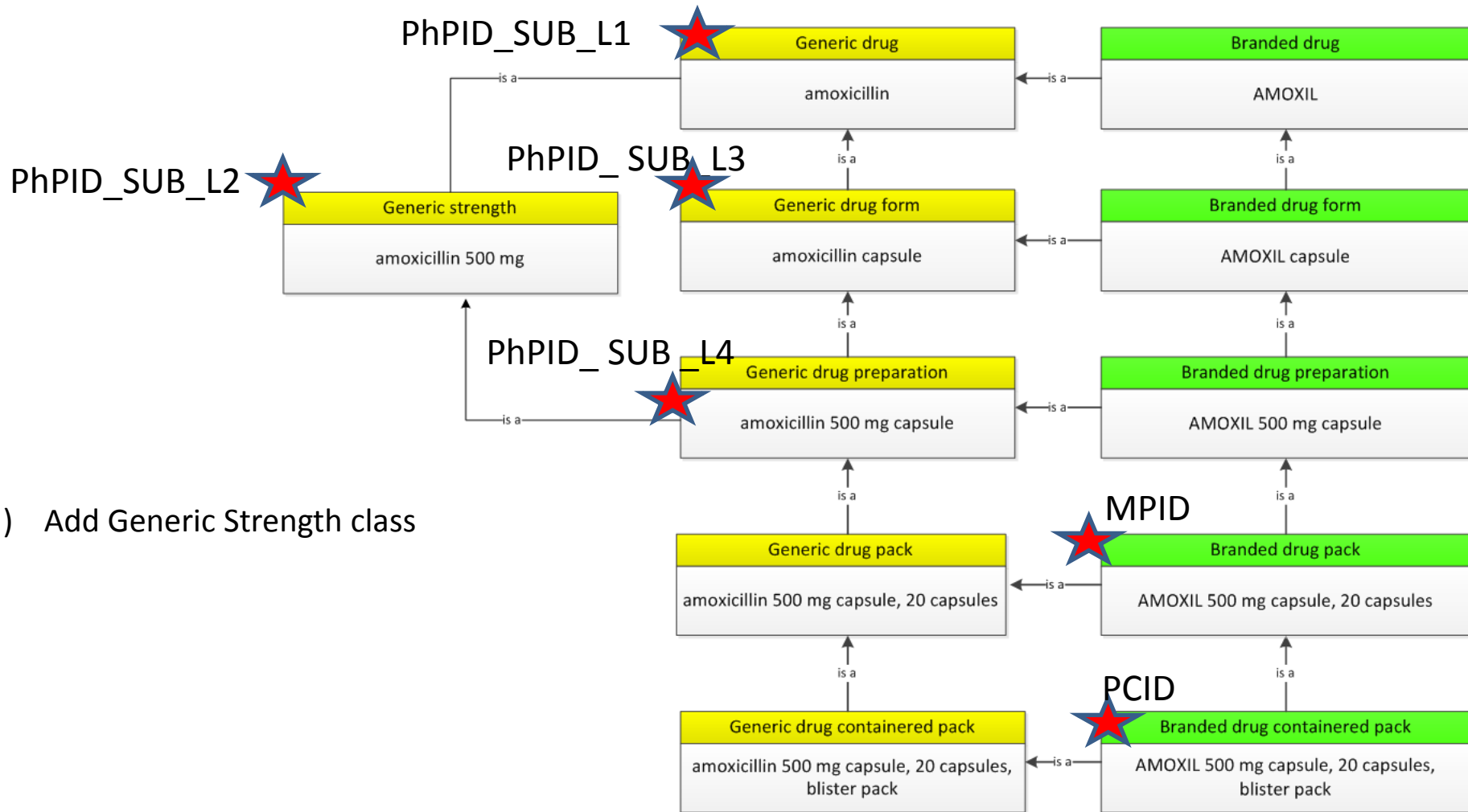


# 8. IDMP Option 2

Option 2: Map to IDMP concepts AND add additional information to ensure compliance to the data elements including:

- a) Add Generic Strength class
- b) Add specific substance layer (NOTE: May not be relevant in clinical practice)
- c) Add administrable dose forms
- d) Add device when required
- e) Split Containers into containers and administrable devices
- f) Align to IDMP strength representation eg concentration, presentation and reference strength , strength range( relationships and editorial rules)
- g) Add “has ingredient type” relationship & qualifier to generic side
- h) Add “has adjuvant” relationship & qualifier
- i) Add “has flavour” relationship & qualifier to branded classes ( to be confirmed when more information available)

# 8. IDMP Option 2a- Add Generic Strength class



a) Add Generic Strength class

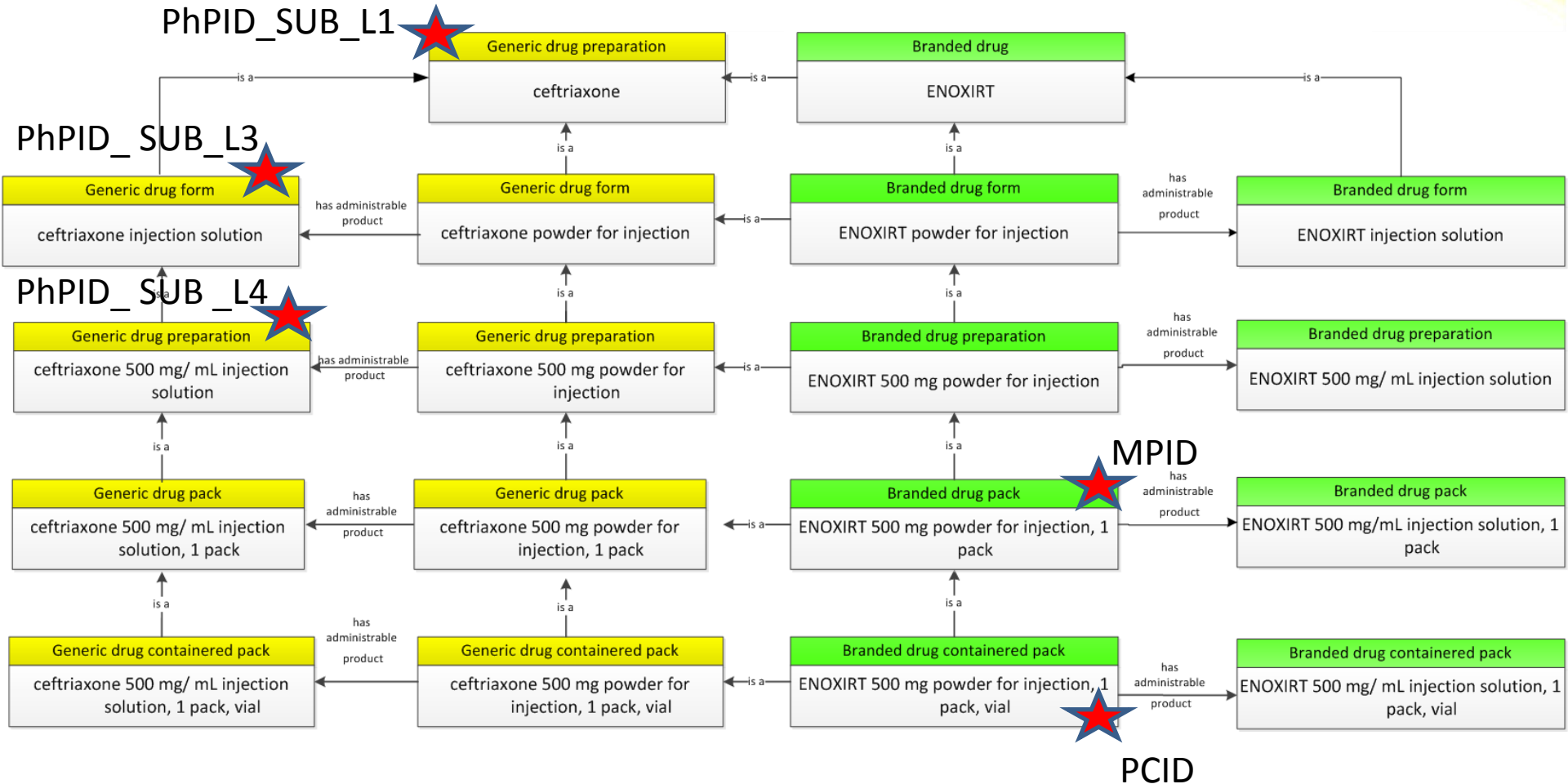
# IDMP Option 2b - Add specific substance layer

a) Add Generic Strength class

b) Add specific substance layer (**NOTE: May not be relevant in clinical practice**). This is a regulatory use case and the relevance would need to be reviewed again after completion of the Substance database and when the first few examples have been implemented in the IDMP database.

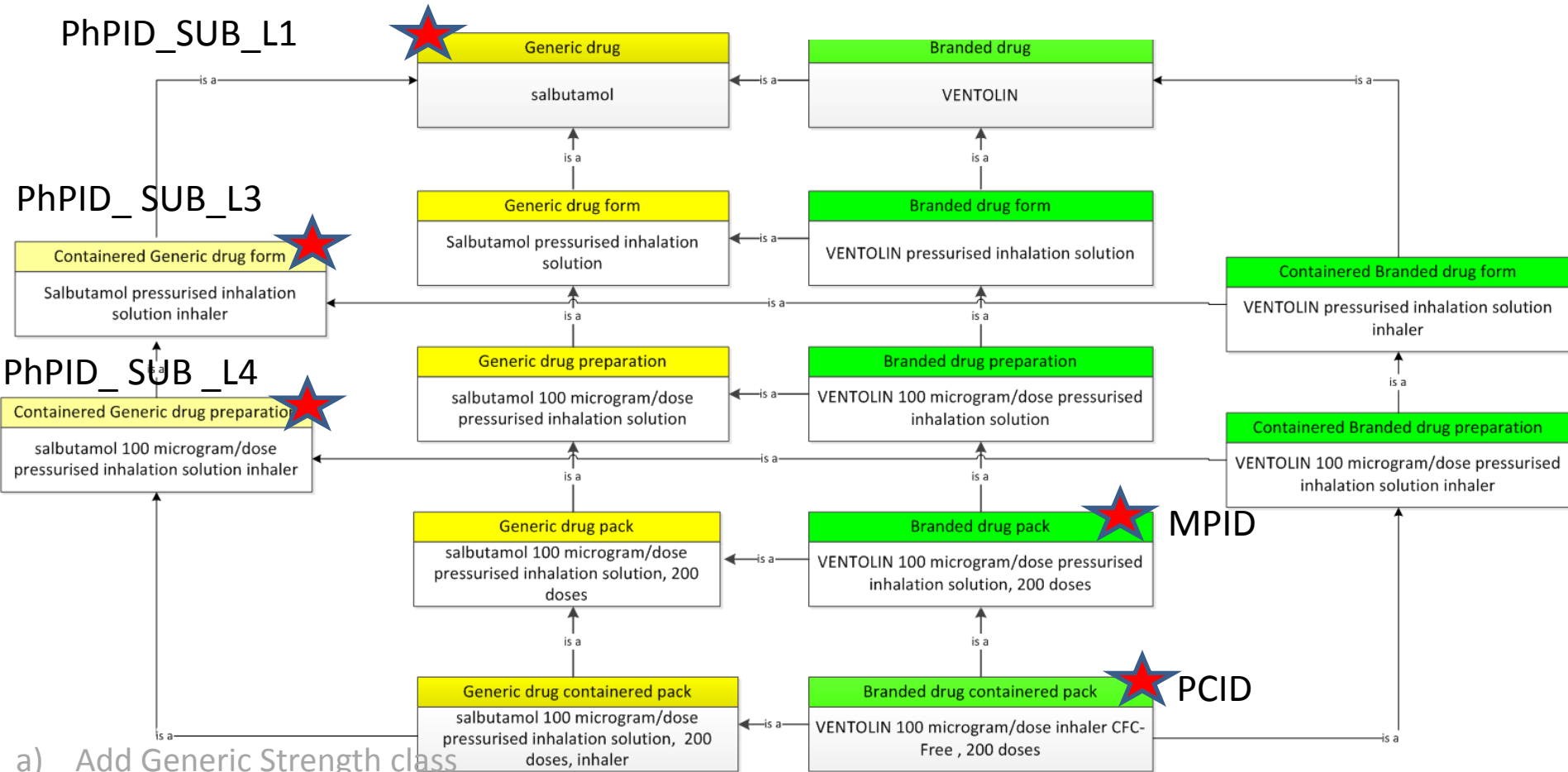
# IDMP Option 2c-

## Add administrable dose forms



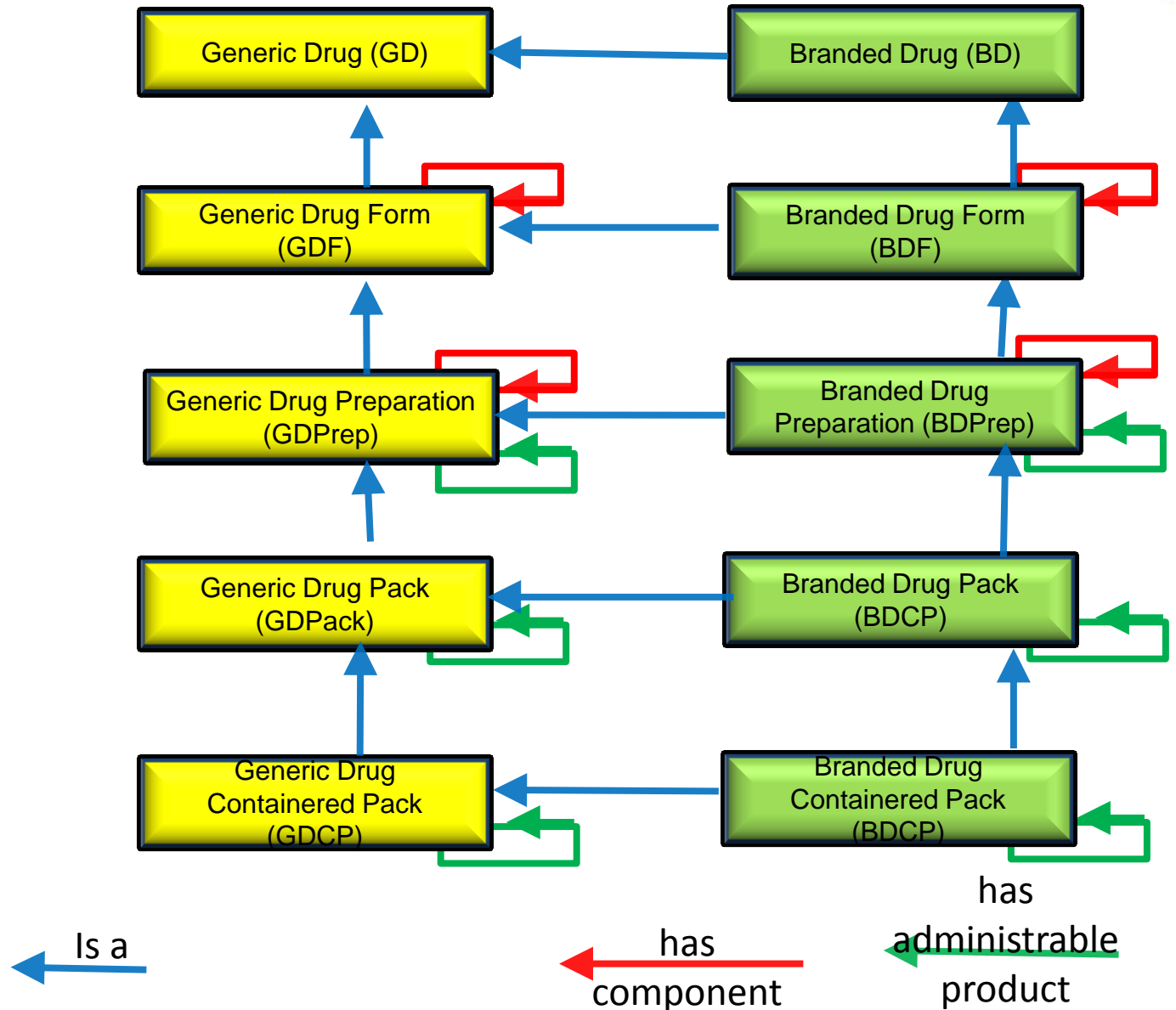
- Add Generic Strength class
- Add specific substance layer ( when required
- Add administrable dose forms

# IDMP Option 2d – add administrable device

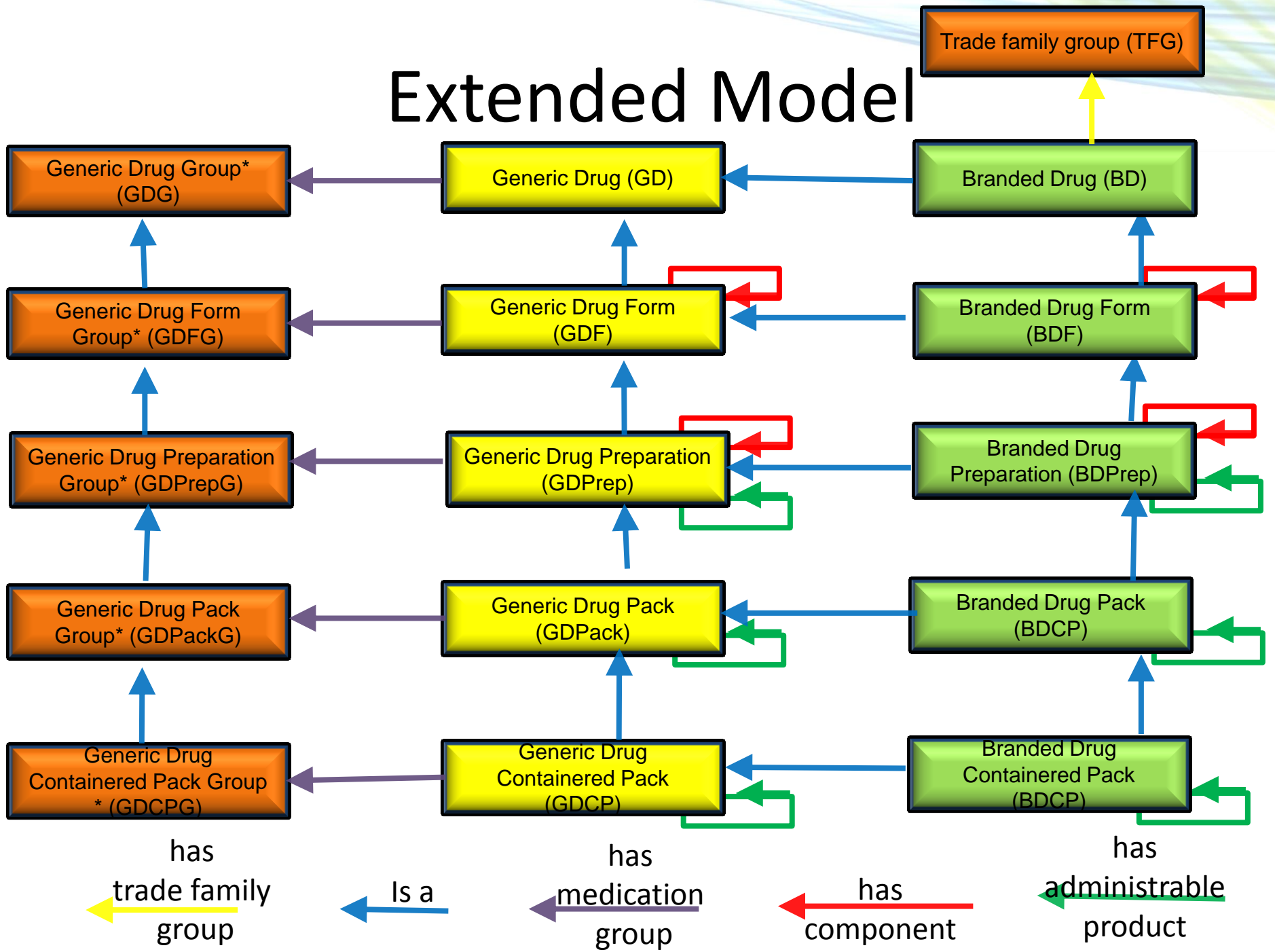


- Add Generic Strength class
- Add specific substance layer ( when required
- Add administrable dose forms
- Add device when required

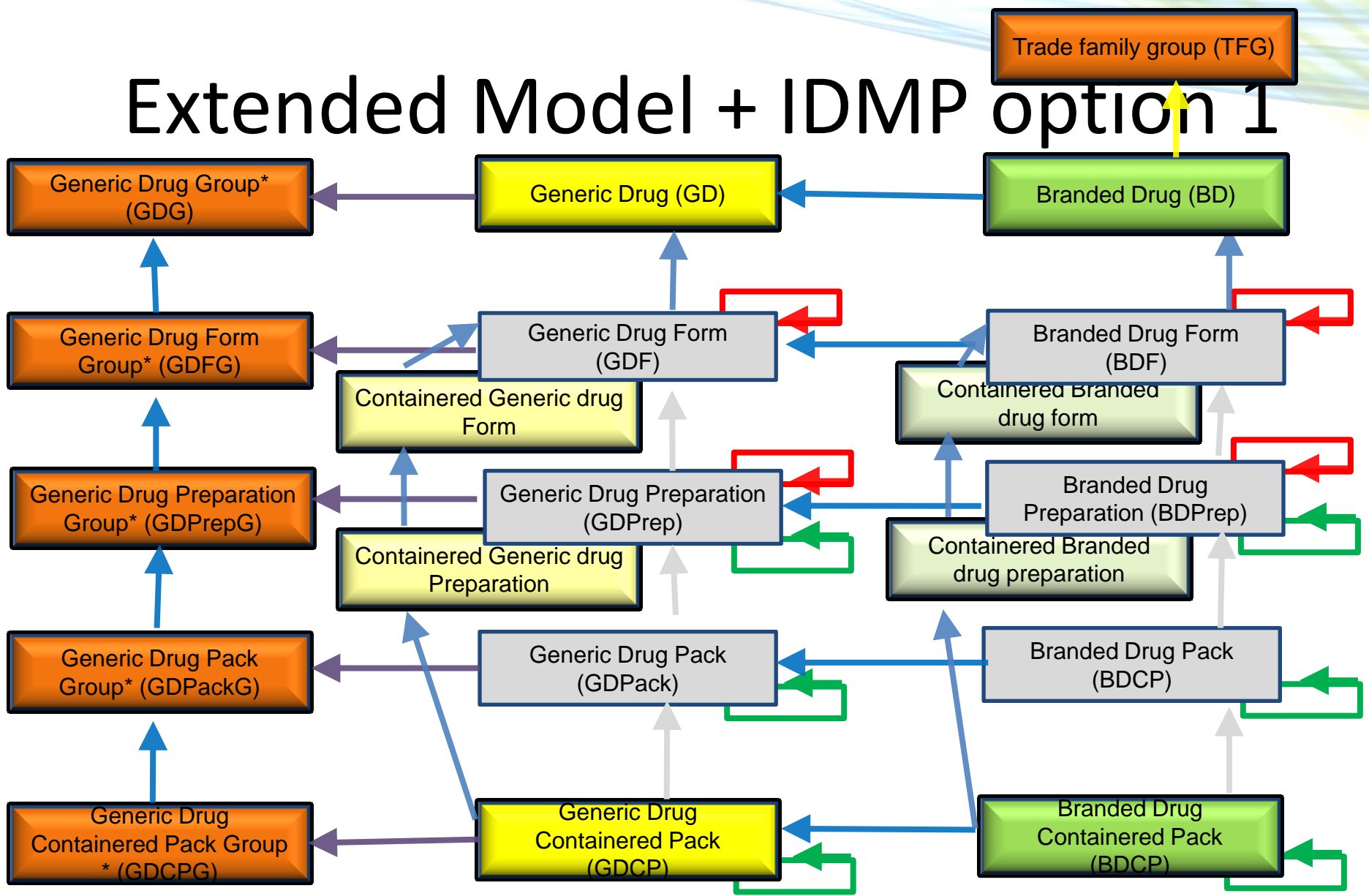
# Extended Model



# Extended Model



# Extended Model + IDMP option 1



has  
trade family  
group

Is a

has  
medication  
group

has  
component

has  
administrable  
product



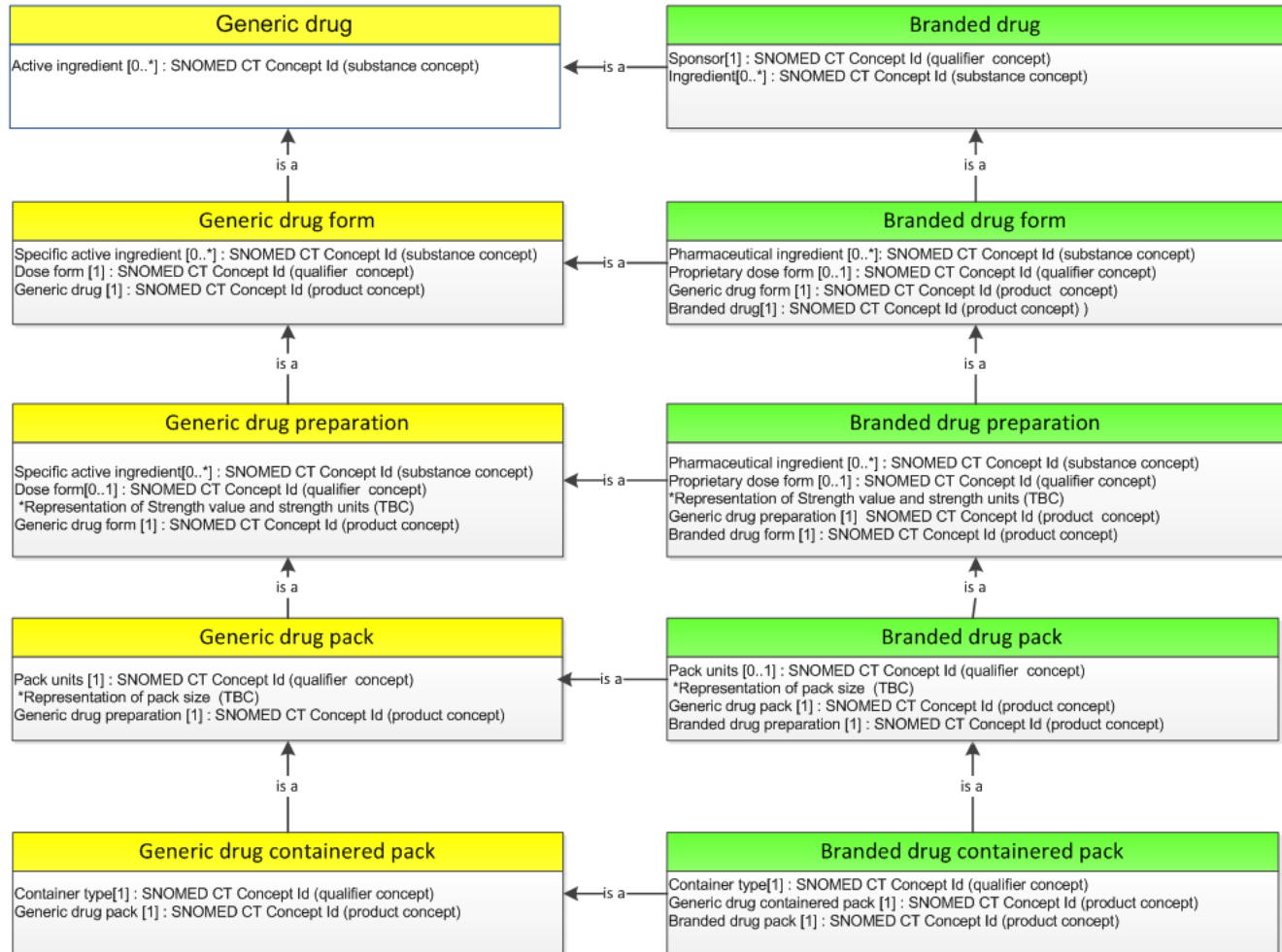
# Other extension model options

- The following options can also be included if a use case exists:
  - Freeness (or include as other identifying information)
  - Flavour (or include as other identifying information)
  - Sub packs



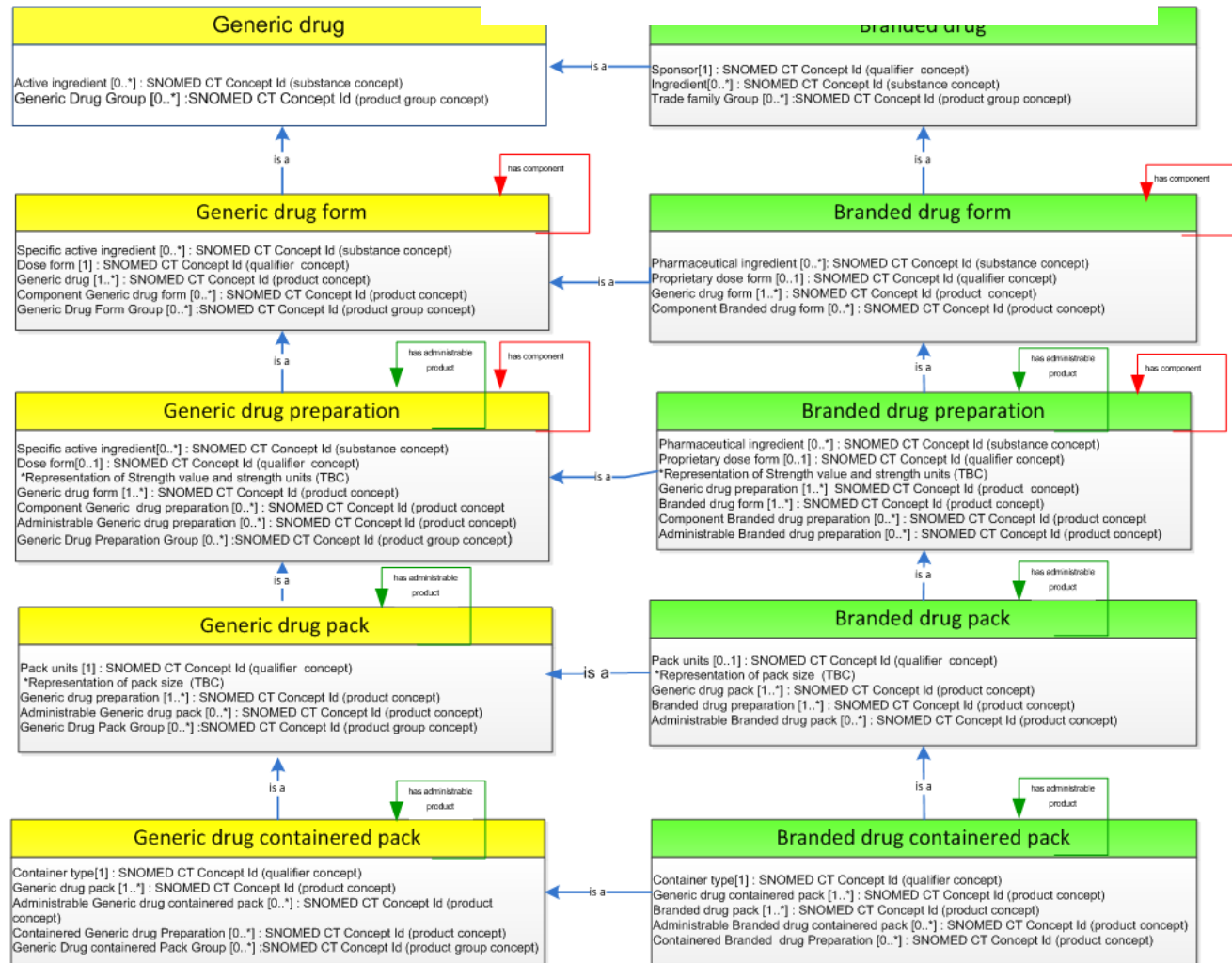
# **APPENDIX**

# Core Product Classes



## Core Product Classes

+ administrable product and component relationships



All Product Classes  
+ administrable product and component relationships

