

Keyless lockers help staff and patients

In this article, **Rose Lynas, Agnes Hunter, Dianne Gill, Bernadette Irvine, James McElnay** and **Michael Scott** describe how a keyless locker was chosen and installed on an acute surgical ward as part of an integrated medicines management system

In Northern Ireland an integrated medicines management (IMM) project, funded under the Executive Programme Funds scheme, was commenced in the United Hospitals HSS Trust.¹ The purpose was to provide a comprehensive medicines management service to a selected group of high-risk patients.

It is recognised that if patients bring their medicines into hospital, and if all their medicines are available beside them and labelled from admission to discharge, this helps to ensure an accurate medication history from admission. It also produces a safer, faster and more efficient system for the storage, management and administration of medicines on the ward and at discharge.²

Therefore, as part of the second phase of the IMM project, it was decided to introduce a one-stop dispensing system into a 28-bed acute surgical ward in Antrim Area Hospital (a 426-bed district general teaching hospital).

Protocols were designed to produce the following desired outcomes:

- Accurate and rational drug history from admission
- Reduced medication errors
- Faster drug administration rounds
- Decreased time to discharge
- Elimination of unnecessary patients' own drugs and broken stock wastage
- Reduced process costs
- Cost savings to the combined health economy
- Extension of the role of the ward technician and pharmacist

The service will eventually be developed to include self-administration of medicines.

Installation of lockers was recognised as crucial to achieve a number of the desired improvements. For example, a study carried out by Wirral Hospitals NHS Trust showed that "giving medicines from patient lockers reduced errors; a baseline error rate of 10 per cent dropped to 2.5 per cent when drugs were administered from the patients' own medicines lockers".³

However, in terms of the actual choice of locker type, a number of issues arose and although it constituted only a small part of the process, it took some time to achieve a suitable product that met all the concerns of the staff involved.

Locker design

A project group was established consisting of pharmacists, pharmacy technicians, nursing managers and sisters, infection control nurses, the domestic supervisor, IT personnel and staff from Queen's University Belfast. At the pre-



The key bars can be individually programmed to suit each user

liminary meeting, concerns were expressed by nurse managers regarding the management of multiple keys when the scheme would eventually evolve to include self-administration of medicines. It was agreed unanimously at this stage that the traditional lock and key mechanism was unacceptable. Initial market inquiries provided minimal information on alternatives and all medication lockers that were in production incorporated the simple lock and key option. A more detailed search was started and companies beyond the usual locker manufacturers were approached to ascertain possibilities. Two alternative locking options were sourced.

The first was a digital lock, which proved to be impractical because it is impossible to programme a suite of such locks to obey a

master command. This is an essential requirement for ward and pharmacy staff who require easy access to all lockers without the added difficulty of memorising 28 codes. Security was also a point of concern since with regular use the panel can become imprinted which would enable the code to be ascertained relatively easily. Space is also limited on the ward and beds are close together allowing patients to see what their neighbour or staff member is typing.

The second option, which proved appropriate, uses transponder technology and is known as Dialock, manufactured by Hafele. The transponders necessary to activate the lock are available in several guises such as key bars, wristbands and swipe cards. These alternatives allow staff and patients the option of different formats ensuring both groups have the most appropriate for their needs. In appearance the visible portion of the lock resembles a button, which, when pressed in using a "key", kick starts the battery which in turn activates the transponder to make the necessary connection.

Key bars were selected for ward and pharmacy staff because they can be easily attached to their existing key chain. The key bars are individually programmed using a corresponding software package. It is possible to limit their access to specific times, days and duration of employment and extend its capabilities to activate all locks as well as log into the system and make changes.

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For the duration of the pilot four key bars were available on the ward and one each for the pharmacist and technician. Each has master function capabilities and is named according to the profession responsible for that particular "key". Eventually each staff member will have his or her own, programmed specifically for them, to match the extent of their grade and responsibilities. As an additional security feature it is possible to interrogate the system using a hand-held programming device. Information from each lock can be downloaded, including details of the previous 150 transactions. Incidents can therefore be investigated thoroughly as "names" of the individual "keys" that have opened the lock, including corresponding dates and times, are available.

For self-administration, patients will be given a fob which will be placed on their identity band. The available Velcro wristbands were deemed inappropriate by the infection control department due to their potential to potentiate cross infection. The fobs themselves can be effectively disinfected using existing fluids, such as the routinely used liquid detergent, and can be immersed in the same between patients without adversely affecting the mechanism. These fobs are not locker specific and so do not require programming. It is therefore not necessary to match up a particular fob to a particular lock. Any fob can be selected for a patient on admission but as soon as it has been used to close their medicines cabinet it becomes "locked" into that lock. It will not open another until, at the point of discharge or transfer, it can be "released" when the cabinet is left open for the next patient. This facilitates the move-

ment of patients around the ward, which would be difficult to manage with a system which operates a specific key for a specific lock.

Cabinet design

The design and procurement of the cabinet itself was as important as the selection of the locking mechanism. Due to the size of the chosen lock special consideration had to be given to the dimensions which would allow for sufficient storage space within the cabinet. No commercially available lockers were suitable, which prompted the design of a bespoke cabinet to include in its specification all desirable characteristics. These included:

- Specific dimensions
- Thickness and standard of steel used
- Coatings and colours
- Split shelf to allow for the option of a full or half shelf
- Integral dispensing tray on top to facilitate administration
- No sharp edges
- Specified weight capacity both on the hinged door and in the cabinet
- Suitable for disinfection using specified cleaning products
- All areas easily accessible
- Option of attachment to the existing bedside cabinets
- Delivery and installation instructions

Several companies were approached and one selected which could deliver what was requested. Prototypes of the lockers were produced and further alterations made until all requirements were satisfied. Twenty-eight ex-

amples of the finalised version were produced and installed on the ward in May 2003 as a joint effort between the manufacturer and the hospital's estates personnel. Due to insufficient space on the wall around the beds the cabinets were fitted to the front of the existing bedside cabinets. The ideal would be to have the locker as an integral part of the bedside cabinet and this is currently being investigated.

Outcome

The keyless locker system has proved extremely successful with all staff using the lockers. A satisfaction questionnaire showed that 100 per cent of nursing staff, 92 per cent of patients and 92 per cent of GPs were "happy with the new way of dealing with medicines in hospital". The response from the ward manager was "great job, medicines round faster and good for 'when required' medications". The product is now available on the new national contract.

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References

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The Society's museum

The Museum of the Royal Pharmaceutical Society maintains important collections representing the history, science and practice of pharmacy and the development of pharmacy as a profession in Britain. Since the Museum's establishment in 1842, the collections have grown to about 45,000 items.

Representative items from the museum collections are displayed in showcases in selected parts of the Society's headquarters building. Members and their guests can access these displays.

The collections also form an invaluable resource for researchers. They include:

- A fine collection of English pharmaceutical delftware
- Other ceramic items, including feeders, leech jars, advertising models and pot lids
- An extensive collection of mortars, including outstanding examples of bell-metal mortars bequeathed from the collection of the late Edward Saville Peck
- Pharmaceutical glassware, silver, pewter and treen used for storage, dispensing and display
- Instruments used for weighing and measuring in pharmacy
- Prints, paintings, photographs and ephemera illustrating a variety of pharmaceutical and medical subjects
- Parts of the reference collection of materia medica for which the collection was originally formed in 1842
- A substantial number of proprietary and trade name medicines, the earliest from the 1700s

Most of the items in the collections are kept off-site, safely stored for future generations. However, the museum's plans for the future focus on developing the collection's potential as a resource for learning, for schoolchildren, university students, community groups and web-users and through loans to other museums.

Since January 2002 the museum's collecting policy has also taken a new direction, to enable the collection's relevance to be maintained for now and the future. This new focus means concentrating on the collection of historical and contemporary proprietary medicinal products and material.

Further information on the museum and its services can be obtained from the museum office (tel 020 7572 2210; e-mail museum@rpsgb.org).

Diploma in veterinary pharmacy

The Royal Pharmaceutical Society has relaunched its diploma in veterinary pharmacy and introduced a postgraduate certificate in companion animal health care.

The core programme for the revised diploma consists of four modules: companion animals and public health; companion animal health care; veterinary pharmacy; and livestock health and husbandry. Each module includes a written assignment. Those aiming for the diploma must complete all four modules, undertake recorded practical experience, submit a dissertation, sit an oral examination and complete two three-day residential periods. The postgraduate certificate is obtained by completing two modules through distance learning and attending a study day.

Further information and registration forms can be obtained from Lorraine Fearon, Royal Pharmaceutical Society, 1 Lambeth High Street, London SE1 7JN (tel 020 7572 2409; e-mail lorraine.fearon@rpsgb.org).