

Document filename:	doc_UKSnomedCTUKDrugExtensionEditorialPolicy		
Project / Programme	Information Standards Delivery	Project	Pharmacy Terminology Service
Document Reference	TBC		
Project Manager	Stuart Abbott	Status	Published
Owner	Emma Melhuish	Version	8.1
Author	Stuart Abbott/Emma Melhuish	Version issue date	27-Dec-2017

SNOMED CT® UK Drug Extension Editorial Policy

Document is applicable to the data provided in both Release Format 1 and Release Format 2 of SNOMED CT

Document management

Revision History

Version	Date	Summary of Changes
v0.1	31-Jan-2010	Initial version sent for internal review.
v0.2	31-Apr-2010	Changes made to content following internal review.
v0.3	23-Aug-2010	'Amendment History' table added following UKTC Edition Committee review.
V1.0	17-Jan-2011	Branding added for publication
V1.1	11-Apr-2011	Clarification to wording on page 26 and 30 regarding Co-names
V1.2	06-Sep-2011	Clarification on terms to be used in implementations
V1.3	06-Sep-2011	Addition of Appendix II to replace previous separate document on the purpose of description subsets Additional example included in 4.7.3
V1.4	17-Jul-2012	Telephone number updated
V1.5	28-Jul-2012	Rules on population of Trade Family concepts further clarified. Additional concept added to exceptions table in Appendix II
V1.6	14-Nov-2012	Amendment to TF and TFG terms in response to UKTC Edition Committee decision
1.7	13-Mar-2013	Rebranded as HSCIC
2.0	26-Mar-2013	Approved version for release
2.1	14-May-2014	Updated to include RF2 information
3.0	15-May-2014	Approved version
3.1	18-Jul-2014	Inclusion of radiopharmaceuticals content. Sections 6.1 and 6.2
4.0	17-Sep-2014	Approved version
5.0	07-Jan-2015	Amendments to section 6 and Appendix I
6.0	14-Sep-2016	Rebranded as NHS Digital
7.0	01-Feb-2017	Updated IHTSDO branding
8.0	08-Nov-2017	Updated radiopharmaceuticals section
8.1	27-Dec-2017	Addition of Unit of Administration

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1 About this Document

1.1 Purpose

This document specifies the Editorial Rules for SNOMED CT¹ UK Drug Extension and focuses on the naming conventions and rules associated with all description types for concepts within the UK Drug Extension.

This document will be updated according to stakeholder feedback, Drug Extension model refinement and editorial rule reviews.

For further information on SNOMED CT there are a number of resources produced by SNOMED International² which describe how the content of SNOMED CT should be developed and maintained, these are constantly updated and users should refer to the SNOMED International website (<http://snomed.org/doc>) for the latest version.

1.2 Audience

This document has been written for all those involved in the use and implementation of SNOMED CT UK Drug Extension. This will include dictionary authors, system implementers, and end users.

1.3 Acronyms and abbreviations

Acronym	Description
AMP	Actual Medicinal Product
AMPP	Actual Medicinal Product Pack
ARP	Actual Radiopharmaceutical Product
ARPP	Actual Radiopharmaceutical Product Pack
BAN	British approved name
BANM	Modified British approved name
Concept	A "concept" as referred to in this document is a clinical meaning identified by a unique numeric identifier (ConceptID) that never changes. Concepts are represented by a unique human-readable Fully Specified Name (FSN). The concepts are formally defined in terms of their relationships with other concepts. These "logical definitions" give explicit meaning which a computer can process and query on. Every concept also has a set of terms that name the concept in a human-readable way.
Concept ID	The unique identifier (code) for each SNOMED CT concept. Refer to the SNOMED CT Release File Specification for a full explanation of how this identifier is structured.
Description	The human-readable phrases or names associated with SNOMED CT concepts. All

¹ SNOMED® and SNOMED CT® are registered trademarks of the International Health Terminology Standards Development Organisation (IHTSDO)® (www.snomed.org). SNOMED CT® was originally created by the College of American Pathologists.

² SNOMED International is the trading name of the International Health Terminology Standards Development Organisation (IHTSDO), but references thereafter should be to SNOMED International

	of the concept descriptions in SNOMED CT are listed in the Descriptions Table.
Description ID	An SCTID that uniquely identifies a Description. Refer to the SNOMED CT Release File Specification for a full explanation of how this identifier is structured.
dm+d	NHS Dictionary of Medicines and Devices
Extension	Extensions are complements to a released version of SNOMED CT. Extensions are components that are created in accordance with the data structures and authoring guidelines applicable to SNOMED CT.
Fully defined concept	SNOMED CT concepts are either primitive or fully defined. A concept is primitive when its modelling (attributes and parents) does not fully express its meaning. Fully defined concepts can be differentiated from their parent and sibling concepts by virtue of their relationships. Primitive concepts do not have the unique relationships needed to distinguish them from their parent or sibling concepts.
FSN	Fully Specified Name - A description that names a concept in a manner intended to be unambiguous.
IHTSDO	International Health Terminology Standards Development Organisation. Please note SNOMED International is the trading name of the International Health Terminology Standards Development Organisation (IHTSDO)
INN _m	Modified recommended international non-proprietary name
International Release	The SNOMED CT International Release is the data produced and published by SNOMED International
NHS BSA	NHS Business Services Authority
NPfIT	National Programme for IT
pINN	Proposed international non-proprietary name
Preferred Term	Preferred Term (PT) - A description that names a concept in a manner that is intended to capture the common word used by clinicians in the UK.
RefSet	Reference sets provided in the UK RF2 release are semantically equivalent to the respective subsets in RF1.
Relationship	An association between two Concepts. The nature of the association is indicated by a Relationship Type. Each Relationship is represented by a row in the Relationships Table.
Relationship Type	The nature of a Relationship between two concepts within SNOMED CT. The RelationshipType field indicates the ConceptID for the concept that forms the relationship between two other concepts (ConceptID1 and ConceptID2). SNOMED CT has four types of relationships: Defining characteristics are IS_A relationships and defining attributes. Example: "PROCEDURE-SITE = Liver" is a defining characteristic of Liver biopsy. Qualifying characteristics are non-defining, qualifying attributes. Historical relationships relate inactive concepts to active concepts. For example, a concept may be inactivated because it is a duplicate. In this example a relationship is created when one concept is inactivated and stated to be the "same-as" another concept. Additional relationships are other non-defining characteristics, like PART OF which is retained for backward compatibility with SNOMED RT.

Relationship ID	<p>A SNOMED CT ID that uniquely identifies a Relationship between three concepts: a source concept (ConceptID1), a target concept (ConceptID2), and a relationship type.</p> <p>Each row in the Relationships Table represents a relationship "triplet" (ConceptID1 - RelationshipType - ConceptID2) identified by a RelationshipID.</p> <p>Refer to the SNOMED CT Release File Specification for a full explanation of how this identifier is structured.</p>
RF1	<p>Release Format 1. The SNOMED CT UK Edition is currently published by NHS Digital in two formats; Release Format 1 (RF1) and Release Format 2 (RF2). RF1 is provided as a 'Supported Product'.</p> <p>Further details on the release formats can be found in the SNOMED International Technical Implementation Guide and the SNOMED International SNOMED CT Starter Guide.</p>
RF2	<p>Release Format 2. The SNOMED CT UK Edition is currently published by NHS Digital in two formats. RF2 release is provided as 'Draft for Trial Use'. The move to 'Supported Product' for RF2 will be in line with the NHS Digital Product Development Lifecycle criteria.</p> <p>Further details on the release formats can be found in the SNOMED International Technical Implementation Guide and the SNOMED International SNOMED CT Starter Guide.</p>
RTF	Radiopharmaceutical Trade Family
RTFG	Radiopharmaceutical Trade Family Group
rINN	Recommended international non-proprietary name
SNOMED CT	SNOMED CT is the terminology used by health and care professionals to record and share information via electronic patient record (EPR) systems to support the provision of care.
SNOMED International	SNOMED International is the trading name of the International Health Terminology Standards Development Organisation (IHTSDO)
SCT ID	SNOMED CT Identifier
TF	Trade Family
TFG	Trade Family Group
UKTC	UK Terminology Centre
USAN	United States Adopted Name
VMP	Virtual Medicinal Product
VMPP	Virtual Medicinal Product Pack
VRP	Virtual Radiopharmaceutical Product
VRPP	Virtual Radiopharmaceutical Product Pack
VRM	Virtual Radiopharmaceutical Moiety
VTM	Virtual Therapeutic Moiety

1.4 Notation

Character	Name	Description
:=	Definition	The symbol on the left can be replaced by the expression on the right.
;	Terminating character	This identifies the end of a rule (called a "production rule")
	Logical OR	A choice, with alternative items separated by this symbol.
[...]	Optional	Encloses optional items.
{ ... }	Optional and repeatable	Encloses optional items that can be repeated zero or more times.
(...)	Arrangement in groups	Encloses items that need to be grouped together.
" ... "	Double quotation	A terminal expression (i.e. characters that appear exactly as shown).
(* ... *)	Comment	Encloses a comment (i.e. the characters inside are not part of the expression).
-	Exception	An exception to the rule.

1.5 Related Documents

1.	NHS Dictionary of Medicines and Devices – Editorial Policy Available at https://www.nhsbsa.nhs.uk/pharmacies-gp-practices-and-appliance-contractors/dictionary-medicines-and-devices-dmd
2.	SNOMED CT Starter Guide.
3.	SNOMED CT Technical Implementation Guide.
4.	SNOMED CT Release File Specification.

SNOMED CT documentation produced by SNOMED International describes how the content of SNOMED CT should be developed and maintained, these are constantly updated and users should refer to the SNOMED International website (<http://snomed.org/doc>) for the latest version.

2 Introduction

2.1 Need for Standardisation

dm+d has been developed for use throughout the NHS (in hospitals, primary care and the community) as a means of uniquely identifying the specific medicines or devices used in the diagnosis or treatment of patients. dm+d will be used as the underlying set of descriptors, codes and relationships wherever medicines and devices data is entered, processed or stored. Prior to dm+d there has been no common, standardised vocabulary for medicinal products. Lack of standardisation does not allow interoperability between diverse clinical systems, or allow effective decision support through linkage of data. The case for change is driven at a strategic level by the need to underpin and support key national initiatives by providing a unique and unambiguous identifier.

2.2 Integration with SNOMED CT

The history of the development of dm+d required that a standalone entity be produced to allow implementation in systems independent of the strategic clinical terminology solution the NHS was committed to – SNOMED CT. However, even in taking this decision the importance of seamless integration with SNOMED CT was recognised and as a result all unique identifiers used in dm+d are SNOMED CT identifiers.

Feedback from stakeholders at the time of the inception of dm+d consistently pointed to the requirement to integrate dm+d into SNOMED CT. One of the key reasons for this feedback was a requirement to implement a single terminology structure from root node to Actual Medicinal Product Pack (AMPP). Furthermore, representation within the SNOMED CT file structures would provide benefit of a full concept history, something not provided by the dm+d XML format.

From a strategic perspective it was important both to the implementation of NPfIT (National Programme for IT) clinical systems and for the internationalisation of its terminological structures that dm+d be seen as the SNOMED CT UK Drug Extension.

3 SNOMED CT UK Drug Extension

3.1 SNOMED CT Extensions

The Extension mechanism is a structure that enables authorised organisations to add Concepts, Descriptions, Relationships and Subsets³ to complement the International content of the SNOMED CT International Release. One example of the Extension mechanism is for extensibility of SNOMED CT for the specialised terminology needs such as medicine and device terminology.

The levels of drug products represented in the International Release include Virtual Therapeutic Moiety (VTM) (e.g. atenolol), Virtual Medicinal Product (VMP) (e.g. atenolol 100mg tablets) and Product Category (e.g. beta-blocking agent). Actual Medicinal Products (AMPs) contain brand specific or country specific information and consequently are represented in an extension and not in the International Release. Actual Medicinal Products in an extension will have a direct link to their virtual equivalent in the International Release via the IS_A relationship or to a virtual equivalent in the extension (i.e. not all VMPs are International Release concepts)

3.2 Overview of SNOMED CT UK Drug Extension

The SNOMED CT UK Drug Extension now comprises NHS Dictionary of Medicines and Devices (dm+d) derived content, some CTv3 derived content and some unique content. As notified in 2004 any new content created to support the Read Drug and Appliance Dictionary is automatically given a retired status in SNOMED CT. *The consequence of this is that whilst the ctv3sctmap_uk mapping may provide some information for high level mapping to CTv3 derived headers it should not be relied upon to migrate systems from CTv3 to SNOMED CT with respect to drug and appliance information.*

The NHS dm+d, as the NHS preferred drug terminology is the basis for all medicine and device codes forming the SNOMED CT UK Drug Extension. Data contained in the UK Drug Extension files is a subset of the data in the original dm+d XML format data. The five main concept classes (VTM, VMP, AMP, VMPP and AMPP) are fully included. However not all of the attributes and associations from the XML format are replicated in the UK Drug Extension data.

At its simplest SNOMED CT is a three table terminology (Concepts, Descriptions and Relationships) designed to comply with all the principles of good terminology practice; at its simplest dm+d (XML format) is a nine table (five main concept classes plus associated data) dictionary designed to support the business processes of the NHS and comply with good vocabulary practice wherever possible. Translation of dm+d into the UK Drug Extension involves representing these nine tables in the three table SNOMED CT format.

Translation of dm+d XML data into the SNOMED CT UK Drug Extension provides dm+d concepts with:-

- Fully Specified Name and UK preferred term for each concept;

³ The reference sets ('refsets') provided in the UK RF2 release are semantically equivalent to the respective subsets in RF1. Therefore content information within this document relevant to the RF1 subset is also applicable to the reference sets provided in RF2; for consistency the term subset is used throughout unless the information is specific to RF2 when reference set will be used.

- A valid SNOMED CT Description Id for each description (e.g. FSN, Preferred Term etc) associated with a dm+d concept;
- Relationships to International Release SNOMED CT. Each dm+d concept will have a SNOMED CT defined relationship either to an appropriate supertype concept in the SNOMED CT International Release or to another dm+d concept that is itself linked (directly or indirectly) to a SNOMED CT International Release concept;
- Inherited defining relationships (where appropriate);
- Specific defining relationships. Relationships to other International Release defined concepts;
- Historical relationships.

In addition to the data from the original XML format dm+d two extra concept classes are included in the SNOMED CT UK Drug Extension data. These are the Trade Family (TF) and Trade Family Group (TFG) and are provided to facilitate system vendors in their implementation of dm+d.

3.3 SNOMED CT UK Drug Extension Model

SNOMED CT UK Drug Extension conceptually has six distinct concepts classes, each containing a set of attributes and each participating in number of relationships with other concepts as depicted in the diagram below. The diagram below illustrates the concepts and SNOMED CT relationships that have been used in the SNOMED CT UK Drug Extension subsets. Details of the relationships and attributes can be found in section 3.5 SNOMED CT UK Drug Extension Components.

The six concept classes are:

- Virtual Therapeutic Moiety (VTM)
- Virtual Medicinal Product (VMP)
- Virtual Medicinal Product Pack (VMPP)
- Actual Medicinal Product (AMP)
- Actual Medicinal Product Pack (AMPP)
- Trade Family (TF)

Trade Family Group (TFG) is a Qualifier Value concept and therefore forms part of a different hierarchy within SNOMED CT.

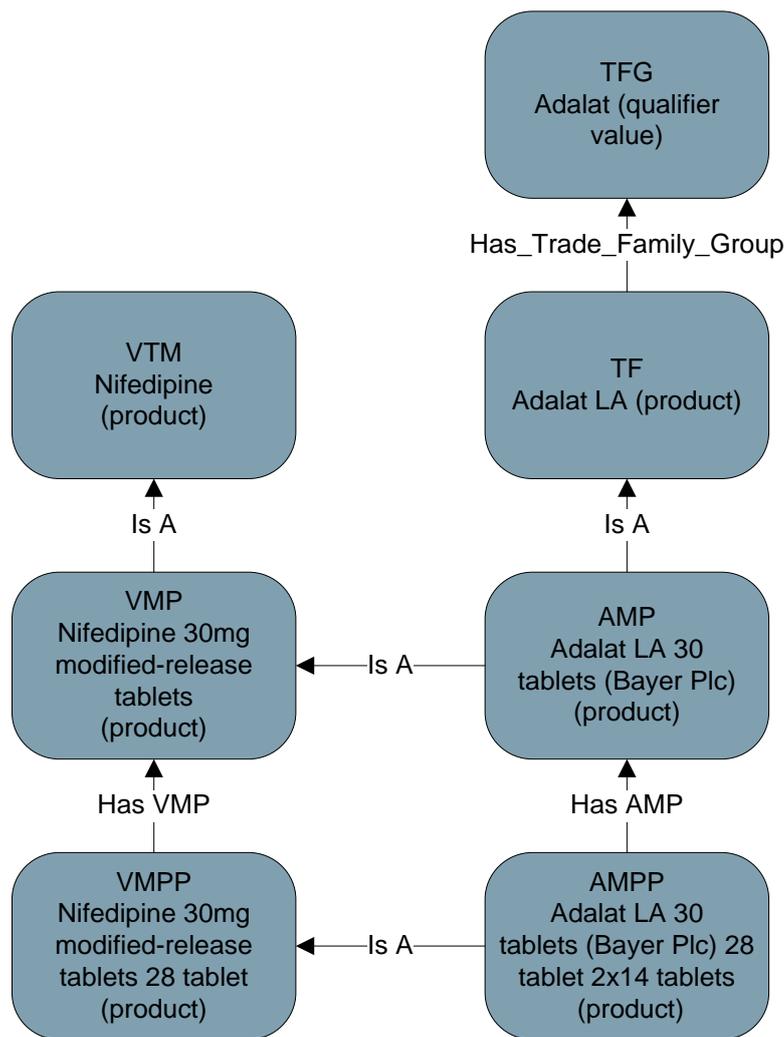


Figure 1

It should be noted that a detailed structure for devices is currently out of scope. However the current project 'Medical Devices Dictionary', will address requirements for devices structure in both dm+d (XML format) and the SNOMED CT UK Drug Extension.

3.4 Creation of SNOMED CT UK Drug Extension

3.4.1 General Principles

- Existing SNOMED CT relationships are utilised where possible and where they will not result in inheritance issues.
- 'Medicines' from dm+d will be placed in the pharmaceutical/biological product (product) hierarchy and 'devices' (appliances) from dm+d in the physical object (physical object) hierarchy. Please note that this document currently only details editorial rules for medicines. The representation of appliance information is currently under development and will therefore not be represented in SNOMED CT format at this time.
- The distinction between 'medicine' and 'device' in dm+d is based on licensing. Products one may clinically assert to be medicines (e.g. synovial fluid injections), due to their licensing, would appear to be devices on first, simple extraction from dm+d. Author

intervention will be required to place these concepts in the clinically intuitively correct hierarchy (i.e. (product)). This may result in some of the attributes remaining unpopulated e.g. HAS_SPECIFIC_ACTIVE_INGREDIENT being unpopulated for such concepts.

- A dm+d realm description subset is produced. The UK dialect subset released as part of the SCT International release defines the preferred terms to be used for concepts in the SNOMED CT UK Drug Extension (simple Anglicisation of the US FSN). A dm+d realm description subset identifies the dm+d term as the preferred term for the five concept classes derived from the XML data. It is intended to override the SNOMED CT International Release UK dialect subset. This is due to an implementation requirement that the dm+d term for a concept be presented as the preferred term for that concept in SNOMED CT when used in the UK.
- There are seven main concept groups of which five are derived from dm+d (VTM, VMP, AMP, VMPP and AMPP) and two created specifically for the SNOMED CT UK Drug Extension (TF and TFG). Each concept class is represented individually as a subset.

3.4.2 Main translation points

The following section highlights the changes required to dm+d data to create a structurally compliant extension of SNOMED CT known as the SNOMED CT UK Drug Extension.

- Addition of high level concepts for each concept class (see Figure 2 below).

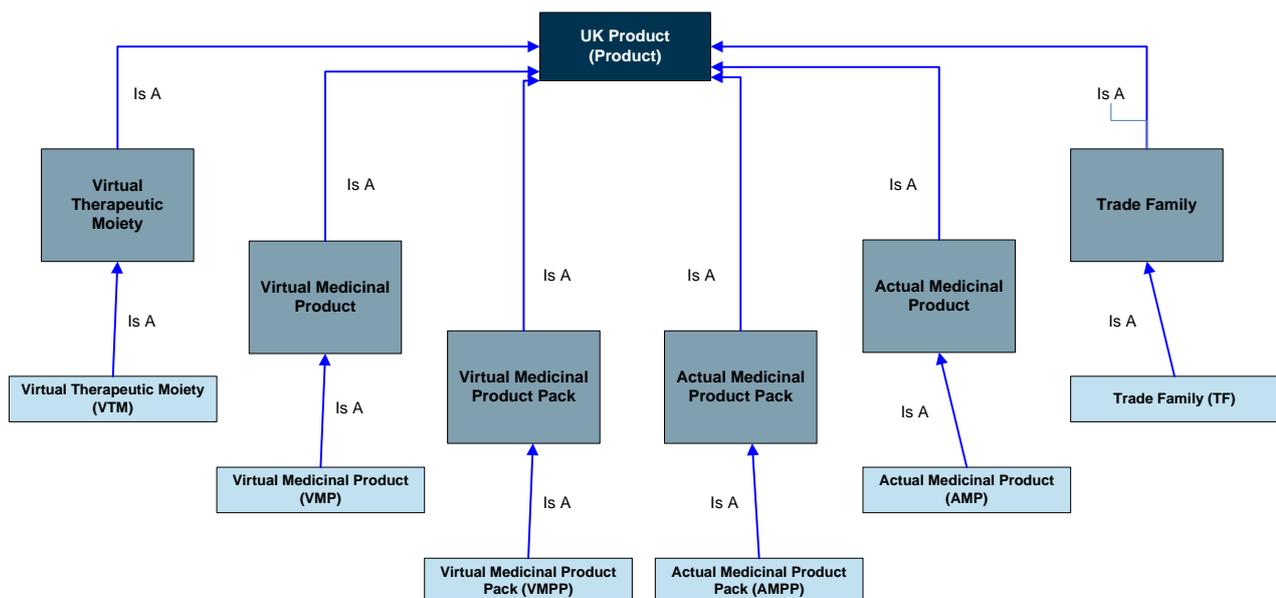


Figure 2

For example every product concept e.g. VTM will be linked to the VTM concept class which in turn is linked to the highest level concept “UK Product”. A UK Product will be a child of pharmaceutical /Biological Product.

i.e. atenolol **IS_A** VTM **IS_A** UK_Product **IS_A** Pharmaceutical/Biological Product

It should be noted that these relationships are additional to the current hierarchy up to Pharmaceutical/Biological Product and not replacement. For example the following relationship will still exist in addition to the newly created relationship represented above:

atenolol **IS_A** Beta 1 blocking agent **IS_A** beta-Blocking agent **IS_A** hypotensive agent **IS_A** cardiovascular drug **IS_A** pharmaceutical / biologic product

- Reference to cardinalities removed. There is currently no mechanism to represent cardinality constraints in SNOMED CT.
- Subsets created to represent each of the five dm+d derived concept classes VTM, VMP, AMP, VMPP and AMPP.
- Removal of the PRODUCT_ASSERTED_FREE_FROM relationships. Inclusion of a PRODUCT_ASSERTED_FREE_FROM relationship would create a SNOMED CT International Release relationship that included embedded negation. In terms of ontology engineering and description logics reasoning over negation can be problematic and should therefore be avoided. These concepts are represented using subsets.
- HAS_SPECIFIC_ACTIVE_INGREDIENT. A UK extension specific relationship of HAS_SPECIFIC_ACTIVE_INGREDIENT is used to identify the active ingredient (s) exported from the dm+d XML data. This differs from HAS_ACTIVE_INGREDIENT relationship already defined in the International Release of SNOMED CT. Provenance will be denoted by the UK relationship Id.
- Dates held in SNOMED CT format (e.g. '*VTM identifier date*', '*non-availability status date*', '*Discontinued flag change date*' etc). The dates are exported from the XML data and are therefore consistent with the date with which the change was made.
- Information held within a terminology must be always and necessarily true. Therefore in the creation of the SNOMED CT UK Drug Extension, some information associated with dm+d derived concepts is removed. For example route of administration is not always the same for equivalent products with different manufacturers (depending on a particular product's licence). Similarly information pertaining to cost fluctuates and cannot be said to be true for all related VMPs and AMPs.
- Creation of two additional concept classes - Trade Family (TF) and Trade Family Group (TFG) and represented as subsets.

3.5 SNOMED CT UK Drug Extension Components

These descriptions are SNOMED CT descriptions and are subject to the same rules and constraints.

3.5.1 Concepts

A 'concept' is a clinical meaning identified by a unique numeric identifier (Concept ID) that never changes. Each concept is represented by a unique human readable Fully Specified Name (FSN). The concepts are formally defined in terms of their relationships with other concepts. These 'logical definitions' give explicit meaning which a computer can process and query on. Every concept also has a set of terms (descriptions) that name the concept in a human readable way.

Each concept has a unique concept ID. Concept IDs do not contain hierarchical or implicit meaning although it does indicate if the concept is from the International Release or a National Extension.

3.5.2 Descriptions

Concept descriptions are the terms or names assigned to a SNOMED CT concept. "Term" in this context means a phrase used to name a concept. A unique DescriptionID identifies a description. Multiple descriptions might be associated with a concept identified by one ConceptID. Each description has a unique description ID.

3.5.2.1 Types of descriptions

3.5.2.1.1 Fully Specified Name (FSN)

Each concept has one unique FSN intended to provide an unambiguous way to name a concept. The purpose of the FSN is to uniquely identify a concept and clarify its meaning, not necessarily to present the most commonly used or natural phrase for that concept. Each FSN ends with a “semantic tag” in parentheses at the end of the concept. The “semantic tag” indicates the semantic category to which the concept belongs. I.e. it will contain the semantic tag of its appropriate parent and in the case of the SNOMED CT UK Drug Extension - “(product)”. For example, amoxicillin (product) is a FSN that describes a product that a clinician may choose to prescribe whereas amoxicillin (substance) describes a chemical that plays a role of an ingredient in a product. The table below summarises the specific constraints for the Fully Specified Name.

Fully Specified Names are not generally updated when changes to Editorial policy or product brand names occur. To ensure that implementations are using the current dm+d term the SNOMED CT Preferred Term should be the term visible at the user interface.

Constraints
Each concept must have a FSN.
There must only be one FSN for each concept, in any one language or one dialect.
The FSN of a concept must not be the same as its Preferred Term. Although the name may be the same, the FSN will have a semantic tag and therefore differentiates it from its Preferred term.
The FSN should explain the meaning of the concept to remove or reduce ambiguity. It may therefore not be the most commonly used or understood term.
Each FSN must contain a suffix that indicates where it is integrated into the primary hierarchy. I.e. It will include the semantic tag of its appropriate parent.
No two active concepts may have the same FSN.
The FSN of medicinal products will use the rINN wherever available. Any exceptions will be detailed.
The character length of the Fully Specified name may be up to 255 characters.

3.5.2.1.2 Preferred Term

Each concept has one Preferred Term meant to capture the common word or phrase used by clinicians to name that concept. The SNOMED CT UK Drug Extension will consist of preferred terms to be used for concepts in the UK. E.g. Acetaminophen (product) is the Fully Specified name and acetaminophen is the preferred term in the international release whereas for the SNOMED CT UK Drug Extension, the FSN is the same whilst the Preferred Term is paracetamol.

Constraints
There must be only one Preferred Term for a given concept in any one SNOMED CT language or dialect.
The Preferred Term must not be the same as the FSN. The name may be the same but without the semantic tag.
The Preferred Term of medicinal products will use the rINN wherever available.
The character length of the Preferred Term may be up to 255 characters.

To aid in the identification of Preferred Terms for implementations of SNOMED CT UK Drug Extension data NHS Digital publishes language subsets and realm description subsets as part of the release. For further information on these see Appendix II of this document and also the information in the Subset Overview document provided in the release.

3.5.2.1.3 Synonym

Synonyms represent any additional terms that represent the same concept as the Fully Specified Name. Synonyms, like Preferred Terms, are not required to be unique across concepts.

Constraints
A synonym cannot be the same as a FSN.
There may be more than one synonym for each concept.
Synonyms are optional and will only be populated when deemed clinically relevant.

3.5.3 Relationships

The SNOMED CT UK Drug Extension will use SNOMED CT relationships and specific SNOMED CT UK Drug Extension relationships which link concepts within SNOMED CT (both International Release and National Extensions). Every active concept (except the SNOMED CT 'Root' concept) has at least one IS_A relationship to a supertype concept.

IS_A relationships are also known as 'Supertype-Subtype' relationships or 'parent-child' relationships. IS_A relationships are the basis of SNOMED CT hierarchies.

Attribute relationships relate two concepts and establish the type of relationship between them. Together with IS_A relationships they are considered defining characteristics since they allow the logical representation of the meaning of a concept by establishing relationships with other concepts. A logical concept definition includes one or more supertypes (modelled with IS_A relationships), and a set of defining attributes that capture the semantics of a concept to help differentiate it from other concept definitions, including its supertypes.

Relationship Types	Relationship source
is a	SNOMED CT
may be a	SNOMED CT
moved from	SNOMED CT
replaced by	SNOMED CT
same as	SNOMED CT
was a	SNOMED CT
pending move	SNOMED CT
has VMP	SNOMED CT UK Drug Extension
has AMP	SNOMED CT UK Drug Extension
has trade family group	SNOMED CT UK Drug Extension

has specific active ingredient	SNOMED CT UK Drug Extension
has dispensed dose form	SNOMED CT UK Drug Extension
has excipient	SNOMED CT UK Drug Extension
Is component of	SNOMED CT UK Drug Extension
Prescribing status	SNOMED CT UK Drug Extension
Non-availability indicator	SNOMED CT UK Drug Extension
Legal category	SNOMED CT UK Drug Extension
Discontinued indicator	SNOMED CT UK Drug Extension
has basis of strength substance	SNOMED CT UK Drug Extension
has unit of administration	SNOMED CT UK Drug Extension

3.6 Representation of dm+d concept associations in SNOMED CT format

3.6.1 Virtual Therapeutic Moiety (VTM)

VTM Concepts		
All dm+d derived VTM concepts (or where there is an equivalent concept in the International Release then this is used) will be members of a VTM subset. Provenance is denoted by UK subset Id		
Descriptions / Id	Type	Occurrence
VTM_ID	SNOMED CT ID	1
The SNOMED CT concept identifier for the Virtual Therapeutic Moiety (VTM). This identifier will either be from SNOMED CT International release or where applicable from the SNOMED CT UK Drug Extension namespace.		
VTM_FSN	string	1
The Fully Specified Name for the Virtual Therapeutic Moiety. This will be in the format “Virtual Therapeutic Moiety (product)”. The semantic tag indicates the semantic category to which the concept belongs.		
VTM_UK_Preferred_Term	string	1
The UK Preferred Term for the Virtual Therapeutic Moiety. For conceptually equivalent concepts, the dm+d term (XML format) may not be the same as the en-GB Preferred Term in SNOMED CT The realm description subset should be used to identify the current dm+d name as the Preferred Terms where this is required for implementations.		
Relationships		
In the case of hierarchical relationships (i.e. IS_A) only the closest relationship is represented explicitly. The reciprocal relationship is implied together with relationships to its children. All concepts are primitive.		
IS_A		
VTM (<i>product</i>) IS_A VTM (<i>concept class</i>) i.e. atenolol IS_A VTM IS_A UK_Product IS_A Pharmaceutical/Biological Product This relationship is a SNOMED CT relationship.		

Note: There is no HAS_INGREDIENT link at VTM level in the SNOMED CT UK Drug Extension however one may be allocated in the SNOMED CT International Release.

3.6.2 Virtual Medicinal Product (VMP)

VMP Concepts		
All dm+d derived VMP concepts (or where there is an equivalent concept in the International Release then this is used) will be members of a VMP subset. Provenance denoted by UK subset Id		
Descriptions	Type	Occurrence
VMP_ID	SNOMED CT ID	1
The SNOMED CT concept identifier for the Virtual Medicinal Product (VMP). This identifier will either be from SNOMED CT International release or where applicable from the SNOMED CT UK Drug Extension namespace.		
VMP_FSN	string	1
The Fully Specified Name for the Virtual Medicinal Product. This will be in the format “Virtual Medicinal Product (product)”.		
VMP_UK_Preferred_Term	string	1
The UK Preferred Term for the Virtual Medicinal Product. For conceptually equivalent concepts, the dm+d term (XML format) may not be the same as the en-GB Preferred Term in SNOMED CT The realm description subset should be used to identify the current dm+d VMP name as the Preferred Terms where this is required for implementations.		
Relationships		
In the case of hierarchical relationships (i.e. IS_A) only the closest relationship is represented explicitly. The reciprocal relationship is implied together with relationships to its children. Other relationships further define the concept. All concepts are primitive.		
IS_A		
VMP (<i>product</i>) IS_A VMP (<i>concept class</i>) E.g. atenolol 100mg tablets IS_A VMP VMP IS_A VTM E.g. Atenolol 100mg tablets] IS_A Atenolol (product) The IS_A relationship is a SNOMED CT relationship.		
HAS_DISPENSED_DOSE_FORM		
VMP HAS_DISPENSED_DOSE_FORM Form This relationship HAS_DISPENSED_DOSE_FORM is a UK extension specific relationship and is used to identify the dose form as specified in dm+d. HAS_DOSE_FORM is already defined in SNOMED CT These relationships are inherited from the SNOMED International release and due to differences in editorial policy may identify a different dose form concept.		
HAS_SPECIFIC_ACTIVE_INGREDIENT		

VMP HAS_SPECIFIC_ACTIVE_INGREDIENT VPI
E.g. Atenolol 100mg tablets [VMP] HAS_SPECIFIC_ACTIVE_INGREDIENT Atenolol (substance) [VPI] where VPI = Virtual Product Ingredient
This relationship HAS_SPECIFIC_ACTIVE_INGREDIENT is a UK extension specific relationship and is used to identify the active ingredient as specified in dm+d. HAS_ACTIVE_INGREDIENT relationship is already defined in SNOMED CT. These relationships are inherited from the SNOMED International release and due to differences in editorial policy may identify a different substance concept.
NON_AVAILABILITY_INDICATOR
This relationship is a UK extension specific relationship with a set of dm+d permissible values (qualifier values).
PRESCRIBING_STATUS
This relationship is a UK extension specific relationship with a set of dm+d permissible values (qualifier values).
HAS_BASIS_OF_STRENGTH_SUBSTANCE
This relationship is a UK extension specific relationship and only exists if the basis of strength substance differs from the substance as stated in the HAS_SPECIFIC_ACTIVE_INGREDIENT relationship.
HAS_UNIT_OF_ADMINISTRATION
This relationship is a UK extension specific relationship with a set of permissible values (qualifier values).
It is applied to both SNOMED CT UK Drug Extension concepts and SNOMED CT International Release concepts that are VMPs. The relationship is inherited onto their AMPs.
This attribute is only available and populated with values for specified concepts meeting the following criteria:
<ul style="list-style-type: none"> a. All members of the insulins subset will have a HAS_UNIT_OF_ADMINISTRATION relationship to 258666001 unit (qualifier value) b. All VMPs with a dose form of: <ul style="list-style-type: none"> i. eye drops ii. nasal drops iii. ear drops iv. ear/eye drops solution v. ear/eye/nose drops solution vi. homeopathic drops vii. modified release drops
will have a HAS_UNIT_OF_ADMINISTRATION relationship to 10693611000001100 drop (qualifier value)
viii. All VMPs with a dose form of Oral drops are excluded

3.6.3 Virtual Medicinal Product Pack (VMPP)

VMP Concepts		
All dm+d derived VMPP concepts will be members of a VMPP subset. Provenance denoted by UK subset Id.		
Descriptions / Id	Type	Occurrence
VMPP_ID	SNOMED CT ID	1
Unique identifier for the Virtual Medicinal Product Pack. This identifier will be taken from the SNOMED CT UK Drug Extension namespace.		
VMPP_FSN	string	1
The Fully Specified Name for the Virtual Medicinal Product Pack. This will be in the format “Virtual Medicinal product Pack (product)”.		
VMPP_UK_PREFERRED_TERM	string	1
The UK Preferred Term for the Virtual Medicinal Product Pack. The dm+d realm description subset should be used to identify the current dm+d VMPP name as the Preferred Term where this is required for implementations.		
Relationships		
In the case of hierarchical relationships (i.e. IS_A) only the closest relationship is represented explicitly. The reciprocal relationship is implied together with relationships to its children. All concepts are primitive. HAS_DISPENSED_DOSE_FORM; HAS_SPECIFIC_ACTIVE_INGREDIENT; PRESCRIBING_STATUS, NON_AVAILABILITY_INDICATOR HAS_Basis_Of_Strength_Substance are all stated relationships.		
IS_A		
VMPP (<i>product</i>) IS_A VMPP (<i>concept class</i>) E.g. Atenolol 100mg tablets 28 IS_A VMPP		
HAS_VMP		
VMPP HAS_VMP VMP Atenolol 100mg tablets 28 HAS_VMP Atenolol 100mg tablets		

3.6.4 Actual Medicinal Product (AMP)

AMP Concepts		
All dm+d derived AMP concepts will be members of an AMP subset. Provenance denoted by UK subset Id		
Descriptions / Id	Type	Occurrence
AMP_ID	SNOMED CT ID	1
Unique identifier for the Actual Medicinal Product. This identifier will be taken from the SNOMED CT UK Drug Extension namespace.		
AMP_FSN	string	1
The Fully Specified Name for the Actual Medicinal Product. This will be in the format “Actual Medicinal Product (product)”.		
AMP_UK_PREFERRED_TERM	string	1
The UK Preferred Term for the Actual Medicinal Product. The dm+d realm description subset should be used to identify the current dm+d AMP description as the Preferred Term where this is required for implementations.		
Relationships		
In the case of hierarchical relationships (i.e. IS_A) only the closest relationship is represented explicitly. The reciprocal relationship is implied together with relationships to its children. All concepts are primitive. HAS_DISPENSED_DOSE_FORM; HAS_SPECIFIC_ACTIVE_INGREDIENT; PRESCRIBING_STATUS; HAS_BASIS_OF STRENGTH_SUBSTANCE and NON_AVAILABILITY_INDICATOR are all stated relationships.		
IS_A		
AMP (<i>product</i>) IS_A AMP (<i>concept class</i>) E.g. Tenormin 100mg tablets (AstraZeneca) IS_A AMP AMP IS_A VMP E.g. Tenormin 100mg tablets (AstraZeneca) [AMP] IS_A Atenolol 100mg tablets [VMP] Through this relationship, the AMP will inherit defining characteristics such as HAS_SPECIFIC_ACTIVE_INGREDIENT and HAS_DISPENSED_DOSE_FORM. AMP IS_A TF One AMP may have zero to one TF associated with it. E.g. Tenormin 100mg tablets (AstraZeneca) [AMP] IS_A Tenormin [TF]		
HAS_EXCIPIENT		

AMP HAS_EXCIPIENT Ingredient (substance)

Every concept will have an HAS_EXCIPIENT relationship either to an excipient or to a 'not declared' concept. This is a SNOMED CT UK Drug Extension relationship. For information on which excipients (substance) are identified using this relationship see the dm+d Editorial policy.

3.6.5 Actual Medicinal Product Pack (AMPP)

AMPP Concepts		
All dm+d derived AMPP concepts will be members of an AMPP subset. Provenance denoted by UK subset Id		
Descriptions / Id	Type	Occurrence
AMPP_ID	SNOMED CT ID	1
Unique identifier for the Actual Medicinal Product Pack. This identifier will be taken from the SNOMED CT UK Drug Extension namespace.		
AMPP_FSN	string	1
The Fully Specified Name for the Actual Medicinal Product Pack. This will be in the format “Actual Medicinal Product Pack (product)”.		
AMPP_UK_PREFERRED_TERM	string	1
The UK Preferred Term for the Actual Medicinal Product. The dm+d realm description subset should be used to identify the current dm+d AMPP description as the Preferred Term where this is required for implementations.		
Relationships		
In the case of hierarchical relationships (i.e. IS_A) only the closest relationship is represented explicitly. The reciprocal relationship is implied together with relationships to its children. All concepts are primitive. HAS_DISPENSED_DOSE_FORM; HAS_SPECIFIC_ACTIVE_INGREDIENT; PRESCRIBING_STATUS, NON_AVAILABILITY_INDICATOR and HAS_EXCIPIENT are all stated relationships.		
IS_A		
AMPP (<i>product</i>) IS_A AMPP (<i>concept class</i>) E.g. Tenormin 100mg tablets (AstraZeneca) 28 IS_A AMPP AMPP IS_A VMPP E.g. Tenormin 100mg tablets (AstraZeneca) 28 [AMPP] IS_A Atenolol 100mg tablets 28 [VMPP] This relationship is a SNOMED CT relationship.		
HAS_AMP		
AMPP HAS_AMP AMP E.g. Tenormin 100mg tablets (AstraZeneca) 28 [AMPP] HAS_AMP Tenormin 100mg tablets (AstraZeneca) [AMP]		
DISCONTINUED_INDICATOR		

This relationship is a UK extension specific relationship with a set of dm+d permissible values (qualifier values).
LEGAL_CATEGORY
This relationship is a UK extension specific relationship with a set of dm+d permissible values (qualifier values).

3.6.6 Trade Family (TF)

TF Concepts		
All TF concepts will be members of a TF subset. Provenance denoted by UK subset Id		
Descriptions / Id	Type	Occurrence
TF_ID	SNOMED CT ID	1
Unique identifier for the Trade Family. This identifier will be taken from the SNOMED CT UK Drug Extension namespace.		
TF_FSN	string	1
The Fully Specified Name for Trade Family. This will be in the format “Trade Family (product)”.		
TF_UK_PREFERRED_TERM	string	1
The UK Preferred Term for the Trade Family name. In most instances this will be the same as the FSN without the semantic tag.		
Relationships		
In the case of hierarchical relationships (i.e. IS_A) only the closest relationship is represented explicitly. The reciprocal relationship is implied together with relationships to its children. All concepts are primitive.		
IS_A		
TF (<i>product</i>) IS_A TF (<i>concept class</i>) Tenormin IS_A TF TF IS_A UK Product IS_A pharmaceutical/biologic product. TF has reciprocal IS_A relationship with AMP		
HAS_TRADE_FAMILY_GROUP		
TF HAS_TRADE_FAMILY_GROUP TFG This relationship is a UK extension specific relationship with a set of permissible values (qualifier values). One TF may have zero to one Trade Family Group associated with it whereas one TFG may have one to many TF associated with it.		

Where the brand name and hence the Trade Family concept created may be ambiguous in the context of a larger terminology (for example where it is the same as an abbreviation commonly used in medical notes) the Trade Family concept will have all current terms (Preferred Term, Synonym and Fully Specified Name) authored with a suffix of “- brand name”

For example:

- PR – brand name (qualifier value)

It may be possible to identify some of these potentially problematic trade names as they come to market. However it may be that some Trade Family concepts that are found to require a clarifying suffix can only be identified in response to feedback from terminologist colleagues or terminology users.

3.6.7 Trade Family Group (TFG)

TFG Concepts		
All TFG concepts will be members of a TFG subset. Provenance denoted by UK subset Id		
Descriptions / Id	Type	Occurrence
TFG_ID	SNOMED CT ID	1
Unique identifier for the Trade Family group. This identifier will be taken from the SNOMED CT UK Drug Extension namespace.		
TFG_FSN	string	1
The Fully Specified Name for Trade Family Group. This will be in the format “Trade Family Group (qualifier value)”.		
TFG_UK_PREFERRED_TERM	string	1
The UK Preferred Term for the Trade Family Group.		
Relationships		
In the case of hierarchical relationships (i.e. IS_A) only the closest relationship is represented explicitly. The reciprocal relationship is implied together with relationships to its children. All concepts are primitive.		
IS_A		
TFG IS_A qualifier value		

Where the brand name and hence the Trade Family Group concept created may be ambiguous in the context of a larger terminology (this may be where it is the same as an abbreviation commonly used in medical notes) the Trade Family Group concepts will have all current terms (Preferred Term, Synonym and Fully Specified Name) authored with a suffix of “- brand group”

For example:

- MSUD – brand group (qualifier value)

It may be possible to identify some of these potentially problematic trade names as they come to market. However it may be that some Trade Family Group concepts that are found require a clarifying suffix can only be identified in response to feedback from terminologist colleagues or terminology users.

4 Product Concepts

4.1 Medicinal Product Types

This section looks at the different product types that are included in the SNOMED CT UK Drug Extension. Medicinal products included in the SNOMED CT UK Drug Extension can be defined by certain defining attributes or characteristics such as a trade product name, strength, form, pack size and active ingredients. The most granular description (containing the most information about a product) is the AMPP (Actual Medicinal Product Pack) and is attributed to a particular manufacturer or supplier

The model is capable of handling the following types of medicinal products:

- Single ingredient
- Multi-ingredient
- Multi-component
- Sub-packs

VTMs may be single-ingredient, multi-ingredient but not multi-component.

VMPs and AMPs may be single ingredient, multi-ingredient or multi-component.

VMPPs and AMPPs may be single ingredient or multi-ingredient, multi-component and/or have sub-packs.

VTMs may have multiple VMPs and AMPs which in turn can have multiple VMPPs and AMPPs.

4.1.1 Single Ingredient

A single ingredient product is one in which there is only one active ingredient in each unit of use (i.e. VMP or AMP). Concept examples using the FSN of single ingredient products include:

- VTM Amoxicillin (product)
- VMP Amoxicillin 500mg capsules (product)
- AMP Amoxil 500mg capsules (GlaxoSmithKline) (product)
- VMPP Amoxicillin 500mg capsules 21 capsule (product)
- AMPP Amoxil 500mg capsules (GlaxoSmithKline) 21 capsule (product)
- TF Amoxil (product)

4.1.2 Multi-ingredient

A multi-ingredient product is one where two or more ingredients are compounded together and cannot be separated. E.g. Zidovudine + Lamivudine. A multi-ingredient product is one in which there are multiple active ingredients in each unit of use. Concept examples using the FSN of multi-ingredient products include:

- VTM Zidovudine + Lamivudine (product)
- VMP Zidovudine 300mg / Lamivudine 150mg tablets (product)

- AMP Combivir 150mg/300mg tablets (ViiV Healthcare UK Ltd) (product)
- VMPP Zidovudine 300mg / Lamivudine 150mg tablets 60 tablet (product)
- AMPP Combivir 150mg/300mg tablets (ViiV Healthcare UK Ltd) 60 tablet 6 x 10 tablets (product)
- TF Combivir (product)

4.1.3 Multi-component

A multi-component product is one where 2 or more components are included in the same pack. Multi-component packs include both:

- Combination packs – where the one pack has different unit dose forms that are intended to be taken sequentially e.g. TriNovum contraceptive tablets;
- Multi-component kits – where the one pack has different unit dose forms but the dosage regimen for each type of unit dose form may be implemented concurrently
e.g. Canesten Oral and Cream Duo.

Concepts (FSN) for Canesten Oral Duo are as follows:

- VTM no VTM are given for multi-component VMPs
- VMP Fluconazole 150mg capsule and Clotrimazole 2% cream (product)
- AMP Canesten Oral and Duo Cream (Bayer plc) (product)
- VMPP Fluconazole 150mg capsule & Clotrimazole 2% cream 1 pack (product)
- AMPP Canesten Oral and Cream Duo (Bayer plc) 1 pack 1 x (1capsule + 10g) (product)

Concepts (FSN) for Trinovum are as follows:

- VTM no VTMs are given for multi-component VMPs
- VMP Generic Trinovum tablets (product)
- AMP Trinovum tablets (Janssen-Cilag Ltd) (product)
- VMPP Generic Trinovum tablets 63 tablet (product)
- AMPP Trinovum tablets (Janssen-Cilag Ltd) 63 tablet 3 x (7tabs + 7tabs + 7tabs) (product)

4.1.3.1 Component Packs

Where there is one or more dose forms (as contained within the multi-component packs), individual dose forms are expressed as component packs. A pack for a multi-ingredient product can therefore have two or more component packs.

VMPs and AMPs and VMPPs and AMPPs need to be present for all components of multi-component packs as well as for the pack itself. If a component VMP/VMPP is only available in a combination pack then this has Prescribing Status relationship of 'not valid as a prescribable product (qualifier value)'.

Examples:AMPP Concepts (FSN) for Canesten Oral Duo are as follows:

- AMPP Canesten 2% thrush cream (Bayer Plc) 20gram (product)
- AMPP Canesten 150mg capsules (Bayer Plc) 1 capsule (product)

The above AMPPs are both components of the multi-component AMPP:

AMPP - Canesten Oral and Cream Duo (Bayer plc) 1 pack 1 x (1capsule + 10g) (product)

AMPP Concepts (FSN) for Trinovum are as follows:

- AMPP Norethisterone 500microgram / Ethinylestradiol 35microgram tablets 21 tablet (product)
- AMPP Norethisterone 1mg / Ethinylestradiol 35microgram tablets 21 tablet (product)
- AMPP Norethisterone 750microgram / Ethinylestradiol 35microgram tablets 21 tablet (product)

The above AMPPs are components of the multi-component AMPP:

Generic Trinovum tablets 63 tablet (product)

4.1.4 General Style Rules

The following rules apply to all names:

- First letter of each drug name will be capitalised;
- rINN naming convention is given priority where available.
- Names will not include commas unless part of the strength representation (e.g. 10,000 units);
- A space will be placed in front of an opening parenthesis and after a closing parenthesis, but not within it;
- Capsules, tablets etc. will be represented in the plural form (unless preparation only contains 1 tablet or 1 capsule);
- Approved strength expressions, forms and unit of measures apply and are detailed in the dm+d Editorial Policy
- All strength representations with microgram and nanogram as the unit of strength will be written out in full.
- The units used in strength representation will be singular e.g. unit, microgram, mg, ml unless part of a numerator/denominator ratio
e.g. Fentanyl 12micrograms/hour transdermal patches compared to Fentanyl 200microgram buccal tablets sugar free
- When applicable the isomeric prefix i.e. D or L used in amino acid isomers will be indicated using a capital letter. The name of the entity itself will be indicated entirely in

lower case if prefixed by anything other than a number. Where the name is broken up using various descriptors the entity names are in lower case.

E.g. L-lysine; 2_Methyl; N-acetyl-L-cysteine.

4.2 Virtual Therapeutic Moiety (VTM)

A Virtual Therapeutic Moiety (VTM) is the abstract representation of the substance(s), which when formulated as a medicinal product is intended by an authorising healthcare professional for use in the treatment of the patient.

The Virtual Therapeutic Moiety is the abstract conceptual representation of the material defining the prescriber's therapeutic intent, divorced from formulation, dose or strength.

4.2.1 Basic principles

The Virtual Therapeutic Moiety follows rINN where available. Generally this name is in fact derived from the base of the active ingredient. The exception to this is where the salt is considered clinically significant and then the precise ingredient (with salt) is specified or there are other overriding reasons why the name should be modified.

VTMs will usually follow the format of:

'Name' or **'Name + Name'**.

A VTM may be linked to one or many VMPs (Virtual Medicinal Product). A VMP may only link to one VTM but a VMP is not required to link to a VTM.

VTMs currently do not exist for:

- Multi-ingredient products where there is more than three ingredients (exceptions do however exist and include vaccines); and
- Multi-component products.

Examples of VTM FSNs and PTs are provided in the table below:

Type of Product	Fully Specified Name	Preferred Term
Single ingredient	Lisinopril (product)	Lisinopril
Single ingredient - salt	Diclofenac potassium (product)	Diclofenac potassium
Multi-ingredient	Zidovudine + Lamivudine (product)	Zidovudine + Lamivudine
Multi-ingredient	Co-amoxiclav (product)	Co-amoxiclav
Multi-component product intended to be taken sequentially e.g. contraceptive pills with inert tablets	No VTMs have been established for multi-component products. E.g. – no VTM currently exists for Prempak C (conjugated oestrogens and norgestrel tablets). However the individual components may have a relationship to the appropriate VTM.	
Multi-component kit		

4.2.2 VTM – Fully Specified Name (FSN) and Preferred Term (PT) Definitions

The Fully Specified Name and Preferred Term of a VTM are defined below:

Description Component	Description Unless specified the description refers to both FSN and PT
VTM FSN	VTM_Ingredient_Details “(product)”
VTM PT	VTM_Ingredient_Details
Ingredient_Details	<p>Ingredient_Name {“+” Ingredient_Name}</p> <p>Where ‘Ingredient_Name’ is the approved name for the active ingredient(s) given in accordance with the naming convention (see rules section below).</p> <ol style="list-style-type: none"> 1. Currently VTMs are only expressed for single and multi-ingredient products and NOT for multi-component products. 2. For multi-ingredient products, the active substances are grouped together and separated by a “+” (product)
(product)	The semantic tag used in the FSN of all VTM concepts

4.2.3 VTM – Fully Specified Name and Preferred Term Rules

Rule Id	Description
VTM-FSN/PT-1	All FSN and PT rules apply (see section 3.5.2)
VTM-FSN/PT- 2	<p>The VTM for both FSN and PT will be derived from the active ingredient(s) and which will be named in accordance with the recommended international non-proprietary name (rINN) or modified recommended international non-proprietary name (INN_m) where available.</p> <p>Where there is no rINN/INN_m available, a proposed international non-proprietary name (PINN) or the British Approved Name (BAN) or modified British approved name (BANM) will be used followed by the United States adopted name(USAN) or other approved or clinically intuitive names.</p> <p>Exceptions: Adrenaline and Noradrenaline</p> <p>Any modification that affects dosage or pharmaceutical properties of an associated VMP must be represented in the name field of the VTM but only if an alternative VMP exists that is not modified. E.g. Fenofibrate Micronised; Daunorubicin (liposomal).</p> <p>Similarly salts are expressed in a VTM only when there are two or more salts available in a dose form with clinically discernible differences between the salts e.g. Flupentixol decanoate and Flupentixol dihydrochloride.</p>
VTM-FSN/PT- 3	The first letter of each drug is capitalised.
VTM-FSN/PT- 4	<p>A VTM must represent all the active ingredients expressed in any associated VMP as a VMP can only link to one VTM.</p> <p>If a VMP contains four or more compounded ingredients then a VTM is not usually established. See dm+d Editorial policy for further details.</p>
VTM-FSN/PT- 5	<p>For multi-ingredient products, active substances are ordered to align with the British National Formulary (BNF).</p> <p>For items out of scope of the BNF, ingredients follow the VMP word order. (See VMP rules).</p>

VTM-FSN/PT- 6	<p>Co-names (e.g. Co-codamol) will be used to represent a VTM in preference to individual constituents where a recognised co-name (BAN) exists for that product.</p> <p>Co-names should only be used in accordance with the BAN definition.</p> <p>A co-name therefore can only be used for strength ratios as defined by the BAN.</p> <p>For strength ratios not defined by the BAN then a combination VTM will be created to represent the constituent parts (e.g. Paracetamol + Dihydrocodeine for Paracetamol 500mg/Dihydrocodeine 20mg tablets).</p>
VTM-FSN/PT-7	<p>Where there is a requirement to author both a salt free or base VTM alongside a VTM that includes a salt then “(base)” should be included in the textual description of the salt free VTM. E.g. Hyoscine (base).</p>

4.3 Virtual Medicinal Product (VMP)

A Virtual Medicinal Product (VMP) is an abstract concept representing the properties of one or more clinically equivalent Actual Medicinal Products, where clinical is defined as relating to the course of a disease.

A Virtual Medicinal Product (VMP) is an abstract concept representing a template of the properties which constitute one or more actual medicinal products.

The VMP describes a generic product without supplier or trade name information.

4.3.1 Basic principles

VMPs will usually follow the format of:

‘Name strength form’.

Multi-ingredients in a compounded preparation will be separated by “/” with only a final representation of form.

Multi-components will follow the format:

‘Name strength form “and” Name strength form’.

Modification(s), unit dose and ‘freeness’ information will be provided where applicable – For example -

‘Name Strength Modification(s) Form Unit dose xxx-free(s)’.

Where unit dose is the same as form it will not be represented twice (for example tablet represents form and unit dose).

VMPs will be created for each different strength and form of a licensed medicinal product. All VMP concepts will also have relationships to all their active ingredients as identified by the `has_specific_active_ingredient` relationship.

For unlicensed products refer to NHS Dictionary of Medicines and Devices Editorial Policy.

Examples of FSNs and PTs for dm+d derived VMPs are provided in the table below:

Type of Product	Fully Specified Name	Preferred Term
Single ingredient	Lisinopril 10mg tablets (product)	Lisinopril 10mg tablets
Single ingredient - salt	Diclofenac potassium 25mg tablets (product)	Diclofenac potassium 25mg tablets
Multi-ingredient -2 ingredients	Zidovudine 300mg / Lamivudine 150mg tablets (product)	Zidovudine 300mg / Lamivudine 150mg tablets
	Oxycodone 10mg / Naloxone 5mg modified-release tablets (product)	Oxycodone 10mg / Naloxone 5mg modified-release tablets
Multi-ingredient – more than 2 ingredients	Generic Trizivir tablets (product)	Generic Trizivir tablets

Multi-component product intended to be taken sequentially e.g. HRT	Conjugated oestrogens 1.25mg tablets and Norgestrel 150microgram tablets (product)	Conjugated oestrogens 1.25mg tablets and Norgestrel 150microgram tablets
Multi-component product intended to be taken sequentially e.g. contraceptive pills with inert tablets /triphasic contraceptive pills/HRT – more than 2 ingredients	Generic Synphase tablets (product)	Generic Synphase tablets
Multi-component product kit	Clotrimazole 500mg pessary and Clotrimazole 2% cream (product)	Clotrimazole 500mg pessary and Clotrimazole 2% cream
Solution for injection	Ondansetron 4mg/2ml solution for injection ampoules (product)	Ondansetron 4mg/2ml solution for injection ampoules
Solution for Infusion	Glyceryl trinitrate 10mg/10ml solution for infusion ampoules (product)	Glyceryl trinitrate 10mg/10ml solution for infusion ampoules
Solution for Infusion For bags and polyethylene bottles	Sodium chloride 0.45% infusion 500ml bags (product)	Sodium chloride 0.45% infusion 500ml bags
Patch	Fentanyl 100micrograms/hour transdermal patches (product)	Fentanyl 100micrograms/hour transdermal patches

4.3.2 VMP – Fully Specified Name (FSN) and Preferred Term (PT) Definitions

The Fully Specified Name and Preferred Term of a VMP are defined below:

Description Component	Description Unless specified the description refers to both FSN and PT
VMP FSN	<p>Ingredients_With_Strength “ “ Form [Unit_Dose_Form_Details] {freeness_information} (Ingredient_Name_Strength “ “ Form “and” Ingredient_Name_Strength “ “ Form) “(product)”</p> <p>Where for single and multi-ingredient compounded products: Ingredients_With_Strength “ “ Form [Unit_Dose_Form_Details] {freeness_information} “(product)” applies</p> <p>OR ()</p> <p>for multi-component product with 2 items: (Ingredient_Name_Strength “ “ Form “and” Ingredient_Name_Strength “ “ Form) “(product)”</p>
VMP PT	<p>Ingredients_With_Strength “ “ Form [Unit_Dose_Form_Details] {freeness_information} (Ingredient_Name_Strength “ “ Form “and” Ingredient_Name_Strength “ “ Form)</p>
Ingredients_With_Strength	<p>Ingredient_Name_Strength { “/” Ingredient_Name_Strength }</p> <p>A list of the name and strength (if available) of each of the active ingredients of the VMP where:</p> <ol style="list-style-type: none"> 1. The name string and strength string of an ingredient are separated by a space; 2. The name and strength pairs for different ingredients in a compounded product are separated by a “ / ”. 3. For multi-component products, different components are separated by “and”. 4. For combination products, ingredients are ordered to align with standard references. The BNF is the preferred initial source where products are contained within the BNF. 5. For items out of scope of the BNF the active ingredient present in the greatest amount/strength being expressed first and where the strengths are equal, the ingredients are ordered alphabetically. 6. If more than one salt is available in the same dose form then the salt is expressed in preference to the base where normally a base would be expressed.
Ingredient_Name_Strength	<p>The name string and strength pair for each ingredient /component where VMP has specific_active_ingredient relationship.</p>
Form	<p>This is the dose form described in a non-proprietary way. It is the preferred term (PT) used in the relationship VMP has_dispersed_dose_form.</p>
Unit_Dose_Form_Details	<p>This represents the unit dose form size (value and units e.g. 2ml) and the unit dose unit of measure (e.g. ampoule) where applicable. The latter is</p>

	<p>the unit of measure that can be physically handled.</p> <p>In parenteral preparations, the unit dose volume is included at the end of the term with the unit dose form, only when it has not previously been quoted as part of the strength expression.</p> <p>E.g.</p> <ol style="list-style-type: none"> 1. Furosemide 20mg/2ml solution for injection ampoules (no unit dose volume (udv) with the unit dose form) 2. Glucose 10% solution for injection 1 litre bags (udv with the unit dose form). <p>The exception – parenterals containing potassium or other base chemicals, where the unit dose volume is quoted twice:</p> <p>E.g.</p> <ul style="list-style-type: none"> • Potassium chloride 15% (potassium 20mmol/10ml) solution for injection 10ml ampoules. <p>The unit dose form size (value and units) is not shown when it has a null value or a value of '1' or when the unit matches the PT of the VMP's Form (e.g. 1 tablet).</p> <p>Expression of unit dose size will not be subject to the same rules as those that apply to expression of strength. It will be allowable to state 0.5g and 0.5ml as a unit dose size.</p> <p>Continuous liquids and creams have no unit dose expressed.</p> <ul style="list-style-type: none"> • E.g. Furosemide 10mg/5ml oral suspension; Clotrimazole 2% cream.
Freeness_information	This allows representation of freeness such as sugar free; preservative free. No hyphen is used i.e. 'sugar free' and not 'sugar-free'.
(product)	The semantic tag used in the FSN of all VMP concepts.

4.3.3 VMP – Fully Specified Name and Preferred Term Rules

Rule ID	Description
VMP-FSN/PT-1	All FSN and PT rules apply (see section 3.5.2)
VMP-FSN/PT-2	<p>A VMP will utilise an approved generic name where one is available. This will be the rINN or INN_m, with the exception of adrenaline and noradrenaline only. If there is no rINN the BAN will be used. If there is no BAN then another approved name will be used providing it is 'clinically intuitive'</p> <p>If a VMP is available in one form as two or more salts and the rINN is insufficiently precise the INN_m will be used except where a BP monograph or the MHRA has determined that the preparations are clinically equivalent e.g. warfarin tablets, amlodipine tablets.</p> <p>For drugs with narrow therapeutic indices (e.g. phenytoin), the VMP name will reflect the strength i.e. Phenytoin sodium 50mg capsules (Epanutin) and Phenytoin 50mg tablets (Epanutin Infatabs).</p>
VMP-FSN/PT-3	<p>Co-names will be used to represent a VMP in preference to individual constituents where a recognised co-name (BAN) exists for that product:</p> <ul style="list-style-type: none"> • Co-names should only be used in accordance with the BAN definition. • A co-name can therefore only be used for strength ratios as defined by the BAN. • Strengths ratios must be represented alongside the co-name. E.g. Co-dydramol 10mg/500mg tablets. • Order of strength representation will follow BP convention. • For products with strength ratios not defined by the BAN then a VMP will be created that represents the constituent parts together with the strength of each constituent (E.g. Paracetamol 500mg/Dihydrocodeine 20mg tablets).
VMP-FSN/PT-4	Capitalisation - all drug names will begin with an uppercase character.
VMP-FSN/PT-5	<p>A maximum of two active ingredients is represented in the VMP. If a product contains 3 or more compounded ingredients or components then a true VMP is not usually created. Instead the VMP name is made up of a prefix "Generic" followed by the AMP name. E.g. Generic Trizivir tablets. If two or more proprietary products exist, where the name would be generic xxx, the name of the product marketed first i.e. the originator product, will be used.</p> <p>Exceptions:</p> <ul style="list-style-type: none"> • Vaccines or large volume parenteral fluids containing more than 2 active ingredients and for which no current approved generic name is in existence, a true VMP name will be supplied. <p>Exceptions will be reviewed on a case by case basis.</p>
VMP-FSN/PT-6	<p>For multi-ingredient compounded preparations the ingredients are ordered to align with the British National Formulary (BNF).</p> <p>Where a product is not in the BNF, the active ingredient in greatest quantity/strength is populated first followed by alphabetical order if strengths are the same.</p> <p>Exceptions:</p>

	No known exceptions to this rule
VMP-FSN/PT-7	<p>Strength expressions – For information on strength expressions refer to the NHS Dictionary of Medicines and Devices Editorial Policy. Generally all expressions of strength will avoid using decimal expressions starting with the integer 0. E.g. 500micrograms instead of 0.5mg; 500ml instead of 0.5L.</p> <p>Exceptions to this general rule are limited to:</p> <ul style="list-style-type: none"> • Representation of strength as a percentage, i.e. 0.05% is acceptable. • Representation of unit dose / total dose volume in ml, i.e. use of microlitres will be avoided e.g. 0.5ml unit dose or 300micrograms/0.3ml instead of 500microlitres unit dose or 300micrograms/300microlitres. • However, decimal expressions commencing with an integer other than 0 will be used in preference to non-decimal greater than or equal to 1000. I.e. 1g instead of 1000mg, 2.5mg instead of 2500micrograms
VMP-FSN/PT-8	For representation of unit of measure, free-ness, form, unit dose forms refer to the NHS Dictionary of Medicines and Devices Editorial Policy.
VMP-FSN/PT-9	<p>Freeness representation</p> <p>Sugar free, CFC free, gluten free and preservative free will be included in the VMP name.</p> <p>Details of freeness will be obtained from the BNF, Drug Tariff and Summary of Product Characteristics.</p>
VMP-FSN/PT-10	Flavours will not be included at VMP level.
VMP-FSN/PT-11	Plurality – All VMPs unit dose forms will be described as plural entities i.e. tablets as opposed to tablet, vials as opposed to vial. This applies to 'discrete' dose forms only. Where the dose form is 'continuous', e.g. for a tube of cream or a bottle of oral solution, the unit dose form will be described in the singular according to the form e.g. oral solution, cream, ointment etc.

4.4 Virtual Medicinal Product Pack (VMPP)

A Virtual Medicinal Product pack (VMPP) is an abstract concept representing the properties of one or more quantitatively equivalent Actual Medicinal Product Packs (AMPPs).

Identity and amount of medicinal product within a Virtual Medicinal Product Pack is expressed by mass, volume, number of entities or otherwise in a container, intermediate container(s) or package as supplied by a manufacturer or supplier.

The VMPP takes the description of the VMP and provides information about various pack sizes or content associated with the VMP.

4.4.1 Basic principles

VMPPs will usually follow the format of:

‘VMP name + VMPP quantity + VMPP Quantity unit of measure’.

The amount of medicinal product within a VMPP can be expressed by mass, volume, number of entities or otherwise in a container, intermediate container(s) or package as supplied by a manufacturer or supplier.

For every VMPP there will be one or more AMPPs associated with it. Quantitatively equivalent AMPPs are therefore those that have the same base active ingredient (or salt where therapeutically significant) as well as the same strength, dose form and pack size.

For combination packs a VMPP needs to exist for all components of the combination pack as well as for the combination pack itself.

Examples of VMPPs FSNs and PTs are provided in the table below:

Type of Product	Fully Specified Name	Preferred Term
Single ingredient	Lisinopril 10mg tablets 28 tablet (product)	Lisinopril 10mg tablets 28 tablet
Single ingredient - salt	Diclofenac potassium 25mg tablets 28 tablet (product)	Diclofenac potassium 25mg tablets 28 tablet
Multi-ingredient -2 ingredients	Zidovudine 300mg / Lamivudine 150mg tablets 60 tablet (product)	Zidovudine 300mg / Lamivudine 150mg tablets 60 tablet
	Oxycodone 10mg / Naloxone 5mg modified-release tablets 56 tablet (product)	Oxycodone 10mg / Naloxone 5mg modified-release tablets 56 tablet
Multi-ingredient – more than 2 ingredients	Generic Trizivir tablets 60 tablet (product)	Generic Trizivir tablets 60 tablet
Multi–component product intended to be taken sequentially e.g. HRT	Conjugated oestrogens 1.25mg tablets and Norgestrel 150microgram tablets 120 tablet (product)	Conjugated oestrogens 1.25mg tablets and Norgestrel 150microgram tablets 120 tablet
Multi–component product intended to be taken sequentially e.g. contraceptive pills with inert tablets /triphasic contraceptive pills/HRT – more than 2	Generic Synphase tablets 21 tablet (product)	Generic Synphase tablets 21 tablet

ingredients		
Multi-component kit	Clotrimazole 500mg pessary and Clotrimazole 2% cream 1 pack (product)	Clotrimazole 500mg pessary and Clotrimazole 2% cream 1 pack
Multi-component kit	Dydrogesterone 10mg tablets and Estradiol 40micrograms/24hours transdermal patches 1 month supply (product)	Dydrogesterone 10mg tablets and Estradiol 40micrograms/24hours transdermal patches 1 month supply

4.4.2 VMPP – Fully Specified Name (FSN) and Preferred Term (PT) Definitions

The Fully Specified Name and Preferred Term of a VMPP are defined below:

Description Component	Description Unless specified the description refers to both FSN and PT
VMPP FSN	VMP_Name “ “ Total_Quantity_Pack_Size_Details “(product)”
VMPP PT	VMPP PT: = VMP_Name “ “ Total_Quantity_Pack_Size_Details
VMP_Name	<p>This is the name given to the VMP as detailed in section 4.3.2. The VMP_Name is derived from the VMP_ FSN minus the semantic tag.</p> <p>This component therefore includes the Ingredients_With_Strength details, Form and Unit_Dose_Form given for the VMP where VMPP has_VMP VMP.</p>
Total_Quantity_Pack_Size_Details	<p>Descriptive terms may be used to express quantity and/or pack size details for a VMPP. A list of allowable descriptive terms to describe a unit of measure at VMPP level is provided NHS Dictionary of Medicines and Devices Editorial Policy.</p> <p>For single ingredient VMPPs this component includes the ‘total unit of use quantity value’ and the preferred term of the unit of measure (e.g. 28 tablet) – the quantity and unit of measure being separated by a space.</p> <p>For multi-component products total quantity may be expressed in terms of number of days supply e.g. 1 month’s supply or simply as a pack e.g. 1 pack.</p>
(product)	The semantic tag used in the FSN of all VMPP concepts

4.4.3 VMPP – Fully Specified Name and Preferred Term Rules

Rules ID	Description
VMPP-FSN/PT-1	All rules in section 3.5.2 (Fully Specified Name Definition and Rules) apply.
VMPP-FSN/PT-2	<p>The rules for naming VMPs therefore automatically apply to VMPPs.</p> <p>For multi-component VMPPs, the multi-component VMP name is used.</p>
VMPP-FSN/PT-3	<p>At VMPP level, a unit of measure is used to indicate the amount of VMP within a container. For this purpose the unit of measure is expressed in the singular e.g. 28 tablet; 100 ml.</p> <p>Descriptive terms (e.g. month supply, unit dose) can also be used within a VMPP. A list of permissible descriptive terms forms part of a subset of the forms terms and is detailed in the NHS Dictionary of medicines and Devices Editorial Policy.</p> <p>For multi-component packs:</p> <ul style="list-style-type: none"> • If all the components have the same unit dose form, the pack size is the total number of unit dose forms (i.e. x tablet) • If the components are different dose forms but both are 'discrete', the pack size is the total number of unit dose forms. E.g. If the pack consists of capsules and tablets the pack size = x unit dose • If the pack consists of a discrete and continuous unit dose form, the pack size can be represented as '1 pack' where duration cannot be specified or is variable. • Where the duration can be specified in terms of week(s) or month(s) then this is represented e.g. 1 month supply. • The above rules now take preference over expressing the number of components in a pack.

4.5 Actual Medicinal Product (AMP)

An Actual Medicinal Product (AMP) is a single dose unit of a finished dose form (unless the product is presented as a continuous dosage form), attributable to an identified supplier that contains a specified amount of an ingredient substance.

An Actual medicinal Product is a medicinal product that has been made available by a manufacturer/supplier. It is the physical entity that is taken by the patient.

Examples of single dose units of a finished dose form include tablets, capsules, suppositories, pessaries, sachets – this category covers discrete entities that have a consistent physically measurable dose.

Examples of continuous dose forms include creams, ointments, gels, pastes, foams, liquids – this category covers those products where a consistent physically measurable dose cannot be defined.

4.5.1 Basic Principles

AMPs will usually follow the format of:

‘AMP name + (Supplier)’.

For generic drugs the AMP name will be the same as the VMP name plus supplier but for proprietary drugs this will be the ‘trade name’ which is derived from the Summary of Product Characteristics (SPC) name of the product + Supplier details. Details of strength, form (which may be represented as a proprietary form such a Durule) and other identifying information (e.g. sugar free) may be included as part of the AMP name.

The Actual Medicinal Product will provide sufficient information to uniquely identify the product but not the size of the pack that the supplier makes available for purchase/dispensing.

Examples of AMPs FSNs and PTs are provided in the table below:

Type of Product	Fully Specified Name	Preferred Term
Single ingredient	Zestril 10mg tablets (AstraZeneca UK Ltd) (product)	Zestril 10mg tablets (AstraZeneca UK Ltd)
Single ingredient - salt	Voltarol Rapid 25mg tablets (Novartis Pharmaceuticals UK Ltd) (product)	Voltarol Rapid 25mg tablets (Novartis Pharmaceuticals UK Ltd)
Multi-ingredient -2 ingredients	Combivir 150mg/300mg tablets (ViiV Healthcare UK Ltd) (product)	Combivir 150mg/300mg tablets (ViiV Healthcare UK Ltd)
	Targinact 10mg/5mg modified-release tablets (Napp Pharmaceuticals Ltd) (product)	Targinact 10mg/5mg modified-release tablets (Napp Pharmaceuticals Ltd)
Multi-ingredient – more than 2 ingredients	Trizivir tablets (ViiV Healthcare UK Ltd) (product)	Trizivir tablets (ViiV Healthcare UK Ltd)
Multi-component product intended to be taken sequentially e.g. HRT	Prempak-C 0.625mg tablets (Sigma Pharmaceuticals Plc) (product)	Prempak-C 0.625mg tablets (Sigma Pharmaceuticals Plc)

Multi-component kit	Canesten Combi 500mg pessary and 2% cream (Bayer Plc) (product)	Canesten Combi 500mg pessary and 2% cream (Bayer Plc)
Multi-component kit	Femapak 40 (Solvay Healthcare Ltd) (product)	Femapak 40 (Solvay Healthcare Ltd)
Other identifying information	Calpol Paediatric 120mg/5ml oral suspension sugar free (McNeil Products Ltd) (product)	Calpol Paediatric 120mg/5ml oral suspension sugar free (McNeil Products Ltd)
Infusions (bags)	Sodium chloride 0.9% infusion 100ml bags (A A H Pharmaceuticals Ltd) (product)	Sodium chloride 0.9% infusion 100ml bags (A A H Pharmaceuticals Ltd)
Proprietary dose forms	Glucose 2.5% / Sodium chloride 0.45% infusion 500ml Viaflex bags (Baxter healthcare Ltd) (product)	Glucose 2.5% / Sodium chloride 0.45% infusion 500ml Viaflex bags (Baxter healthcare Ltd)

4.5.2 AMP – Fully Specified Name (FSN) and Preferred Term (PT) Definitions

In the case of proprietary medicines as far as is practicable the name of the SPC will be utilised. However to provide consistency in representation and to reduce ambiguity the following syntax has been devised. This allows representation of additional information where it has not been provided in the SPC name, details which may be determined from the product literature.

The Fully Specified Name and Preferred Term of a VMPP are defined below:

Description Component	Description Unless specified the description refers to both FSN and PT
AMP FSN	AMP FSN: = Trade_Name [suffix] [Strength_Details {(/" Strength_Details)}} " Generic_or_Proprietary_form [Unit_Dose_Form_Details] { "and" Strength_Details " Generic_or_Proprietary_Form} { Other_Identifying_Information} {" Supplier_Details ") "(product)"
AMP PT	AMP PT: = Trade_Name [Suffix] [Strength_Details {(/" Strength_Details)}} " Generic_or_Proprietary_Form [Unit_Dose_Form_Details] { "and" Strength_Details " Generic_or_Proprietary_Form} { Other_Identifying_Information} {" Supplier_Details ")
Trade_Name [suffix]	The Trade_Name [suffix] is derived from the Summary of Product Characteristics (SPC) name for the product. Trade_Name is taken from the base of the name devoid of strength and form and may include a suffix which is represented here as optional. This allows addition of a suffix not included in the SPC name if deemed appropriate.
Strength_Details	This includes details of strengths of either a single ingredient product, a multi-ingredient (compounded) product (details separated by"/") or for items contained within a multi-component product. E.g. 0.625mg; 300mg/150mg for single and multi-ingredient products. For multi-component products details are represented using Strength_Details followed by form and repeated for multiple components e.g. 500mg pessary and 2% cream.
Generic_Or_Proprietary_Form	This may be populated with either a generic dose form such as a tablet or a proprietary (Trademarked) dose form such as Durule.
Unit_Dose_Form_Details	Unit dose form is represented in the same way as for VMPPs except that proprietary dose forms may be used to represent units of measure E.g. Viaflex bags.
Other_Identifying_Information	Additional details may be provided to avoid ambiguity or duplication. This is usually descriptive in nature e.g. sugar free, flavours (when not included as part of the name) etc.
Supplier_Details	The name of the supplier/manufacturer of the actual medicinal product.

(product)	Applies to FSN only - The semantic tag used in the FSN of all AMP concepts
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4.5.3 AMP – Fully Specified Name and Preferred Term Rules

Rule ID	Description
AMP-FSN/PT-1	All rules in section 3.5.2 (Fully Specified Name and Preferred Term Definition and Rules) apply
AMP-FSN/PT-2	<p>The name given to the AMP is derived from information provided by the proprietary name in the SPC – Summary of Product Characteristics.</p> <p>The proprietary name forms the ‘root’ and other defining information from the SPC is added to provide an unambiguous name. Such information includes strength, form and any suffixes, flavours or sugar freeness. If this information is not available within the SPC name then it is obtained from the SPC Product Information or manufacturer’s literature.</p> <p>The order of the information may differ from that provided in the SPC Product name from and as a result the syntax provides uniformity in representation.</p>
AMP-FSN/PT-3	<p>Strength representation.</p> <p>The rules governing strength representation depend on how much information is provided about strength within the SPC name and any additional suffixes to ensure that the product name is not in any way ambiguous or duplicated. E.g. Where the strength can be inferred from the name then additional strength details are not represented. E.g. Zestoretic 10 tablets (AstraZeneca UK Ltd).</p> <p>Where the SPC name does not indicate strength and there are no proprietary suffixes then strength may be represented. The same rules apply as for the VMP where strength is represented for a maximum of two active ingredients within a compounded preparation. Such strengths unlike VMPs are ordered according to SPC and separated by ‘/’ e.g. Combivir 150mg/300mg tablets (ViiV Healthcare UK Ltd). Generally if a product contains 3 or more ingredients then the strengths are not represented.</p> <p>Exceptions – where ambiguity exists if only two strengths are indicated</p> <p>E.g.</p> <ul style="list-style-type: none"> • Stalevo 100mg/25mg/200mg tablets • Stalevo 50mg/12.5mg/200mg tablets <p>For multi-component kits such as Canesten Combi, the strength is represented followed by form of product one and repeated for product 2 and so on.</p> <p>Exceptions:</p> <p>No known exceptions to this rule</p>

AMP-FSN/PT-4	Form is always represented. For AMPs a proprietary form may be used if included in the SPC name.
AMP-FSN/PT-5	Flavours will only be included when there is more than one flavour option at the AMP level. If the flavour does not form part of the trade name, it will follow the pharmaceutical form. E.g. Fybogel Orange is part of the trade name and therefore appears before the form.
AMP-FSN/PT-6	The supplier/manufacturer represented will be the one that is most prominent on the actual AMPP packaging.

4.6 Actual Medicinal Product Pack (AMPP)

An Actual Medicinal Product Pack is the packaged product that is supplied for direct patient use or from which AMPs are supplied for direct patient use. It may contain multiple components each of which may or may not be an AMPP in their own right.

An Actual Medicinal Product Pack contains information concerning a medicinal product that has been made available by a manufacturer and/or supplier as a packaged entity.

4.6.1 Basic principles

AMPPs will usually follow the format of:

'AMP name + (Supplier) + VMPP Quantity + VMPP Quantity Unit of Measure + sub-pack information'

Examples of AMPPs FSNs and PTs are provided in the table below:

Type of Product	Fully Specified Name	Preferred Term
Single ingredient	Zestril 10mg tablets (AstraZeneca UK Ltd) 28 tablet 2 x 14 tablets (product)	Zestril 10mg tablets (AstraZeneca UK Ltd) 28 tablet 2 x 14 tablets
Multi-ingredient -2 ingredients	Combivir 150mg/300mg tablets (ViiV Healthcare UK Ltd) 60 tablet 6 x 10 tablets (product)	Combivir 150mg/300mg tablets (ViiV Healthcare UK Ltd) 60 tablet 6 x 10 tablets
Multi-component product intended to be taken sequentially e.g. HRT	Prempak-C 0.625mg tablets (Sigma Pharmaceuticals Plc) 120 tablet (product)	Prempak-C 0.625mg tablets (Sigma Pharmaceuticals Plc) 120 tablet
Multi-component kit	Canesten Combi 500mg pessary and 2% cream (Bayer Plc) 1 pack (product)	Canesten Combi 500mg pessary and 2% cream (Bayer Plc) 1 pack 1 x (1 pessary + 10g)
Multi-component kit	Femapak 40 (Solvay Healthcare Ltd) 1 month supply 1 x (8 patches + 14 tablets) (product)	Femapak 40 (Solvay Healthcare Ltd) 1 month supply 1 x (8 patches + 14 tablets)
Other identifying information	Calpol Paediatric 120mg/5ml oral suspension sugar free (McNeil Products Ltd) (product) 100ml	Calpol Paediatric 120mg/5ml oral suspension sugar free (McNeil Products Ltd) 100ml
Injections	Sodium chloride 0.9% infusion 100ml Viaflo bags (Baxter Healthcare Ltd) 1 bag (product)	Sodium chloride 0.9% infusion 100ml Viaflo bags (Baxter Healthcare Ltd) 1 bag

Flavours	Gaviscon 500mg chewable tablets lemon (Reckitt Benckiser Healthcare (UK) Ltd) 60 tablet 3 x 20 tablets (product)	Gaviscon 500mg chewable tablets lemon (Reckitt Benckiser Healthcare (UK) Ltd) 60 tablet 3 x 20 tablets
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4.6.2 AMPP – Fully Specified Name (FSN) and Preferred Term (PT) Definitions

The Fully Specified Name of an Actual Medicinal Product Pack is defined as follows:

Description Component	Description Unless specified the description refers to both FSN and PT
AMPP FSN	AMP_Name “ “ Total_Quantity_Pack_Size_Details “ “ Sub-pack_Details “(product)”
AMPP PT	AMP_Name “ “ Total_Quantity_Pack_Size_Details “ “ Sub-pack_Details
AMP_Name	This is the name given to the AMP as detailed in section 4.5.2. This component therefore includes the trade name, any suffix or other identifying information to avoid ambiguity, strength, form, unit dose form details where applicable and supplier details.
Total_Quantity_Pack_Size_Details	For single component products the ‘total unit of use quantity value’ and the preferred term of the unit of measure (e.g. 28 tablet) is given where the quantity and unit of measure are separated by a space. For multi-component products total quantity may be expressed in terms of number of days supply e.g. 1 month’s supply or simply as a pack e.g. 1 pack.
Sub-pack_Details	If the AMPP has a number of sub-packs then the details of the size and quantity of sub-packs are provided in brackets. E.g. 1 x (2 x 14)
(product)	Applies to FSN only - The semantic tag used in the FSN of all AMP concepts

4.6.3 AMPP – Fully Specified Name and Preferred Term Rules

Rule ID	Description
AMPP – FSN/PT -1	All rules in section 3.5.2 (Fully Specified Name Definition and Rules) apply.
AMPP – FSN/PT - 2	<p>The FSN & PT for an AMPP will be derived from the AMP_Name. The AMP_Name is derived from the AMP_FSN minus the semantic tag.</p> <p>The rules for naming AMPs therefore automatically apply to AMPPs.</p>
AMPP – FSN/PT - 3	Quantities and quantity unit of measure at AMPP level are expressed in the same way as those at VMPP level.
AMPP-FSN/PT-4	<p>Sub-pack details are expressed for all AMPPs where applicable. This will be in the format of the number of sub packs and total number of units within each sub pack. E.g. 1 x (2x14) or for multi-component packs 1 x (8 patches + 14 tablets).</p> <p>Form for sub-packs is represented in the plural (unless single item) and separated by a space.</p>

4.7 Trade Family (TF)

A Trade Family (TF) is the abstract conceptual representation of a brand group of related actual medicinal products without representation of any attributes of individual products of that brand group (i.e. dose form, presentation strength, flavour).

4.7.1 Basic Principles

A Trade Family concept represents the product brand name of either single component products that contain the same active ingredients or multi-component products which contain the same combination of active ingredients. It is effectively a grouping or ‘family’ of similar products. This concept will allow the recording of medications where only incomplete information is available and the grouping of products for analysis. For example, a patient may be aware they were previously prescribed “Amoxil”, but cannot be more specific about the form and strength or the form and strength is irrelevant for the purpose for which it is recorded.

Examples of Trade Family Fully Specified Name and Preferred terms

Type of Product	Fully Specified Name	Preferred Term
Single ingredient	Amoxil (product)	Amoxil
Multi-ingredient	Gaviscon (product)	Gaviscon
Multi-component product	Prempak- C (product)	Prempak-C
	HeliClear (product)	HeliClear
Exceptions – different ingredients represented by common brand name	Canesten (clotrimazole) (product)	Canesten (clotrimazole)
	Canesten (fluconazole) (product)	Canesten (fluconazole)
Exceptions – suffixed or prefixed branded products representing different ingredients, different licences/ use cases and different release characteristics.	Carace (product)	Carace
	Carace Plus (product)	Carace Plus
	Adalat LA (product)	Adalat LA
	Beta-Adalat (product)	Beta-Adalat
	Medrone (product)	Medrone
	Solu-Medrone (product)	Solu-Medrone

4.7.2 TF – Fully Specified Name and Preferred Term Descriptions

The Fully Specified Name of a Trade Family is defined as follows:

Description Component	Description Unless specified the description refers to both FSN and PT
TF FSN	Trade_Family_Term (product)
TF PT	Trade_Family_Term
Trade_Family_Term	This is the brand name given to a product. E.g. Amoxil A TF must represent a “true brand”. Therefore not all AMPs will have a TF.
(product)	Applies to FSN only - The semantic tag used in the FSN of all TF concepts.

4.7.3 TF – Fully Specified Name and Preferred Term Rules

Rule ID	Description
TF-FSN/PT-1	All rules in section 3.5.2 (Fully Specified Name Definition and Rules) apply.
TF-FSN/PT-2	A TF must represent a “true brand”. Therefore not all AMPs will have a TF. For example the following AMPs will not have a TF name Lloydspharmacy Zinc 15mg tablets (Lloyds Pharmacy Ltd). Lisinopril 10mg tablets (A A H Pharmaceuticals Ltd).
TF-FSN/PT-3	Suffixed or prefixed branded names will become separate Trade family concepts when the suffix or prefix is considered to be a defining characteristic of that particular product. Examples: <ul style="list-style-type: none"> • Different ingredients: Adalat and Beta-Adalat; • Different licences or use cases: Solu-Medrone and Depo-Medrone; • Different release characteristics: Trasicor and Slow-Trasicor; • Different quantities (ratios) for multi-ingredient products: Half Sinemet. • Branded presentations that affect handling: Twisthaler, Autohaler Exceptions: A separate Trade Family name will not be created if a suffix is deemed not to be a defining characteristic but to represent differences in strength. <ul style="list-style-type: none"> • E.g. Atrovent and Atrovent Forte.
TF-FSN/PT-4	The VTM (e.g. lisinopril) will not be represented in the Trade Family name. Exception: VTM will be represented in the Trade Family name when the given “Brand” name can represent products with different ingredients. <ul style="list-style-type: none"> • E.g. Canesten (clotrimazole) (product) and Canesten (fluconazole) (product).
TF-FSN/PT-5	Trade Family names will not be populated where they are ambiguous. For example Antiseptic Cream (The Boots Company) and Haemorrhoid Cream (Nelsons) are ambiguous as they may be interpreted as a generic product to treat an ailment.
TF-FSN/PT-6	Trade Family will not be populated for imported products.
TF-FSN/PT-5	Trade Family names will not be populated for food products
TF-FSN/PT-6	Trade Family will not be appliances other than where there is a specific use case identified

5 Qualifier Value Concepts

5.1 Trade Family Group (TFG)

This qualifier value concept allows for Trade Family products sharing a common root Trade Family name to be grouped. Trade products grouped under this concept may or may not share the same active ingredients.

5.1.1 Basic Principles

The Trade Family Group (TFG) name is the root of the trade name without the suffixes (or prefixes) that define a Trade Family (TF). If a range of products under one TF name do not have any suffixes or prefixes, the TFG name is identical to the TF Name. Trade Families containing non-identical ingredients can be grouped under the Trade Family Group.

Trade Family Group (FSN)	Related Trade Family (FSN)
Adalat (qualifier value)	Adalat (product)
	Adalat LA (product)
	Adalat Retard (product)
	Beta-Adalat (product)
Gaviscon (qualifier value)	Gaviscon (product)
	Gaviscon Cool (product)
Medrone (qualifier value)	Medrone
	Solu-Medrone
	Depo-Medrone
Canesten (qualifier value)	Canesten (clotrimazole) (product)
	Canesten (fluconazole) (product)
	Canesten Oasis (product)

5.1.2 TFG – Fully Specified Name and Preferred Term Descriptions

The Fully Specified Name of a Trade Family Group follows the syntax:

TFG FSN = Trade_Family_Group_Term (qualifier value)

The Preferred term of a Trade Family Group concept follows the syntax:

TFG PT = Trade_Family_Group_Term

Description Component	Description
TFG FSN	Trade_Family_Group_Term (qualifier value)
Trade_Family_Group_Term	This is the 'root' of the Trade Family name and is without any suffix or prefix. It groups TFs with similar names but which may have different ingredients or characteristics.
(qualifier value)	Applies to the FSN only - The semantic tag used in the FSN of all TFG concepts.

5.1.3 TFG – Fully Specified Name and Preferred Term Rules

Rule ID	Description
UK – TFG– FSN/PT -1	All rules in section 3.5.2 (Fully Specified Name Definition and Rules) apply.
UK – TFG– FSN/PT - 2	A TFG will only exist if there are two or more related Trade Families. In other words standalone Trade Families (i.e. where there is no extension to the range through a suffix, prefix or VTM) will not have a TFG e.g. Amoxil
UK – TFG– FSN/PT -3	Trade Families with the same root name (whether it is suffixed or prefixed or it contains the VTM in brackets) will be associated with the same Trade Family Group.
UK – TFG– FSN/PT -4	Trade Family Group concepts are always qualifier value concepts.

6 Radiopharmaceuticals content

6.1 The Model

The model for the representation of radiopharmaceuticals in SNOMED CT is a 5 box model using many of the attributes from dm+d. There are the three hierarchical concept classes as shown below in Figure 3. Each Virtual Radiopharmaceutical Product (VRP) and Actual Radiopharmaceutical Product (ARP) concept in the model is also associated with one or more pack concepts (Virtual Radiopharmaceutical Product Pack and Actual Radiopharmaceutical Product Pack). This model supports the inclusion of radiopharmaceuticals that are included in dm+d. Where radiopharmaceuticals are present in the dm+d data they will be included in both the radiopharmaceutical concept class subsets and the dm+d concept class subsets.

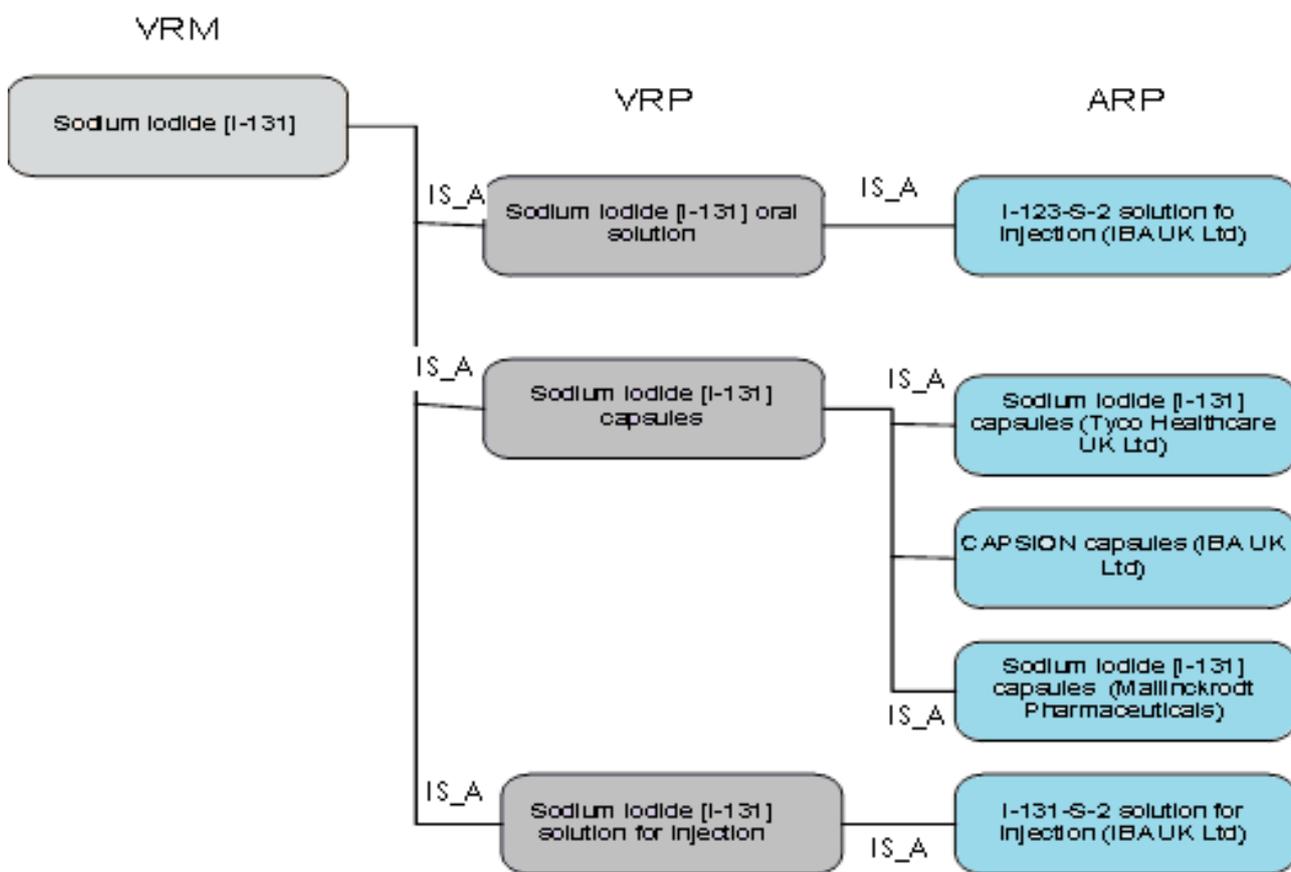


Figure 3: Diagram of the three hierarchical concept classes in the radiopharmaceuticals model

In addition to the IS_A relationships between concepts as shown above all concepts will also be allocated and IS_A relationship to a header concept to identify them as members of a particular concept class as shown in Figure 4 below.

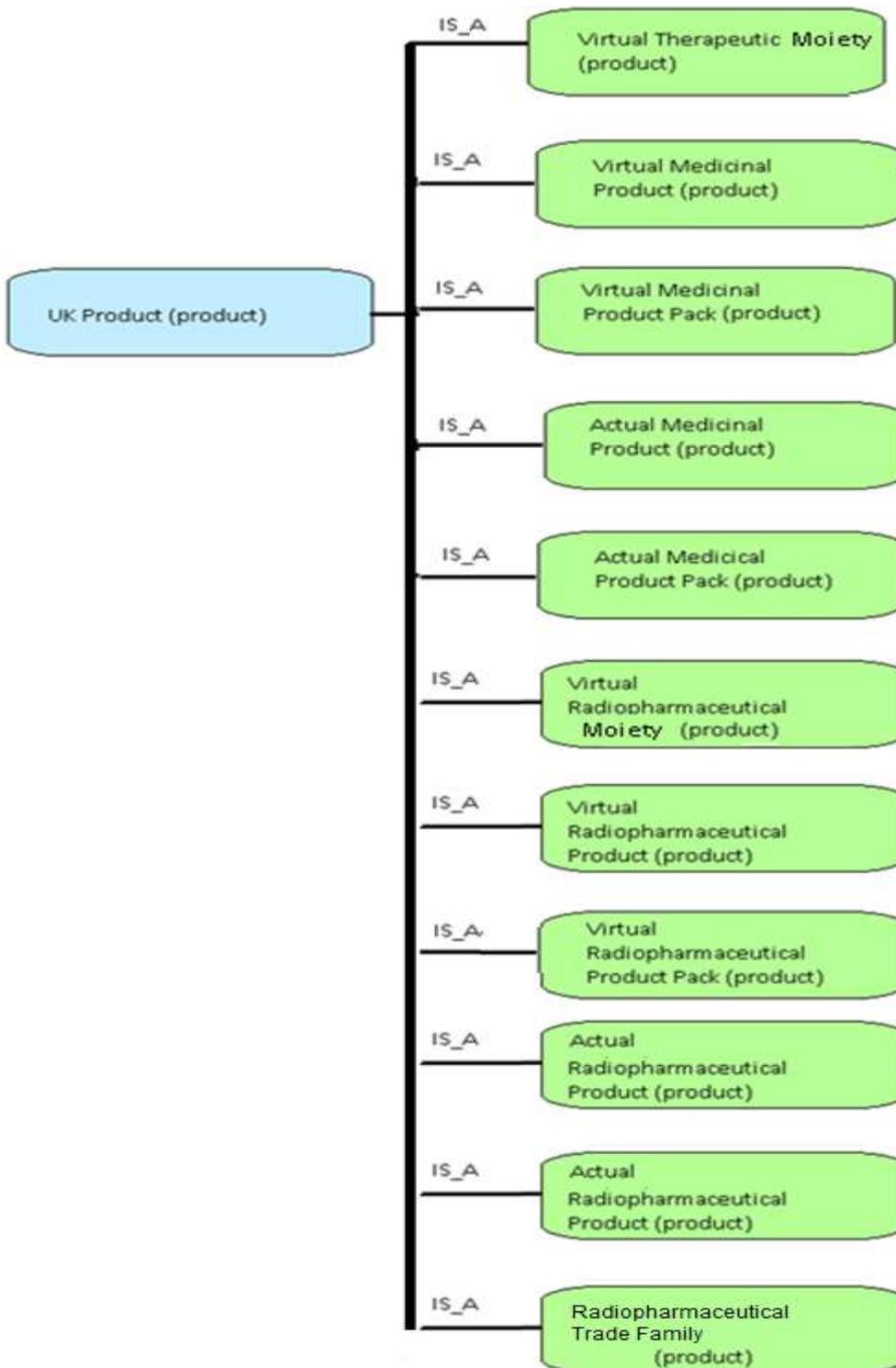


Figure 4: Diagram of IS_A relationships to header concepts in the radiopharmaceuticals model

It should be noted that where pre-existing SNOMED CT concepts are appropriate they will be utilised and not retired in favour of new content.

6.2 Concept Class Definitions

The following are definitions for the concept classes to be used to represent radiopharmaceuticals in the SNOMED CT UK Drug Extension.

6.2.1 Virtual Radiopharmaceutical Moiety

A Virtual Radiopharmaceutical Moiety (VRM) is an abstract concept representing the prescriber's intent. For Radiopharmaceuticals this is interpreted as being the radioactive entity with the identified isotope.

The decision to create a new concept class of VRM which is a subtype of Virtual Therapeutic Moiety rather than use the Virtual Therapeutic Moiety concept class from dm+d means should a clinical system wish to exclude these SNOMED CT concepts from pick lists this will be simplified and support a consistent approach across systems.

6.2.1.1 Virtual Radiopharmaceutical Moiety Data structure

The VRM is a SNOMED CT concept and will form part of the SNOMED CT UK Drug Extension data when released. As such it will comply with any SNOMED CT requirements for a concept that are in addition to those stated below.

Examples of VRM are:

- Chromium [Cr-51] edetate
- Erbium [Er-169] citrate
- Gallium [Ga-67] citrate
- Sodium iodide [I-123]
- Sodium iodide [I-131]
- Krypton [Kr-81m]
- Technetium [Tc-99m] tiatide

N.B. kits for radiopharmaceutical preparations and radiopharmaceutical precursors that are not intended for direct patient usage (but rather to be used to create a radiopharmaceutical special) will not have Virtual Radiopharmaceutical Moiety concepts associated.

Description
Virtual Radiopharmaceutical Moieties are created whenever a new concept is authored at that level.
Relationships
<i>Child Concept:</i> An instance of Virtual Radiopharmaceutical Moiety will be associated with one or more child concepts. These are implied relationships to its children as these are not stated in SNOMED CT.

Attributes	Type	Occurrence
VRM_ID	SNOMED CT ID	1

The SNOMED CT identifier for the Virtual Radiopharmaceutical Moiety The SNOMED CT ID will be either from the UK Drug Extension or where applicable the SNOMED CT International Release.		
VRM_FSN	String	1
The Fully Specified Name for the Virtual Radiopharmaceutical Moiety. This will be in the format “Virtual Radiopharmaceutical Moiety (product)”		
VRM_UK_Preferred_Term	String	1
The UK Preferred Name for the Virtual Radiopharmaceutical Moiety. Where concepts are also present in dm+d this will be the name used in dm+d Where the concept already exists in the International Release there may be a requirement for an International Preferred Term that is in addition to the UK Preferred Term.		
Parent	SNOMED CT ID	1 or more
The Virtual Radiopharmaceutical Moiety will have one or more “IS_A” relationships to other SNOMED CT concepts. It will also have implied relationships to its children concepts as these are not stated in SNOMED CT.		

6.2.2 Virtual Radiopharmaceutical Product

A Virtual Radiopharmaceutical Product (VRP) is an abstract concept representing the characteristics of one or more clinically equivalent Actual Radiopharmaceutical Products, where “clinical” is defined as relating to the course of a disease.

The decision to create a new concept class of VRP which is a subtype of Virtual Medicinal Product rather than use the Virtual Medicinal Product concept class from dm+d means should a clinical system wish to exclude these SNOMED CT concepts from pick lists this will be simplified and support a consistent approach across systems.

6.2.2.1 Virtual Radiopharmaceutical Product Data structure

The VRP is a SNOMED CT concept and will form part of the SNOMED CT UK Drug Extension data when released. As such it will comply with any SNOMED CT requirements for a concept that are in addition to those stated below.

Examples of VRP concepts are:-

- Sodium iodide [I-131] capsules
- Technetium [Tc-99m] colloidal sulphur dispersion for injection
- Gallium [Ga-67] citrate solution for injection
- Generic OctreoScan kit for radiopharmaceutical preparation

N.B. VMP and VMPP concepts using the naming convention “Generic” followed by a brand name are place holders used to maintain the 5 box model where there is no true generic available. These concepts would be given a Prescribing status of “Never Valid to prescribe” enabling them to be excluded from pick lists.

Description
Virtual Radiopharmaceutical Products are created whenever a new concept is authored at that level.

Relationships
<p><i>Child Concepts.</i> An instance of Virtual Radiopharmaceutical Product will be associated with one or more child concepts. These are implied relationships to its children as these are not stated in SNOMED CT.</p> <p><i>Virtual Radiopharmaceutical Product Pack:</i> An instance of Virtual Radiopharmaceutical Product will be associated with one or more instances of Virtual Radiopharmaceutical Product Pack</p>

Attributes	Type	Occurrence
VRP_ID	SNOMED CT ID	1
The SNOMED CT identifier for the Virtual Radiopharmaceutical Product. The SNOMED CT ID will be from the UK Drug Extension.		
VRP_FSN	String	1
The Fully Specified Name for the Virtual Radiopharmaceutical Product will be of the format Radioactive salt [isotope] form unit dose details		
VRP_UK_PREFERRED_TERM	String	1
The UK Preferred Term for the Virtual Radiopharmaceutical Product. Where concepts are also present in dm+d this will be the name used in dm+d Where the concept already exists in the International Release there may be a requirement for an international preferred name that is in addition to the UK Preferred Term.		
VRP_HAS_SPECIFIC_ACTIVE_INGREDIENT	SNOMED CT ID	1 or more
Each Virtual Radiopharmaceutical Product has a “has_specific_active_ingredient” relationship to one or more concepts in the substance hierarchy of SNOMED CT.		
VRP_HAS_DISPENSED_DOSE_FORM	SNOMED CT ID	1
Each Virtual Radiopharmaceutical Product will have one “has_dispensed_dose_form” relationship to a concept in the qualifier value hierarchy of SNOMED CT.		
Parent	SNOMED CT ID	1 or more
The Virtual Radiopharmaceutical Product will have one or more “IS_A” relationships to other SNOMED CT concepts. In addition there will be a link to the concept named “Virtual Radiopharmaceutical Product” via “IS_A” relationship. It will also have implied relationships to its children concepts as these are not stated in SNOMED CT.		
VRP_Non-availability indicator	SNOMED CT ID	1
Each Virtual Radiopharmaceutical Product will have one “Non-availability indicator” relationship to a concept in the qualifier value hierarchy of SNOMED CT.		
VRP_Prescribing status	SNOMED CT ID	1
Each Virtual Radiopharmaceutical Product will have one “Prescribing status” relationship to a concept in the qualifier value hierarchy of SNOMED CT.		

N.B. Where concepts are derived from dm+d content the VMPP and AMPP term will specify the unit dose form e.g. vial, ampoule, or pre-filled syringe as appropriate.

6.2.3 Actual Radiopharmaceutical Product

An Actual Radiopharmaceutical Product (ARP) is a single administration unit of a radiopharmaceutical or a radiopharmaceutical component, attributable to a particular preparation process (or processes) for administration to a patient.

The decision to create a new concept class of ARP rather than use the Actual Medicinal Product concept class from dm+d means should a clinical system wish to exclude these SNOMED CT concepts from pick lists this will be simplified and support a consistent approach across systems.

Examples of ARP concepts are:-

- OctreoScan kit for radiopharmaceutical preparation (Mallinckrodt Pharmaceuticals)
- Indium [In-111] DTPA solution for injection (Mallinckrodt Pharmaceuticals)
- Indium [In-111] pentetreotide solution for injection (Hospital Radiopharmaceutical)

6.2.3.1 Actual Radiopharmaceutical Product Data structure

The ARP is a SNOMED CT concept and will form part of the SNOMED CT UK Drug Extension data when released. As such it will comply with any SNOMED CT requirements for a concept that are in addition to those stated below.

Description
Actual Radiopharmaceutical Products are created whenever a new concept is authored at that level.
Relationships
<i>Parent Concept:</i> An instance of Actual Radiopharmaceutical Product will have an IS_A relationship with one parent Virtual Radiopharmaceutical Product. In addition there will be a link to the concept named "Actual Medicinal Product" via IS_A relationship.
<i>Actual Radiopharmaceutical Product Pack:</i> An instance of Actual Radiopharmaceutical Product will be associated with one or more instances of Actual Radiopharmaceutical Product Pack

Attributes	Type	Occurrence
ARP_ID	SNOMED CT ID	1
The SNOMED CT identifier for the Actual Radiopharmaceutical Product. The SNOMED CT ID will be from the UK Drug Extension.		
ARP_FSN	string	1
The Fully Specified Name for the Actual Radiopharmaceutical Product. This will be in the format "Actual Virtual Radiopharmaceutical Product Name (Supplier) (Product)"		
ARP_UK_PREFERRED_TERM	string	1
The UK Preferred Term for the Actual Radiopharmaceutical Product. Where concepts are also present in dm+d this will be the name used in dm+d		

Parent	SNOMED CT ID	1 or more
The Actual Radiopharmaceutical Product will have one "IS_A" relationship to a Virtual Radiopharmaceutical Product.		
In addition there will be a link to the concept named "Actual Radiopharmaceutical Product" via "IS_A" relationship.		

6.2.4 Virtual Radiopharmaceutical Product Pack

The Virtual Radiopharmaceutical Product Pack (VRPP) is an abstract concept representing the properties of one or more quantitatively equivalent Actual Radiopharmaceutical Product Packs.

The decision to create a new concept class of VRPP rather than use the Virtual Medicinal Product Pack concept class from dm+d means should a clinical system wish to exclude these SNOMED CT concepts from pick lists this will be simplified and support a consistent approach across systems.

Examples of VRPP concepts are:-

- Sodium iodide [I-131] capsules 1 capsule
- Generic OctreoScan kit for radiopharmaceutical preparation 1 kit
- Indium [In-111] pentetreotide solution for injection 1 ml

N.B. VMP and VMPP concepts using the naming convention "Generic" followed by a brand name are place holders used to maintain the 5 box model where there is no true generic available. These concepts would be given a Prescribing status of "Never Valid to prescribe" enabling them to be excluded from pick lists.

6.2.4.1 Virtual Radiopharmaceutical Product Pack Data structure

The VRPP is a SNOMED CT concept and will form part of the SNOMED CT UK Drug Extension data when released. As such it will comply with any SNOMED CT requirements for a concept that are in addition to those stated below.

Description
A Virtual Radiopharmaceutical Product Pack is created whenever a new concept is authored at that level.
Relationships
<i>Child Concept</i> : An instance of Virtual Radiopharmaceutical Product Pack will be associated with one or more Actual Radiopharmaceutical Product Packs as child concepts

Attributes	Type	Occurrence
VRPP_ID	SNOMED CT ID	1
The SNOMED CT identifier for the Virtual Radiopharmaceutical Product Pack. The SNOMED CT ID will be from the UK Drug Extension.		
VRPP_FSN	string	1

The Fully Specified Name for the Virtual Radiopharmaceutical Product Pack. This will be in the format “VRPP Preferred Name (product)”		
VRPP_PREFERRED_TERM	string	1
The UK Preferred Term for the Virtual Radiopharmaceutical Product Pack. This will normally be in the format “Virtual Radiopharmaceutical Product concept name” + “Defining Dimension Numeric Value” + “Defining Dimension Unit of Measure” + Unit dose form Where concepts are also present in dm+d this will be the name used in dm+d		
VRPP_HAS_VRP	SNOMED CT ID	1
The Virtual Radiopharmaceutical Product Pack will have one relationship to a Virtual Radiopharmaceutical Product.		
Parent	SNOMED CT ID	1
An instance of Virtual Radiopharmaceutical Product Pack will have an IS_A relationship with concept named “Virtual Radiopharmaceutical Product Pack”		

6.2.5 Actual Radiopharmaceutical Product Pack

An Actual Radiopharmaceutical Product Pack (ARPP) is the packaged Actual Radiopharmaceutical Product that is supplied for patient use or from which Actual Radiopharmaceutical Products are supplied for clinical use.

An ARPP contains information concerning a radiopharmaceutical product that has been made available by a supplier as a packaged entity.

The decision to create a new concept class of Actual Radiopharmaceutical Product Pack rather than use the Actual Medicinal Product Pack concept class from dm+d means should a clinical system wish to exclude these SNOMED CT concepts from pick lists this will be simplified and support a consistent approach across systems.

Examples of ARPP concepts are:-

- TechneScan MAG3 powder for solution for injection (Mallinckrodt Pharmaceuticals) 5 vials
- Indium [In-111] pentetate solution for injection (Hospital Radiopharmaceutical) 1 ml
- Sodium Iodide [I-123] solution for injection (Mallinckrodt Pharmaceuticals) 1 vial

6.2.5.1 Actual Radiopharmaceutical Product Pack Data structure

The ARPP is a SNOMED CT concept and will form part of the SNOMED CT UK Drug Extension data when released. As such it will comply with any SNOMED CT requirements for a concept that are in addition to those stated below.

Description
Actual Radiopharmaceutical Product Packs are created whenever a new concept is authored at that level.

Attributes	Type	Occurrence
ARPP_ID	SNOMED CT ID	1
The SNOMED CT identifier for the Actual Radiopharmaceutical Product Pack. The SNOMED CT ID will be from the UK-Drug Extension.		
ARPP_FSN	string	1
The Fully Specified Name for the Actual Radiopharmaceutical Product Pack. This will be in the format “Actual Radiopharmaceutical Product Pack Name (product)”		
ARPP_PREFERRED_TERM	string	1
The UK Preferred Term for the Actual Radiopharmaceutical Product Pack. This will normally be in the format “Actual Radiopharmaceutical Product concept name” + “Defining Dimension Numeric Value” + “Defining Dimension Unit of Measure” + Unit Dose Form Where concepts are also present in dm+d this will be the name used in dm+d		
ARPP_HAS_ARP	SNOMED CT ID	1
An ARPP concept will have one relationship to an Actual Radiopharmaceutical Product concept.		
Parent	SNOMED CT ID	1
The Actual Radiopharmaceutical Product Pack will have one “IS_A” relationship to a Virtual Radiopharmaceutical Product Pack. In addition there will be a link to the concept named “Actual Radiopharmaceutical Product Pack” via IS_A relationship.		

6.2.6 Radiopharmaceuticals and Suppliers

Suppliers for drug products are concepts in the qualifier value hierarchy of SNOMED CT. For the existing pharmaceutical products in SNOMED CT the supplier name is appended to the AMP name to create the description however there is no stated relationship between the AMP concept and the supplier concept. The supplier is only identified in the AMP term. It is intended to replicate this pattern for the radiopharmaceuticals and associated products.

Examples of AMP descriptions:-

- Technescan DTPA radiopharmaceutical kit (Mallinckrodt Pharmaceuticals)
- Technetium pyrophosphate [Tc-99m] injection (Hospital Radiopharmaceutical)

6.2.7 Radiopharmaceuticals Trade Family and Trade Family Group

For the radiopharmaceutical products that are licensed UK products for administration to patients (as opposed to those that are used as a component to manufacture) a radiopharmaceutical Trade Family and Trade Family Group equivalent classes of concepts for radiopharmaceuticals and the associated products will also be authored where applicable.

Examples of Trade Family concepts are:-

- OctreoScan
- TechnoScan DMSA
- TechnoScan PYP

Example of a Trade Family Group concept is:-

- TechnoScan

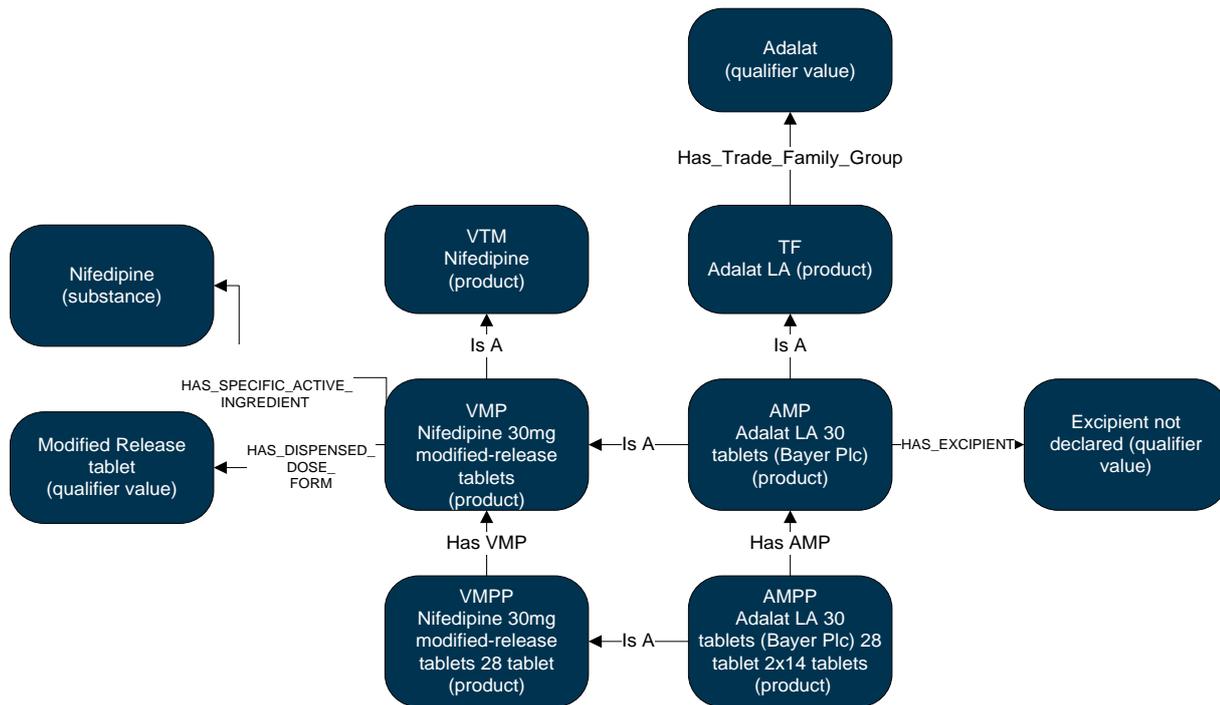
6.3 Dose forms for Radiopharmaceuticals

In the SNOMED CT UK Drug Extension concepts are allocated dose forms in line with the dm+d Editorial policy. However the dose forms currently in dm+d are not appropriate for all of the radiopharmaceutical products that would be included in the SNOMED CT UK Drug Extension. The dm+d dose forms are derived from those included in the European Directorate for the Quality of Medicines and Healthcare (EDQM).

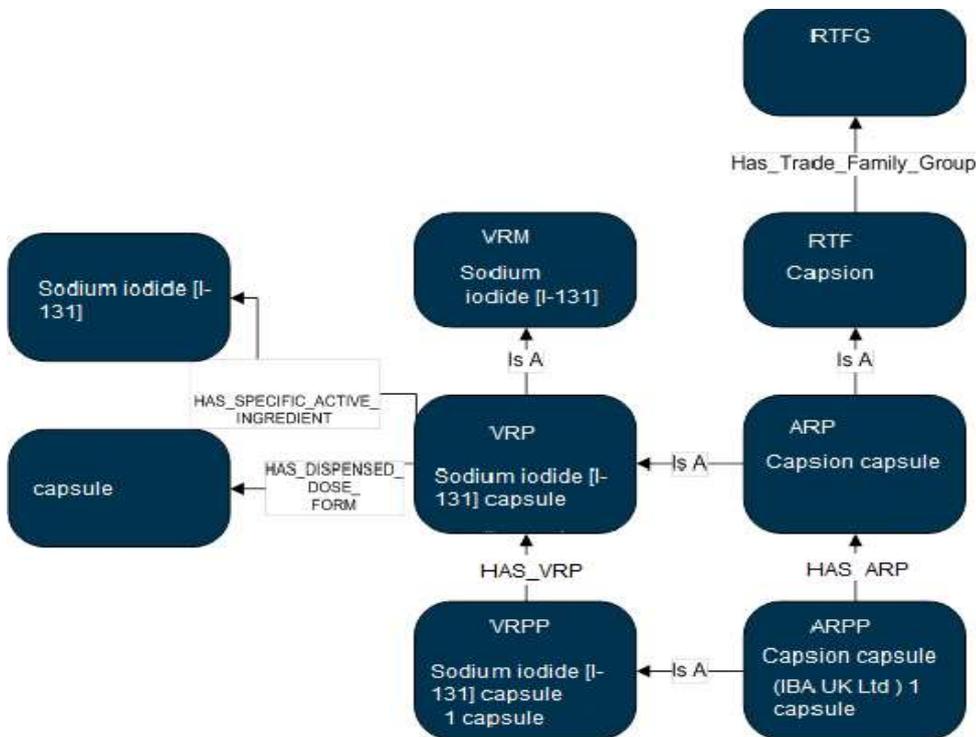
The following Additional dose forms are used for radiopharmaceuticals in SNOMED CT.

SCT UK Drug Ext Dose Form	Definitions	Source of Definitions
<i>Radiopharmaceutical precursor</i>	A radionuclide produced for the radio-labelling of another substance prior to administration.	EDQM

APPENDIX I. SNOMED CT UK Drug Extension model



SNOMED CT UK Drug Extension model - radiopharmaceuticals



APPENDIX II. dm+d descriptions in SNOMED CT

There are currently 5500+ instances where the dm+d term for a given concept differs from the en-GB Preferred Term.

The terms in dm+d have been created with extensive consultation with UK patient safety organisations to ensure optimal safety for use in the NHS. This covers such issues as word order, drug names, expression of strength, a restricted list of drug forms, pluralisation and capitalisation of words.

Concepts referenced in dm+d may be represented in SNOMED CT International Release or in the SNOMED CT UK Drug Extension. Although we are working towards closer integration it is anticipated that there will always be some concepts that will remain in the SNOMED CT UK Drug Extension. This division of content between International Release and Extension means that representation across a product range would not be consistent without implementation of the realm description or language subsets.

For example:

A search for dopamine infusions in the SNOMED CT UK Drug Extension would produce a list displayed as the International core preferred term or dm+d preferred term dependent upon the origin of the concepts :-

7633311000001109	Dopamine 800mg/250ml solution for injection bottles
319519002	dopamine hydrochloride 160mg/mL infusion concentrate 5mL ampoule
319518005	dopamine hydrochloride 40mg/mL infusion concentrate 5mL ampoule
319524004	dopamine hydrochloride 40mg/mL injection solution 10mL prefilled syringe
319523005	dopamine hydrochloride 40mg/mL injection solution 5mL prefilled syringe
347392009	dopamine hydrochloride in glucose 400mg/250mL infusion

The en-GB preferred term in the SNOMED CT International Release is used to reflect the naming differences for drugs e.g. Paracetamol vs. Acetaminophen but not to reflect terming preferences such as word order, spacing, expression of strength or capitalisation.

NHS Digital publishes language subsets and realm description subsets to allow implementations of SNOMED CT UK Drug Extension data to display the dm+d term as the Preferred term for the five dm+d International Release concept classes and ingredients file.

For further information on these subsets please refer to the Subset Overview document that is published as part of the release.

Inheritance of dm+d terms.

The process of creating the SNOMED CT UK Drug Extension requires the retirement of some dm+d originated content with a SAME_AS relationship to an International Release concept. Where the dm+d content is retired status 2 (duplicate) in the SNOMED CT UK Drug Extension the dm+d term will be allocated to the International Release replacement concept and given a status of preferred term in the dm+d realm description subset.

Invalid concepts in dm+d are given retired status in the process of creating the SNOMED CT UK Drug Extension. Where this relationship is anything other than status 2 (duplicate) to a

current SNOMED CT concept the dm+d allocated preferred term will not be added to the current concept.

Exceptions to the dm+d term becoming the Preferred Term

- Where the retired concept is status 2 (duplicate) to a current concept that already has a dm+d derived preferred term, the term from the retired concept will be added to the current concept but with a status of synonym description.
- There are route of administration concepts where the dm+d allocated term is not deemed appropriate for use in prescribing systems. These terms are listed below alongside the preferred term created specifically at the request of an NHS Connecting for Health workstream involved in e-prescribing implementation.

SCT concept ID	dm+d Preferred term	Realm description subset preferred term	Comments
420254004	Body cavity use	65857801000001111 Body cavity	e-Prescribing team request
6064005	Cutaneous	65857901000001117 Topical	e-Prescribing team request
45890007	Transdermal route	56582701000001113 Transdermal	e-Prescribing team request
54485002	Ophthalmic route	56582801000001116 Eye	e-Prescribing team request
404815008	Transmucosal route	56583001000001118 Transmucosal	e-Prescribing team request
10547007	Otic route	1137311000000115 Ear	e-Prescribing team request
54471007	Oromucosal buccal	65858001000001115 Buccal	e-Prescribing team request
12130007	Intraarticular	65858101000001119 Intra-articular	e-Prescribing team request
37839007	Oromucosal sublingual	65858201000001114 Sublingual	e-Prescribing team request
10364101000001103	Subdermal route	56581001000001119 Subdermal	e-Prescribing team request

- The following qualifier value concepts (listed below under the realm description subset) are also exceptions to the dm+d allocated preferred term status since the dm+d term is not appropriate.

SCT concept ID	dm+d Preferred term	Realm description subset preferred term	Comments
8941501000001109	Not applicable	54922201000001114 Legal category not applicable	dm+d term too ambiguous in the context of the larger terminology.
8940201000001104	Valid as a prescribable product	60322501000001115 VMP valid as a prescribable product	dm+d term inappropriate in the context of a hierarchical terminology
8940301000001108	Invalid as a prescribable product	60322601000001116 VMP invalid as a prescribable product	dm+d term inappropriate in the context of a hierarchical terminology
8940401000001100	Never valid to prescribe as a VMP (qualifier value)	65858301000001117 Never valid to prescribe as a VMP	dm+d term inappropriate in the context of a hierarchical terminology
8940101000001106	prescribing status (qualifier value)	65858401000001113 VMP prescribing status	dm+d term inappropriate in the context of a hierarchical terminology
8940601000001102	non-availability indicator (attribute)	65858501000001112 VMP non-availability indicator	dm+d term inappropriate in the context of a hierarchical terminology
0693111000001108	HEP	Histamine Equivalent in Prick testing (qualifier value)	dm+d term ambiguous in the context of a larger terminology