NHS dictionary of medicines and devices

Implementation Guide for SCCI0052

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Information and technology
for better health and care

SCCI Standardisation Committee for Care Information

This information standard (SCCI0052) has been approved for publication by the Department of Health under section 250 of the Health and Social Care Act 2012.

Assurance that this information standard meets the requirements of the Act and is appropriate for the use specified in the specification document has been provided by the Standardisation Committee for Care Information (SCCI), a sub-group of the National Information Board.

This information standard comprises the following documents:

- Requirements Specification
- Implementation Guidance.

An Information Standards Notice (SCCI0052 Amd 13/2013) has been issued as a notification of use and implementation timescales. Please read this alongside the documents for the standard.

The controlled versions of these documents can be found on the NHS Digital website. Any copies held outside of that area, in whatever format (e.g. paper, email attachment), are considered to have passed out of control and should be checked for currency and validity.

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Contents

Glossary of Terms

Term	Abbreviation	What it stands for
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. It describes an actual product which is known to have been available linked to the name of a particular supplier, for example 'Aspirin 300mg caplets (The Boots Company Plc) '.
Actual Medicinal Product Pack	AMPP	An Actual Medicinal Product Pack (AMPP) is the packaged product that is supplied for direct patient use or from which AMPs are supplied for direct patient use. The AMPP describes an actual product which is known to have been available linked to both the name of a particular supplier and information on the pack size of the product, for example 'Aspirin 300mg caplets (The Boots Company Plc) 32 tablet'. It may contain multiple components each of which may or may not be an AMPP in their own right.
Anatomical Therapeutic Chemical Classification	ATC	The Anatomical Therapeutic Chemical (ATC) Classification System is used for the classification of drugs and is controlled by the WHO (World Health Organisation) Collaborating Centre for Drug Statistics Methodology (WHOCC). The main purpose of the ATC system is as a tool for capturing and presenting drug utilisation statistics with the aim of improving drug use both nationally and internationally. Other uses of the ATC classification system are not endorsed.
Arm's Length Body	ALB	Arm's-length bodies are public bodies established to carry out specific central government functions at arm's length from ministers.
British National Formulary	BNF	The British National Formulary (BNF) is a joint publication of the British Medical Association and the Royal Pharmaceutical Society. The BNF aims to provide a quick reference for key information on the selection, prescribing, dispensing and administration of medicines. Medicines generally prescribed in the UK are covered. Little or no information is included on medicines promoted for purchase by the public.
Commission on Human Medicines	CHM	An advisory body that provides advice to ministers and licensing authorities on matters relating to human medicinal products. This body combines the responsibilities previously met by the Committee on Safety of Medicines and Medicines Commission
Commercial Medicines Unit	CMU	The Commercial Medicines Unit is part of the Procurement Investment and Commercial Division of the Department of Health. The focus of the work of the CMU is on strategic supply management and procurement of medicines for use in secondary care.
Commercial off the shelf product	COTS	In this instance a commercially available product that may be purchased from a licensed company with maintenance and support options available compared to an in-house development.
Defined Daily Dose	DDD	The basic definition of the defined daily dose (DDD) is: The DDD is the assumed average maintenance dose per day

		for a drug used for its main indication in adults. A DDD will only be assigned for drugs that already have an ATC code.
dictionary of medicines and devices	dm+d	A terminological resource containing unique identifiers and associated textual descriptions for representing medicines and medical devices used within the UK.
dm+d identifier namespace		Namespace – is a number that is issued to an IHTSDO (owners of SNOMED CT) Member or Affiliate that can be used to create new and unique SNOMED CT identifiers in that realm. Each Member or Affiliate may have one or more namespaces. The namespace allocated to the UK (through the member organisation UKTC) for use for medicines and medicines related components is 100001. This number then forms part of the SNOMED CT Concept identifier to denote provenance of that component.
Dosage instructions		The information supporting the prescribed product in order for it to be correctly administered, for example the dose, the route, frequency of administration and duration of treatment.
Dose-based prescribing		In this type of prescribing, the prescriber does not select a product but rather a generic substance (for example paracetamol) equivalent to a VTM, together with a dose (1000 mg), route (oral) and frequency of administration (4 times a day) to produce an instruction to administer a drug to a patient. In most cases where dose-based prescribing is done, the instruction will be carried out by a healthcare professional, typically a nurse, who will select and prepare the medicinal product to be administered, thereby selecting a form and strength appropriate to the patient's conditions (for example choosing a suspension rather than tablets if the patient is having difficulty swallowing). Dose based prescribing is typically undertaken in secondary care.
Drug Tariff		The Drug Tariff provides information on what will be paid to contractors for NHS Services including both reimbursement (for example the cost of drugs and appliances supplied against an NHS Prescription form) and remuneration (for example professional fees/allowances which are paid as part of the NHS pharmacy contract). It is produced monthly by the Pharmaceutical Directorate of the NHS Business Services Authority, NHS Prescription Services on behalf of the Department of Health. Paperback copies are supplied primarily to pharmacists and doctors surgeries. It is also available in electronic format.
European Medicines Agency	EMA	The European Medicines Agency (EMA) is a European Union agency for the evaluation of medicinal products.
Electronic Prescription Service	EPS	The Electronic Prescription Service (EPS) is a service used in England that enables prescribers in primary care such as GPs to send prescriptions electronically to a dispenser (such as a pharmacy) of the patient's choice. The system also supports electronic reimbursement of prescriptions. For the prescribing, dispensing and reimbursement of primary care medicines, EPS uses dm+d identifiers and descriptions.
Global Trade Item Number	GTIN	An identifier for trade items developed by GS1. Such identifiers are used to look up product information in a database (often by inputting the number through a bar code scanner pointed at an actual product). The uniqueness and

		universality of the identifier is useful in establishing which product in one database corresponds to which product in another database, especially across organizational boundaries.
GS1 UK		GS1 Is the independent Not for profit organisation that sets and maintains the GTIN standard and other supply chain standards. GS1 UK represents UK interests
Health and care organisations		Organisations involved in the delivery of health and care, including Arm's Length Bodies.
Health and Social Care Information Centre	HSCIC	In this context, organisation assuming the responsibility for former NHS Connecting for Health products and services. See also NHS Digital.
International Healthcare Terminology Standards Development Organisation	IHTSDO	IHTSDO is the not for profit organisation that owns and maintains SNOMED CT®
International Nonproprietary Name	INN	International Nonproprietary Names are selected in close collaboration with national nomenclature commissions to provide a unique name that is published by the World Health Organisation
Medical Devices		From the MHRA – Borderline between medical devices and medicinal products, a medical device is: 'Any instrument, apparatus, appliance, material or other article, whether used alone or in combination, including the software necessary for its proper application intended by the manufacturer to be used for humans beings for the purpose of: • Diagnosis, prevention, monitoring, treatment or alleviation of disease, • Diagnosis, monitoring, treatment, alleviation of or compensation for an injury or handicap, • Investigation, replacement or modification of the anatomy or of a physiological process, • Control of contraception, and which does not achieve its principal intended action in or on the human body by pharmacological, immunological or metabolic means, but which may be assisted in its function by such means.'
Medicine		From the MHRA – Borderline between medical devices and medicinal products, a medicine is: 'Any substance or combination of substances which may be used in or administered to human beings either with a view to restoring, correcting or modifying physiological functions by exerting a pharmacological, immunological or metabolic action, or to making a medical diagnosis.'
Medicines & Healthcare products Regulatory Agency	MHRA	The government agency that is responsible for ensuring that medicines and medical devices work, and are acceptably safe. The MHRA is an executive agency sponsored by the Department of Health.
NHS Business Services Authority Prescription	NHSBSA PS	The NHSBSA Prescription Services works in partnership with NHS Digital in populating and maintaining dm+d. It is also the organisation responsible for the reimbursement of medicines

Services		prescribed in primary care.
NHS Digital		NHS Digital is the trading name of the Health and Social Care Information Centre.
National Patient Safety Agency	NPSA	An Arm's Length Body of the Department of Health whose remit was to identify patient safety issues and find appropriate solutions. The key functions of this organisation were transferred to the NHS Commissioning Board (now called NHS England) in June 2012.
Product-based prescribing		In this type of prescribing, prescriptions are created by selecting a single medicinal product (equivalent to VMP or AMP) and with the rest of the prescription then expressed in terms of that product, for example paracetamol *500mg tablets 2* to be taken orally 4 times a day. In this case the instruction cannot be varied in favour of a suspension by the pharmacist. Product based prescribing is typically (but not exclusively) undertaken in primary care.
Specials		Specials are individually prepared unlicensed formulations of existing drugs made for a specific patient. Medicines legislation requires that medicinal products are licensed before they are marketed in the UK. However, some patients may have special clinical needs that cannot be met by licensed medicinal products. So that these special needs may be met, the law allows manufacture and supply of unlicensed medicinal products (commonly known as 'specials') subject to certain conditions.
Summary Care Record	SCR	The SCR is designed to provide a summary of clinical information which would be deemed useful in the event of urgent or emergency care for a patient, particularly when other sources of information may not be readily available. A patient's SCR contains details of medications, adverse reactions and allergies. Where the medications are provided in coded format, they are given dm+d identifiers.
Systematized Nomenclature of Medicine - Clinical Terms	SNOMED CT®	SNOMED CT® is a comprehensive international healthcare terminology. SNOMED CT® has been adopted as the standard clinical terminology for the NHS in England. SNOMED CT® is managed and maintained internationally by SNOMED International and in the UK by the UK Terminology Centre (UKTC).
Technology Reference-data Update Distribution Service	TRUD	The Technology Reference-data Update Distribution Service provides a mechanism to distribute reference-data including dm+d to interested parties. This is the preferred distribution method and is hosted by NHS Digital. All registration requests for the TRUD Service should be done through isd.hscic.gov.uk
United Kingdom Terminology Centre	UKTC	The UK Terminology Centre is responsible for the UK management of SNOMED CT, Read codes and other healthcare terminology products and clinical classifications. www.snomed.org/member/united-kingdom

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. The Virtual Medicinal Product describes the generic title for a product including the form and strength, for example ‘Aspirin 300mg tablets’.
Virtual Medicinal Product Pack	VMPP	A Virtual Medicinal Product Pack (VMPP) is an abstract concept representing the properties of one or more quantitatively equivalent AMPPs. It describes the generic title for a generic or proprietary product pack which is known to have been available. The description includes the pack size, for example ‘Aspirin 300mg tablets 32 tablet’.
Virtual Therapeutic Moiety	VTM	A Virtual Therapeutic Moiety (VTM) is the abstract representation of the substance(s), formulated as a medicinal product, intended by an authorising health care professional for use in the treatment of the patient. It is the abstract conceptual representation of the material defining the prescriber’s therapeutic intent, divorced from formulation, dose or strength; for example ‘Aspirin’.
EXtensible Markup Language	XML	In computing, Extensible Markup Language (XML) is a markup language that defines a set of rules for encoding documents in a format that is both human-readable and machine-readable. www.w3.org/TR/REC-xml

Document purpose

This document provides a guide to the implementation of the NHS dictionary of medicines and devices (dm+d) fundamental standard[1].

Background

dm+d is a dictionary of descriptions and codes which represent medicines and devices in use across the NHS. NHS Digital and the NHS Business Services Authority deliver dm+d through a partnership.

The Information Standards Board (ISB) approved dm+d as a fundamental standard in 2012. This SCCI standard is an uplift of the original ISB standard with no substantive changes.

The primary purpose of the standard is to support interoperability between electronic systems that exchange or share information about medicines directly relating to patient care. The standard does this by uniquely identifying medicines licensed in the UK used in patient care. dm+d provides consistency in how medicines are expressed through a robust published Editorial Policy and Governance structure.

As a fundamental standard, the implementation of dm+d should be within other standards, systems, and collections. As such, any implementation guide for the standard can only provide general guidance on how to implement dm+d.

Specific guidance developed on how to implement dm+d in primary care and secondary care is available from the Implementation guidance section of the dm+d website.

To implement dm+d for a particular programme, service, data set or collection, please refer to the guidance or requirements specific to that area.

What the standard covers

This standard is a dictionary for medicines licensed in the UK.

- The standard uses the dm+d product.
- The scope of the standard is for England.
- The scope of the standard in terms of content is for medicines licensed in the UK only. The standard excludes Medical devices.[2]

The standard's primary purpose is to support interoperability; electronic systems that exchange or share information about medicines relating directly to a patient's care must

[1] A fundamental standard is defined as:
(a) An information standard that can be applied across health and /or adult social care that supports a general business need, for example recording sexual orientation. It will define at a high level what it is and how it should be implemented, used and or recorded
(b) A fundamental standard may cross organisational, geographical, profession and / or specialty boundaries. Fundamental standards are used within other Information Standards, Collections and Extractions that will define a specific implementation. Changes to a fundamental standard will require consideration of all specific standards that use it e.g. a mental health collection collecting 'sexual orientation'.

[2] The standard currently excludes medical devices as the coverage is currently limited to medical devices that can be prescribed in primary care. dm+d does not currently include the vast majority of medical devices used in secondary care. If this changes in the future, we may update the standard to include medical devices.

adhere to the standard by using both the dm+d identifier and an associated textual description when transferring information between systems.

Systems that record and communicate information not relating directly to patient care that is secondary uses, are also required to adhere to the standard where benefits in using common identifiers and descriptions to support interoperability and the sharing of data can be realised. Benefits may also be realised in using dm+d identifiers and descriptions in elements of supply chain management and research. However, it is currently not a requirement of the standard that dm+d identifiers and descriptions are utilised in these settings but is desirable.

What is dm+d?

What the dm+d product provides:

- a unique stable identifier (code) for all medicines
- a standard term (description) for all medicines
- a link to the supply chain by the inclusion of GS1 Global Trade Item Numbers (GTINs)
- a structure in which the above information is held
- ongoing maintenance of the content with a regular weekly update
- an online publication mechanism via the Technology Reference data Update Distribution (TRUD) site
- a formal governance structure
- a publically available editorial policy, data model, and technical specification.

What the dm+d does NOT provide:

- application functionality
- decision support functionality; dm+d is not a decision support system although it does provide information that these systems will utilise.

Key documentation

In order to implement dm+d successfully you may need to refer to the following documents:

- dm+d Editorial Policy
- dm+d Data Model
- dm+d Technical Specification of Data Files.

All these documents are available from the dm+d website.

dm+d Editorial Policy

The dm+d Editorial Policy provides details on the various authoring rules of dm+d. The document is publically available so that the rules are clear to all users of dm+d.

It covers what the various attributes mean and how they are applied.

dm+d data model

The dm+d data model document provides detailed information covering the data model and gives information on each of the five main concept classes of dm+d. It also covers the ancillary support files for dm+d[3]:

- Definition
- Description
- Association(s)
- Attributes
    - Type
    - Occurrence.

Technical specification of data files

The technical specification of data files document contains information on:

- database structure
- extract timetable
- extract files (general)
- extract format
- access to extract
- implementation guidelines
- information on the supplementary files
- a detailed description of Extensible Markup Language (XML) Files (including GTIN File)
- a detailed description of the British National Formulary (BNF) and the Anatomical Therapeutic Chemical (ATC) classification XML files.

Please note: whilst the Technical Specification of Data File document does include information on the BNF/ATC files, these files do not form part of this standard.

Integration with SNOMED CT

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

[3] The ancillary support files are a number of additional 'look-up' files that contain coded entries used by the main concept classes in dm+d. For example, they include information on form, route of administration, ingredient substance and supplier amongst others.

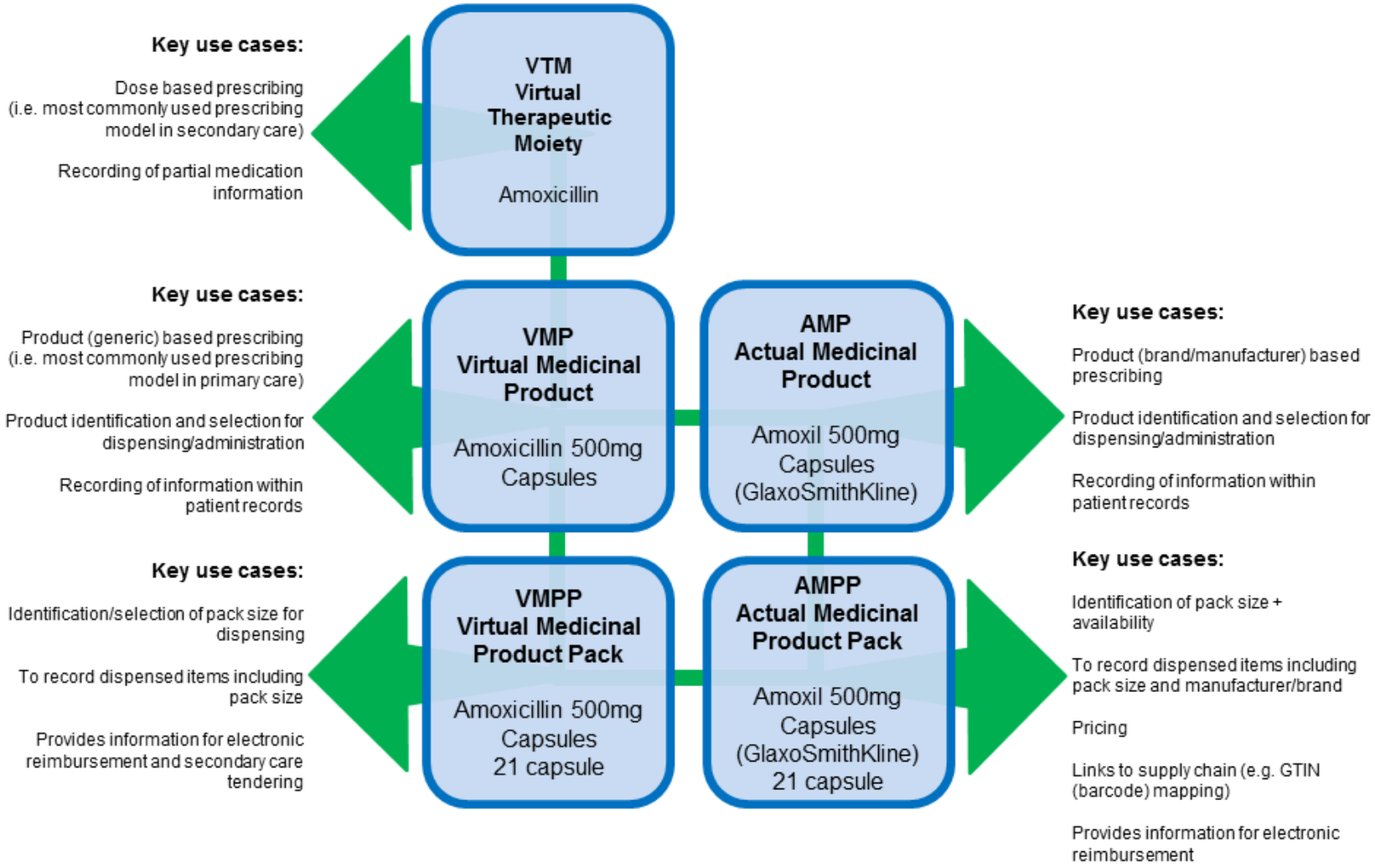
Feedback from stakeholders at the time of the inception of dm+d consistently pointed to the requirement to integrate dm+d into SNOMED CT. One of the key reasons for this feedback was a requirement to implement a single terminology structure from root node to Actual Medicinal Product Pack (AMPP). Furthermore, 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 at the time to both the implementation of NPfIT (National Programme for IT) clinical systems and for the internationalisation of its terminological structures that implementers saw dm+d as the SNOMED CT UK Drug Extension.

Releases of the SNOMED CT UK Drug Extension are available from TRUD.

dm+d data model

Diagram



The above diagram provides a simplified version of the dm+d model that focuses on the five main concept classes, often referred to as the 5-box model. For a full data model please see Appendix A – Full dm+d model.

Description

The dm+d consists of five distinct sub-sections (also known as concept classes) each section containing a set of entries. These sub-sections are:

- Virtual Therapeutic Moiety (VTM)
- Virtual Medicinal Product (VMP)
- Actual Medicinal Product (AMP)
- Virtual Medicinal Product Pack (VMPP)
- Actual Medicinal Product Pack (AMPP).

Definitions for these core concept classes are below. The dm+d Editorial Policy provides further expansion of these definitions and examples of how these apply to different product types.

Virtual Therapeutic Moiety (VTM)

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

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.

Although Virtual Medicinal Product entries within the dictionary are expected to equate to prescribable products there will be a number of entries which are related to entities that cannot normally be prescribed or which cannot be represented in a way suitable for use in prescribing.

Each Virtual Medicinal Product is accompanied by a flag that indicates its prescribing status and therefore its suitability for inclusion in prescribing pick lists. *In most cases the Virtual Medicinal Product will equate to a generic prescribable product and the dictionary entry relating to the Virtual Medicinal Product will provide sufficient information to allow such generic prescribing*.

We intend that implementers use the information relating to Virtual Medicinal Products (dose form, active ingredient(s) and strength(s), route of administration information and controlled drug information) to support aspects of decision support and general prescribing scenarios.

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.

Virtual Medicinal Product Pack (VMPP)

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

For every Actual Medicinal Product Pack (AMPP) there will also be a corresponding VMPP. A VMPP will have at least one AMPP and may have many AMPPs linked to it.

Actual Medicinal Product Pack (AMPP)

An Actual Medicinal Product Pack (AMPP) 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.

At this actual pack level, the dictionary includes information that is required for prescribing, dispensing and for reimbursement, e.g. legal status, Schedule 1 information (the list of preparations that are no longer prescribable on the NHS), price etc.

The AMPP is also the level that includes the link the GTIN.

Implementation

The dm+d fundamental standard is an interoperability standard. When systems exchange or share information about licensed medicines in England the following requirements apply as a minimum in any communication:

- **must** include the dm+d SNOMED CT identifier[4]
- **should** include the name or description for the medication item.

Information about medicines will come from one or more of the five main dm+d concept classes. The implementation guidance or requirements for the particular programme, service, data set or collection should specify which concept class or classes to use.

The table below identifies the name of the field in the dm+d XML files to use.

dm+d Concept class	SNOMED CT identifier field	Name/description field
VTM	VTMID	NM
VMP	VPID	NM
AMP	APID	DESC[5]
VMPP	VPPID	NM
AMPP	APPID	NM

Example

Requirements about which components of dm+d to use and when they can be used are often defined more fully by a particular programme, service, data set or collection. The example below covers the high-level requirements for the use of dm+d in the Electronic Prescription Service.

The Electronic Prescription Service

In the Electronic Prescription Service (EPS) a General Practice (GP) system can only send a prescription message containing dm+d information from these concept classes:

- Virtual Medicinal Product (VMP)
- Actual Medicinal Product (AMP).

EPS prohibits all other concept classes for use by the GP.

The Primary Care Pharmacy system can only send a reimbursement message to the reimbursement agency containing dm+d information from these concept classes:

- Virtual Medicinal Product (VMP)

[4] When deriving this from SNOMED CT, the SNOMED CT identifier must be the SNOMED CT concept ID.
[5] When exchanging or sharing information about AMPs it is important to use the AMP's 'DESC' field instead of the AMP's 'NM' field. dm+d does not intend for the AMP 'NM' field to be used for communications.

- Actual Medicinal Product (AMP)
- Virtual Medicinal Product Pack (VMPP)
- Actual Medicinal Product Pack (AMPP).

EPS have prohibited the use of the VTM concept class by Pharmacy Systems.

Handling exceptions

dm+d is updated and released weekly. This frequency is required to ensure that all up to date information on medicines is included.

When communicating between systems using dm+d there is a risk that the sending system has a different release of dm+d to the receiving system.

Each programme or service implementing dm+d must assess the specific level of risk relevant to their implementation of the standard alongside their risk appetite. The level and types of risk will be specific to the implementation.

The programme or service could mitigate this risk by having a mechanism to ensure that everyone uses the exact same release of dm+d. For example by:

- mandating the use of specific releases of dm+d
- requiring that every system updates at the same time
- using a centrally provided release of dm+d.

Alternatively, a programme or service implementing the standard could require that any message containing the dm+d SNOMED CT identifier (it should also contain the name or description for the medication item) to also include the release date of the dm+d release used by the sending system.

These mitigations may not be suitable for every implementation of dm+d (for example the EPS specifications require that systems are using a release of dm+d no more than two months old). An implementation of dm+d therefore needs to consider how to handle this risk.

The most likely scenario would be where a sending system is using a more up to date release of dm+d to the receiving system and sends a dm+d code that does not yet exist in the receiving system.

There is a need when designing systems that use dm+d to ensure they can handle exceptions and ‘fail elegantly’. There are several options that a system or service could put in place but the decision should reflect the use of the system or service and any potential clinical risk.

The simplest way to handle an exception where the receiving system cannot understand the sent code is to display to the user the text that accompanies the code in the message.

Downloading the dm+d files

You should only download the dm+d files from the Technology Reference data Update Distribution (TRUD) site. This is the official location for all releases of dm+d. NHS Digital maintains and supports the TRUD website.

To download dm+d from TRUD you will need to:

1. Create an account if you do not already have one.
2. Log in to TRUD and go to the NHS Dictionary of Medicines and Devices pack.
3. Subscribe to the 'NHSBSA dm+d' subpack and accept the licence.
4. Click Download releases to see the list of available releases.
5. Select the release you want to download.

Note: NHS Digital does publish other dm+d subpacks that may be of interest to implementers. The SCCI0052 standard does not include these subpacks, therefore this document does not cover them.

The Quick Guide and the Step-by-step Guide to using TRUD contain more details on using TRUD.

Licensing and cost

dm+d is licensed under the Open Government Licence. You must accept this licence to download and use dm+d.

There is no payment required to download and use dm+d from TRUD.

When to update

dm+d data is updated weekly and published on a Monday

- The standard requires that IT systems MUST update the dm+d release data a minimum of every 6 months
- There are no requirements about update frequency from the providers of the files

  There may be additional requirements from a particular programme, service, data set or collection; please refer to the guidance or requirements specific to that area
  For example, the Electronic Prescription Service (EPS) (England) has a requirement of maximum 8 weeks between updates
- Update frequency needs to support the clinical use.

Release types

Each release of dm+d is a full release and does not provide difference or delta files.

Release retention

For dm+d, only the last eight releases are available from TRUD.

TRUD filename conventions

The NHSBSA dm+d release is a .zip file. For example:

nhsbsa_dmd_12.1.0_20161212000001

- First set of numbers is the weekly release by month, week and version
    - NHSBSA release 12.1.0 is release **zero (0)** of the **first (1)** release of **December (12)**
- Second set of numbers is a TRUD release date and time
    - 20161212000001 is 1 second past midnight (00:00) on the 12 December 2016

NHSBSA dm+d subpack

This contains dm+d in a vendor neutral format (XML).

The nhsbsa_dmd zip file contains:

- 7 XML (Extensible Markup Language) data files
- 7 accompanying xsd (XML Schema Definition) files
- docs folder containing the dm+d Extract Communication
- a zip file containing the GTIN (Global Trade Item Number) files.

The seven XML data files contain:

- the 5 main concept class files:
    - f_amp2_3160212.xml
    - f_ampp2_3160212.xml
    - f_vmp2_3160212.xml
    - f_vmpp2_3160212.xml
    - f_vtm2_3160212.xml
- the 2 ancillary support (lookup) files:
    - f_ingredient2_3160212.xml
    - f_lookup2_3160212.xml

Contents of the GTIN (week432016-r2_3-GTIN.zip) file:

- f_gtin2_0201016.xml
- gtin_v2_0.xsd
- docs folder containing
    - The dm+d Extract Communication for GTINs
    - The GTIN transfer tracking log (an Excel spreadsheet).

XML file naming conventions

The dm+d data files are XML files. For example:

f_vmp2_3160212.xml

- f = file
- vmp = content of file, in this example VMP (Virtual Medicinal Product)
- 2_3 = version of technical specification, in this example version 2.3
- 160212 = extract date in DDMMYY, in this example 12 February 2016.

Checksum, signature and public key files

As well as the main NHSBSA dm+d release, TRUD also publishes a Checksum, Signature and Public key file for each release.

Checksum

A checksum is a list of characters (such as "diKQMmdUuQKeDWbegPeZoZOP2d0=") that is calculated from the content of the .zip file downloaded from TRUD.

If you have the checksum of a release, you can check that your copy of the release is identical to the original.

Please see About checksums for more information (you may need to login to TRUD to access this page).

Signature and public key

A signature is a file that NHS Digital calculates from the contents of the checksum file of a release and TRUD's private encryption key.

A public key is a file that anyone can use with the signature file of a release to check that the checksum file of that release came from TRUD.

Please see About signatures and public keys for more information (you may need to login to TRUD to access this page).

Import of dm+d data

General statements

In order to maintain referential integrity within the target database the dm+d files need to be loaded in the following order:

1. Lookup and / or Ingredient
2. VTM
3. VMP
4. AMP and / or VMPP
5. AMPP.

Within the VMPP and AMPP files there are entries relating to combination packs that will require loading after the main VMPPs and AMPPs are populated.

This order assumes that the implementer populates the target database from scratch each time and that the structure is not significantly different to the dm+d Release 2 model.

XML import

The dm+d data is available in XML files with their accompanying XML Schemas. The XML Schemas provide definitions for content contained between each tag (see dm+d Technical Specification of Data Files for full definitions).

The importing of dm+d into a particular piece of software, database or format is the responsibility of the developer.

Additional information

SNOMED CT IDs

dm+d uses SNOMED CT concept identifiers to identify some of the data fields in dm+d. For example:

- VTM
- VMP
- AMP
- VMPP
- AMPP
- Ingredient
- Units of Measure
- Form
- Route
- Supplier.

All the above will contain a SNOMED CT ID.

SNOMED CT IDs can be up to 18 digits long and contain only numbers. This has caused an issue when importing dm+d into some software applications.

For example, in Microsoft Excel the general number format can only hold 10 significant digits and will corrupt any SNOMED CT IDs longer than this when importing the XML file.[6] In Microsoft Excel this can be avoided by setting the format for the cells as 'Text' and not as 'General' or 'Number' prior to importing the data.

Therefore, take care when importing dm+d into a system so that the SNOMED CT IDs are not affected.

Validating SNOMED CT identifiers

SNOMED CT identifiers whilst not human readable are not random numbers and do contain patterns. Part of this pattern is a check-digit. You can use the check-digit to ensure a particular SNOMED CT ID is valid.

The SNOMED CT Technical Implementation Guide, Section 4.3.2 Representing SNOMED CT Identifiers covers how to use the check-digit in a SNOMED CT identifier.

SNOMED CT UK Drug Extension

NHS Digital creates the SNOMED CT UK Drug Extension by importing dm+d into SNOMED CT. As part of this process, all the SNOMED CT concept identifiers in dm+d become part of

[6] The dm+d XML Schema files define some elements as an 'integer'. In XML integer defined as a whole number, either positive or negative and has an infinite set (http://www.w3.org/TR/2004/REC-xmlschema-2-20041028/datatypes.html#integer).

SNOMED CT. This process also involves the creation of a Fully Specified Name (FSN) description and a Preferred Term (if necessary) along with accompanying Description identifiers and relationships.

NHS Digital derives the SNOMED CT UK Drug Extension from dm+d. As such, it is possible to use the SNOMED CT UK Drug Extension instead of dm+d. A system would need to identify the relevant content (concepts, concepts IDs, descriptions, descriptions IDs, etc.) derived from dm+d. The system would also need to ensure any communications between systems are in line with the requirements of the particular programme, service, data set or collection.

NHS Digital has published a series of SNOMED CT subsets to assist system developers and implementers to identify the dm+d content in SNOMED CT. We publish all the subsets as part of the SNOMED CT UK Drug Extension via TRUD. Information on the subsets is available on the Data Dictionary for Care (DD4C) site.

For more information, please refer to the dm+d Implementation Guide (Secondary Care).

Appendix A – Full dm+d model