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dm+d History Data File guide

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# Background

A long running issue with dm+d is that codes can be “lost”. dm+d codes are SNOMED CT codes and some of dm+d concept codes might change; the main reason is to keep in-line with SNOMED CT International drug data changes. dm+d manages the changes by having a current code and a previous code against dm+d concepts that might experience code change (VTM; VMP; Ingredient; Form; Route; Supplier and Unit of Measure).

The issue arises in the occasional occurrence when a code has changed more than once. For concepts in dm+d where codes are updated in the data it is only the current code and the most recent previous code that are published in the dm+d XML data. On the first change the new code becomes the current code and the old current code becomes the previous code. On the second change the new code becomes the current code, the old current code becomes the previous code, and the old previous code is “lost” (overwritten).

From 16th January 2023 the dm+d History data file is being released as part of the dm+d Supplementary (Bonus) data file which contains the full history of current, previous and “lost” codes for dm+d class concepts that might change.

# Assumptions

It is assumed that the reader understands dm+d and knows what VTM; VMP; AMP; VMPP; AMPP; etc. concept classes are.

# History Data File Summary

The History Data File aims to resolve the dm+d “lost” code issue, by identifying the current code with its current and historic codes (including “lost” codes). The new data file also contains the start and end dates of when codes were the current code.

The History Data file holds the code history for concepts that can change codes in dm+d, that is class concepts that have a IDPREV field (VTM; VMP; Ingredient) or a CDPREV field (Forms; Routes; Supplier; Unit of Measure).

## Where Is the History Data File

The History Data Files have been added to the dm+d Supplementary Data File (also known as the dm+d Bonus File) as of 16th January 2023. The [dm+d Supplementary File](https://isd.digital.nhs.uk/trud/users/authenticated/filters/0/categories/6/items/25/releases) can be downloaded from TRUD.

The History data files will be added to Terminology Server Web API during Spring 2023. Further information on this will be available on the [NHSBSA dm+d Web Site](https://www.nhsbsa.nhs.uk/pharmacies-gp-practices-and-appliance-contractors/dictionary-medicines-and-devices-dmd), the document is titled “dm+d code system structure guide” (no link directly to the document because future changes to the document will cause the link to break).

The dm+d core data files are remaining unchanged. The core dm+d data files are the set of files that include the main dm+d data including VTM; VMP; AMP; etc. This means that if the dm+d History data is not required, just continue loading the required dm+d data as normal.

## Structure of the History Data File

The History Data File is part of the dm+d XML data file release. Technical documentation is available on the [NHSBSA dm+d Web Site](https://www.nhsbsa.nhs.uk/pharmacies-gp-practices-and-appliance-contractors/dictionary-medicines-and-devices-dmd) and has the title “Technical Specification of data files…” (link not included because it will soon be updated with further changes and the link will be broken).

For expediency the History File section has been added to Appendix 1 History XML file Specification.

The History XML data file is broken down by the dm+d classes that can be affected by code changes, these are:

* Virtual Therapeutic Moiety (VTM)
* Virtual Medicinal Product (VMP)
* Ingredients
* Forms
* Routes
* Suppliers
* Units of Measure.

The data in the above classes is the same and has the following fields:

* IDCURRENT: the current code of the dm+d release.
* IDPREVIOUS: the current code (which will have no end date) and all previous codes (which will have both a start and end date)
* STARTDT: the start date that the code started as the current code. Some codes have a start date of “1948-01-01” (the year the NHS started). These are the drugs that were added to dm+d when it was first created, and the start date of when they were added to dm+d (early 2000s) did not seem appropriate.
* ENDDT: the end date that the code stopped being the current code. If there is no end date the code is the current code.

**Important Note: On occasions searching for a previous code might bring back more than one record. For example, searching for the code 412096001 will return the following VTM history data, as you can see it has 2 current records, when using dm+d History data consideration is required how to handle the return of multiple records.**

|  |  |  |  |
| --- | --- | --- | --- |
| **IDCURRENT** | **IDPREVIOUS** | **STARTDT** | **ENDDT** |
| 18037811000001108 | 412096001 | 2005-07-01 | 2010-09-29 |
| 21300711000001102 | 412096001 | 2012-09-10 | 2012-10-01 |

Where the current codes are:

|  |  |
| --- | --- |
| **VTMID** | **NM** |
| 18037811000001108 | Co-codaprin |
| 21300711000001102 | Aspirin + Codeine |

## Uses of the History Data

The main use-cases for the history data are:

1. Patient’s historic medical record contains a “lost” dm+d code: If historic patient data is being accessed and a code cannot be found in the current dm+d data, then search IDPREVIOUS field in the history data to see if a current code can be identified. Note: VTM; VMP; Ingredient; Form; Route; Supplier and Unit of Measure class concepts are the only concepts in the History Data as only these concepts are susceptible to code change.
2. Interoperability – where a “lost” dm+d code is shared: When receiving medication records from other healthcare systems a “lost” dm+d code may be sent. If a code is not found in the current dm+d data, then search the history data previous codes (IDPREVIOUS) to see if the current code can be identified.
3. To identify recently changed concepts: The history data can be used to identify concepts where the code has changed. By searching the history data end dates (ENDDT) the user can identify when a code changed. If a code has an end date it is no longer the current code and therefore the code has changed.

Note: depending on the date period being looked at other codes might occur between the code being looked at and the actual occurrence of the current code. For example if a user is looking for codes that changed in the year 2020, other code changes might have occurred for the current code in 2021, 2022, etc.  
  
In 2023 there will be bulk changes of codes to VTM and VMP codes, the history data will help users to identify those codes that have changed since that last load of dm+d data. For example if dm+d 2023 Version1.2.0 release on 16th January 2023 was the last version dm+d loaded. The data is extracted from the authoring tool the Thursday before (Thursday 12th January 2023), this will be the last day of possible code changes in this data. Suppose the next data to be loaded is dm+d 2023 Version 2.2.0 released on 20th February 2023. The data will be up to the Thursday before (Thursday 16th February 2023). The user can search the History end data (ENDDT) between Thursday 12th January and Thursday 16th February to find the codes that have changed between their last data loads.

## Not in dm+d History File (out of scope)

To confirm the following are out of scope of the dm+d History file:

* The dm+d concepts of AMP, VMPP and AMPP concepts are not included in the history data because:
  + These concepts only ever have UK Namespace SNOMED CT codes. These codes are managed between NHS Digital and NHSBSA and therefore these codes will never change.
  + Adding these records would significantly increase the size of the history data file, but would not add benefit, as the codes never change.
* Name change history.

# Known Issues

1. **Duplication of five codes** (all concepts are INVALID): In 2006 five dm+d codes were duplicated across VTM; AMP; VMPP and AMPP class concepts. These five duplicated codes (10 concepts in all) were valid for a week before they were all made INVALID. This has the side effect that if these codes were queried in the history data only the VTMs would be returned. Since all the codes were made INVALID in 2006 and were present for such a short time it is highly unlikely these codes will be present in systems or clinical records and any risk was felt to be low and documenting these duplicated codes here was suitable mitigation.

**VTM:**

|  |  |  |
| --- | --- | --- |
| **VTMID** | **NM** | **INVALID** |
| 9854411000001103 | Medium chain triglycerides – invalid | 1 |
| 9854511000001104 | Calcium + Magnesium | 1 |
| 9854611000001100 | Ichthammol + Zinc | 1 |
| 9854711000001109 | Amiloride + Cyclopenthiazide – invalid | 1 |
| 9854911000001106 | Meglumine amidotrizoate + Sodium amidotrizoate – invalid | 1 |

**VMP:**

None

**AMP:**

|  |  |  |
| --- | --- | --- |
| **APID** | **DESC** | **INVALID** |
| 9854511000001104 | Gel-X tablets (Oakmed Ltd) | 1 |

**VMPP:**

|  |  |  |
| --- | --- | --- |
| **VPPID** | **NM** | **INVALID** |
| 9854611000001100 | Ostomy discharge solidifying agents 140 tablet | 1 |
| 9854911000001106 | International normalised ratio testing strips 24 strip | 1 |

**AMPP:**

|  |  |  |
| --- | --- | --- |
| **APPID** | **NM** | **INVALID** |
| 9854411000001103 | Smartflow drainable night drainage bag NB2 2litre, 120cm tube (Manfred Sauer UK Ltd) 10 device | 1 |
| 9854711000001109 | Gel-X tablets (Oakmed Ltd) 140 tablet | 1 |

1. **Duplication of one code** (one concept still VALID): In 2006 the highlighted code below was duplicated. The AMP is INVALID and the Unit Of Measure is set as the previous code, but the unit of measure is still a VALID concept. This has the side effect of when searching dm+d for the highlighted code the AMP will be returned and if searching the history data the unit of measure will be returned. It was assessed that how dm+d was being used at the time (2006) that it is highly unlikely the unit of measure previous code (duplicated code) will be present in any systems. The previous code from the Unit of Measure data and the history data will be deleted. Along with this documentation this should mitigate any issues.

**AMP:**

|  |  |  |
| --- | --- | --- |
| **APID** | **DESC** | **INVALID** |
| 10204911000001107 | FreeStyle two-piece ostomy system flange F2F429 45mm flange, 29mm stoma (Welland Medical Ltd) | 1 |

**Unit Of Measure:**

|  |  |  |  |
| --- | --- | --- | --- |
| **CD** | **DESC** | **CDPREV** | **CDDT** |
| 10368211000001101 | component | 10204911000001107 | 2006-06-06 |

# Appendices

## Appendix 1 History XML file Specification

**Historic Codes**

On occasion dm+d identifiers change, to cope with the change in identifier dm+d has a previous identifier field. If an identifier changes more than once the oldest code is “lost” from the latest release data. The HISTORY data contains all the previous IDs for current dm+d concept identifiers and a start and end data for when they were the active identifier. If no end date exists, then the identifier is the current code and the ID current and ID previous fields will be the same. Only the dm+d Drug classes that have previous identifiers are contained in the HISTORY data, these are VTM; VMP; Ingredient; Form; Route; Supplier and Units of Measure.

|  |  |  |
| --- | --- | --- |
| **TAG Name** | **Optional** | **Description** |
| <HISTORY> |  | Root Node |
| <VTMS> |  | Collection of VTMs |
| <VTM> |  | Individual Virtual Therapeutic Moiety (VTM) (this collection of tags will occur for each VTM) |
| <IDCURRENT> |  | Virtual Therapeutic Moiety identifier (SNOMED CT code)  Up to a maximum of 18 digits |
| <IDPREVIOUS> |  | Previous VTM identifier (SNOMED CT code)  Up to a maximum of 18 digits |
| <STARTDT> |  | VTM Identifier date - Date the VTM identifier became Valid  Always 10 characters |
| <ENDDT> | Y | Date the VTM SNOMED CT code ended  Always 10 characters |
| </VTM> |  | End Tag |
| </VTMS> |  | End Tag |
| <VMPS> |  | Collection of VMPs |
| <VMP> |  | Individual Virtual Medicinal Product (VMP) (this collection of tags will occur for each VMP) |
| <IDCURRENT> |  | Virtual Medicinal Product identifier (SNOMED CT code)  Up to a maximum of 18 digits |
| <IDPREVIOUS> |  | Previous product identifier (SNOMED CT code)  Up to a maximum of 18 digits |
| <STARTDT> |  | Date VMP identifier became Valid  Always 10 characters |
| <ENDDT> | Y | Date the VMP SNOMED CT code ended  Always 10 characters |
| </VMP> |  | End Tag |
| </VMPS> |  | End Tag |
| <INGS> |  | Collection of Ingredients |
| <ING> |  | Individual ingredient (this collection of tags will occur for each ingredient) |
| <IDCURRENT> |  | Ingredient substance identifier (SNOMED CT code) can be located in ingredient file.  Up to a maximum of 18 digits |
| <IDPREVIOUS> |  | Previous ingredient identifier (SNOMED CT code)  Up to a maximum of 18 digits |
| <STARTDT> |  | Date ingredient identifier became Valid  Always 10 characters |
| <ENDDT> | Y | Date the ingredient SNOMED CT code ended  Always 10 characters |
| </ING> |  | End Tag |
| </INGS> |  | End Tag |
| <SUPPS> |  | Collection of Suppliers |
| <SUPP> |  | Individual supplier (this collection of tags will occur for each supplier) |
| <IDCURRENT> |  | Supplier identifier (SNOMED CT code)  Up to a maximum of 18 digits |
| <IDPREVIOUS> |  | Previous supplier identifier (SNOMED CT code)  Up to a maximum of 18 digits |
| <STARTDT> |  | Date supplier identifier became Valid  Always 10 characters |
| <ENDDT> | Y | Date the supplier SNOMED CT code ended  Always 10 characters |
| </SUPP> |  | End Tag |
| </SUPPS> |  | End Tag |
| <FORMS> |  | Formulation or Form associated with each VMP |
| <FORM> |  | Individual formulation (this collection of tags will occur for each formulation) |
| <IDCURRENT> |  | Formulation identifier (SNOMED CT code)  Up to a maximum of 18 digits |
| <IDPREVIOUS> |  | Previous formulation identifier (SNOMED CT code)  Up to a maximum of 18 digits |
| <STARTDT> |  | Date formulation identifier became Valid  Always 10 characters |
| <ENDDT> | Y | Date the formulation SNOMED CT code ended  Always 10 characters |
| </FORM> |  | End Tag |
| </FORMS> |  | End Tag |
| <ROUTES> |  | Routes associated with each VMP |
| <ROUTE> |  | Individual route (this collection of tags will occur for each route) |
| <IDCURRENT> |  | Route identifier (SNOMED CT code)  Up to a maximum of 18 digits |
| <IDPREVIOUS> |  | Previous route identifier (SNOMED CT code)  Up to a maximum of 18 digits |
| <STARTDT> |  | Date route identifier became Valid  Always 10 characters |
| <ENDDT> | Y | Date the route SNOMED CT code ended  Always 10 characters |
| </ROUTE> |  | End Tag |
| </ROUTES> |  | End Tag |
| <UOMS> |  | Collection of units of measure (UOM) |
| <UOM> |  | Individual UOM (this collection of tags will occur for each UOM) |
| <IDCURRENT> |  | UOM identifier (SNOMED CT code)  Up to a maximum of 18 digits |
| <IDPREVIOUS> |  | Previous UOM identifier (SNOMED CT code)  Up to a maximum of 18 digits |
| <STARTDT> |  | Date UOM identifier became Valid  Always 10 characters |
| <ENDDT> | Y | Date the UOM SNOMED CT code ended  Always 10 characters |
| </UOM> |  | End Tag |
| </UOMS> |  | End Tag |
| </HISTORY> |  | End Tag |