

# What is the dm+d and what will it mean for you and pharmacy practice?

Paul Frosdick and Christine Dalton describe how the Dictionary of Medicines and Devices fits in with National Programme for Information Technology and the NHS Care Records Service, and what it will mean for pharmacy

Imagine the following scenario. Steve Driver is a successful, 47-year-old sales representative for a major company based in the home counties. On a business trip to Carlisle he is involved in a road traffic accident during which he receives a blow to the head. He has only minor cuts and bruises but is unconscious for several hours and appears to be confused for the next 24 hours. His personal effects, including his medicines, were all destroyed in the fire that followed the accident. At the roadside, the attending clinicians access his electronic NHS care record, which provides information on his medical history, and current treatment. It shows that he suffers from insulin-dependent diabetes and mild hypertension. He is also allergic to penicillin. Early identification of his diabetes allows him to be monitored and treated appropriately. Within 24 hours of the accident he develops cellulitis on one leg. His penicillin allergy is noted and he is prescribed erythromycin. After this, he makes an uneventful recovery and leaves hospital two weeks later. The details of his hospital stay, including the medicines given on discharge, are logged in his care record and his GP is electronically alerted to the event.

Had the electronic care record not been available the scenario could have been very different. Mr Driver's diabetes might not have been identified until later and serious metabolic problems could have complicated his management. When the cellulitis developed, he could have been given penicillin and developed anaphylactic shock or even died as a consequence. His stay in hospital would undoubtedly have been longer and he might have suffered lasting damage. No central record of the episode would have been made and his GP and community pharmacist would have been unaware of events and unable to find out about them easily.

Panel 1 shows how an individual's NHS care record will be based on a central "spine" which holds a summary of successive health care episodes and clinical events. More detailed records are held at local level.

Although electronic communication of the type described in the scenario above is not yet available, the technology that will make it possible in the near future is being put into place. One of the most critical elements of the whole scheme is the NHS Dictionary of Medicines and Devices (dm+d) because it is this, along with other terminologies, that will enable information about specific medicines or devices used in the

diagnosis or treatment of patients to be passed from one computer system to another without risk of corruption or mistranslation. The implementation of the dm+d will also make possible new ways of working both in clinical medicine and in business processes. This is a huge step forward that will allow information sharing and enable effective decision support through the linkage of data.

## Background

The value of automated systems, in particular electronic prescribing and electronic health records has been recognised for many years. In 2001, the Audit Commission recommended the implementation of a national system of coding for medicines. In June 2002, the Department of Health published its new strategy for developing IT in the NHS, "Delivering 21st century IT support for the NHS: national strategic programme", in which it set out the scope and strategy for the national programme.

The objective of the national programme is to create an information infrastructure that will improve patient care by increasing the efficiency and effectiveness of clinicians and other NHS staff. It will do this by:

- Creating an NHS Care Records Service to improve the sharing of consenting patients' records across the NHS
- Making it easier and faster for GPs and other primary care staff to book hospital appointments for patients
- Providing a system for electronic transmission of prescriptions
- Ensuring the IT infrastructure can meet NHS needs now and in the future

The dm+d is a prerequisite for the electronic transmission of prescriptions and for sharing of care records (medical records).

## What is the dm+d and how will it work?

In simple terms, the dm+d provides a unique code for each medicine and device along with a textual description of the item. It covers medicines and devices used in both acute and primary care and it is integrated with another terminology — SNOMED Clinical Terms — that provides unique codes for clinical terms and concepts. Computerised systems that use these terminologies will therefore use the same identifiers for medicines, devices and diseases and will be able to communicate with each other. This does not happen at present because different computer

systems are using different coding systems, so there is a risk of mapping errors. For example, community pharmacies use the PIP coding system for reordering and another for dispensing; hospital pharmacy computers use coding systems that are different again and clinical information systems use yet more different systems.

Most computer users are unaware of the coding systems that underpin the complex software that they use on a day-to-day basis. At first sight, it might seem that a dictionary of medicines and devices need be no more than a list of items and codes. However, a brief consideration of the processes of prescribing and dispensing shows that a more elaborate system is required. The coding system needs to be able to support prescribing, dispensing of packs of medicines (in primary care), dispensing of single doses (in secondary care) and also the transfer of information between the two types of system. For this reason, the dm+d contains a number of related pieces of information for each item. For example, the concept of "atenolol 50 mg tablets" is described as a "virtual medicinal product" (VMP), whereas an "actual medicinal product" (AMP) is one that exists and is made by a specific manufacturer to a specific formulation. Similarly, a virtual medicinal product pack (VMPP), for example, of 28 tablets, is a concept that can be related to an actual medicinal product pack (AMPP), for example, a 28-day pack of Tenormin or another brand. One reason that it is constructed in this way is so that prescribers can be guided into prescribing quantities that equate to complete packs. When the dictionary is used in an electronic prescribing system, this structure would allow the prescriber to select a VMP or AMP that is automatically linked to the corresponding AMPPs. Thus, for example, a prescriber may know which therapeutic agent is required but may be unaware of the manufacturer's pack sizes, and the system could automatically prompt the prescribing quantity that is consistent with complete pack entities that exist within the dictionary.

Integration with the SNOMED terminology is achieved through the link with SNOMED's "virtual therapeutic moiety". In this example it would be atenolol.

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## The status of the dm+d

The dm+d has been developed under the UK Clinical Product Reference Source (UKCPRS) Programme — a body that is responsible for overseeing the development of the dm+d and a range of other related products. The first component of this work was the Primary Care Drug Dictionary (PCDD), which was launched by the Prescription Pricing Authority in January 2003. In April 2004 the PPA and NHS Information Authority jointly released the first version of the combined Dictionary of Medicines and Devices (*PJ*, 10 April, p435). It covers medicines used in primary and secondary care and some prescribable devices. Further major groups of devices will be added over the next 12 months.

A dm+d editorial policy has been drawn up to describe the conventions applied to the naming of medicines. In line with European legislation and following guidance from the Medicines and Healthcare products Regulatory Agency, all drug names listed in the dm+d are held as recommended international non-proprietary names (rINNs) or modified rINNs, if these are available, except for adrenaline and noradrenaline. Thereafter, a naming convention of British Approved Names (BANs), for example for names such as co-codamol, is applied and the basis of the name is marked in the dm+d file.

The NHS Information Standards Board has approved the dm+d as a strategic operational standard. This board has representatives from all four home countries and it is intended that the dm+d will become the NHS operational standard for identification of medicines and devices and, as such, will be used by all clinical systems in the NHS.

## What are the implications?

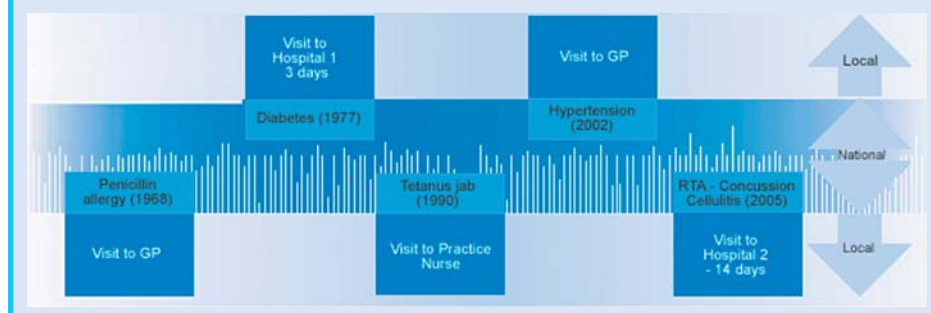
Perhaps the most interesting thing about the dm+d is the developments that it will make possible. Many of the new services envisaged in the NHS plans in all four home countries will be underpinned by this system. The implementation of the dm+d will ensure that products can be unambiguously identified and this will have important implications for patient safety. One of the drawbacks of the early computerised systems has been the need to rekey information. For example, prescriptions generated electronically by GP systems or hospital prescribing systems are routinely rekeyed in pharmacies, thereby introducing the possibility of transcription errors. However, if both the prescribing and pharmacy computer systems use the same coding system, it will be possible to transmit the information directly. Thus, electronic transmission of prescriptions (ETP), for example, could become a reality. David Cousins, head of medication safety for the National Patient Safety Agency, says the dictionary “will make a major contribution to improving patients safety in the prescribing, dispensing and administration of medicines by standardising the way that medicines are described — especially at hand-over points, where the signals

## Panel 1: The NHS Care Records Service

The NHS Care Records Service (NHS CRS) is being developed to provide a live, interactive patient record service accessible 24 hours a day, seven days a week, by health professionals, whether they work in hospital, primary care or community services.

Introduction of the NHS CRS will ensure that any health professional treating a patient will have access to essential clinical information, including the medicines the patient is currently taking. This will provide increased safety in the prescribing, dispensing and administration of medicines.

It will enable health professionals to access patients' records securely, when and where they are needed, via a nationally maintained information repository (the “spine”). When fully implemented, the NHS CRS will function across health and social care settings and organisations and will support planned, emergency and unscheduled care.



must be clear if errors are to be avoided”. Considering prescribing safety, Professor Cousins points out that some measures have been built into the dictionary to reduce the possibility of common prescribing errors, for example, injections will be described in terms of doses per vial — mg/vial and not mg/ml.

The dm+d will also underpin other aspects of the system that have a bearing on safety. For example, the coding system can be used to link with bar code and radio-frequency identification technologies. Another subtle advantage of the dictionary is that it will be updated centrally, thereby eliminating the need for individual institutions to update their own medicines files.

In addition to patient safety, the dm+d will also support key developments in services such as robotic dispensing systems. At present there is no standard drug dictionary that can be used by these systems.

Supplementary prescribing programmes require the independent and supplementary prescribers to use a common medical record. Clearly, the most efficient way for this to work is for there to be an electronic record to which both parties have access. As pharmacists become more involved in supplementary and independent prescribing and the management of chronic diseases and minor ailments, they will need to access and update patient information and medication histories. The link between the dm+d and the SNOMED Clinical Terms that are used to store the clinical information is important here. It is easy to see how the NHS care record will support this type of activity.

Medicines management systems will also benefit from the implementation of the dm+d. Currently, the absence of a standardised medicines coding system makes it impossible to analyse prescribing data across secondary and primary care. Once the dm+d is widely implemented this barrier will disappear.

The implementation of the standardised coding system could potentially have a major impact at several points in the supply chain. There will be opportunities to streamline many of the processes involved in moving medicines from the manufacturer to the patient. For example, if a standardised bar-coding system were in place, dispensary picking robots could generate and send their own orders to wholesalers, where picking robots could automatically assemble the goods, schedule the delivery and generate the invoice. Collation of data related to NHS medicines usage could be improved and more accurate contracting information could be produced.

## How soon will it happen?

The first version of the dm+d was released to suppliers in April 2004. During the summer and autumn it will be loaded into the appropriate software in preparation for its first deployment in 2005. Subject to a satisfactory performance, it will become the NHS operational standard to be used by all clinical systems in the NHS. This will mean that bodies outside the NHS, for example, community pharmacy systems and private hospitals — in fact any organisations involved with prescribing will need to use the dm+d.

## Conclusion

The dm+d is a significant step in the implementation of the NHS information technology programme. Although it seems remote at first sight, it will be in use every day in the high-tech pharmacies of the near future. Indeed many of the high-tech applications could not run without it.

**FURTHER INFORMATION** Further information about the dm+d is available at [www.dmd.nhs.uk](http://www.dmd.nhs.uk) or from the dm+d helpdesk (tel 0845 850 0001).