Pharmaceutical ward stock management for nurses

Abstract
Ward stock management entails a wide range of activities including interpretation of scripts, ordering and receiving stock and dealing with expired medicines. Most of these activities are done by the nursing staff in the ward. This reduces patient time. This article provides practical guidelines on dealing with pharmaceutical stock within a health care unit. Included is the ward stock management cycle, a checklist for effective stock management, physical conditions of the medicine room, as well as physical conditions of pharmaceutical stock. If stock management guidelines are followed according to standard operating procedures (SOPs), an organised system may be in place for all the various aspects. This may create a system that functions both efficiently and effectively.

Introduction
In the clinical practice setting, be it in a hospital or a primary care facility, nurses are faced with the challenging task of managing drug preparations and treatment on a daily basis. This entails a wide variety of activities, which include but are not limited to the following:

- Evaluating and interpreting prescriptions, liaising with the prescribing practitioners and other members of the multidisciplinary health care team, and implementing and coordinating their prescribed treatment regimens.
- Ordering, receiving, storing, issuing and reordering drug supplies (ward stock).
- Preparing and administering prescribed medication to patients in their care.
- Monitoring these patients for the effects of such medicines, as well as possible adverse reactions to the prescribed treatment.
- Monitoring the patient for compliance (adherence) to the prescribed treatment regimen at regular intervals, in settings where the prescribed treatment is not administered directly to the patient.

Managing pharmaceutical stock in the health care unit
Pharmaceutical ward stock management is essential for nurses to be able to fulfil the six “rights” for the benefit of the patient: to give the right medicine, in the right quantity, of the right quality, at the right time, in the right place and for the right cost. Proper stock management and drug control are also vital for the successful management of a nursing unit, as well as the health care facility as a whole. Stock management involves various levels and aspects, including the ordering of stock, receiving and storage of stock in the health care unit (i.e. ward, department, operating theatre or clinic), issuing of the stock, and the reordering thereof, according to the specific levels used for inventory management. If stock is managed inadequately it could lead to wastage of essential drugs and financial resources, as well as a decrease in the quality of care rendered to the patient. Stock management follows a cyclic process and is illustrated in Figure 1. Table I contains a proposed checklist for effective stock management.

The Six “Rights”

Give the RIGHT medicine in the RIGHT quantity of the RIGHT quality to the patient ... at the RIGHT time in the RIGHT place for the RIGHT cost

Suitable physical conditions and security
Practitioners who have been licensed to dispense medication in terms of the Medicines and Related Substances Act, No. 101 of 1965 as amended, are required by law to have a designated medicine room for use as a storage facility. The specifications that such a medicine room needs to comply with, including storage areas within the medicine room, dispensing equipment and reference materials, are determined by the standards for Good Pharmacy Practice 4 (GPP4) in South Africa and are enforced by the South African Pharmacy Council (SAPC).
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Figure 1: Ward stock management cycle

Table 1: Checklist for effective stock management

<table>
<thead>
<tr>
<th>Action</th>
<th>Check (√)</th>
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<tbody>
<tr>
<td>1. Find a structured system for the management of stock in the unit, with regular updated minimum and maximum stock levels (or reorder levels), and a system for proper stock control. This will better manage (and prevent) stock losses (i.e. expired stock, damage or theft).</td>
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<td>2. Assign a dedicated registered nurse in the unit to manage the stock and ensure that there are open lines of communication between the nursing staff and the pharmacist.</td>
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<td>3. Identify fast-moving items (i.e. medicines that are in high demand) and add them to the list of ward stock (if available and not already done); the ordering interval for ward stock and the ward stock levels should be adequate enough to ensure sufficient supply of these items.</td>
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<tr>
<td>4. Upon receipt of ward stock, assign a specific method for unpacking (or rotating) stock, either using the ‘FIFO’ (i.e. the ‘first in, first out’ principle), or ‘FEFO’ (i.e. the ‘first expired, first out’ principle). The former principle may, for instance, be applied when more than one consignment of a particular item (from the same batch, and therefore with the same expiry date) are received on two or more consecutive occasions. Since all of these items have the same expiry date, the ‘FIFO’ principle determines that the stock units that were received first, be used first, followed by the second consignment, the third consignment, and so forth. On the other hand, the ‘FEFO’ principle is applied when different consignments of the same stock item come from different batches and therefore (probably) carry different expiry dates. In the latter scenario it makes obvious sense to first use the items that are closest to their expiry date.</td>
<td></td>
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<tr>
<td>5. Identify stock that is about to expire and that is not used very often (‘slow-moving’ items), and return these items to the pharmacy in a timely manner.</td>
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<tr>
<td>6. Assign regular (fixed) intervals for checking ward stock and to update the minimum and maximum stock levels, if necessary.</td>
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<tr>
<td>7. Appropriate operating procedures or guidelines should be in place, but even more important than having these policy documents in place, is ensuring that all of the staff members are familiar with the stock and drug management policies and procedures. This will ensure uniformity on the part of the ward staff and lessen the likelihood of unnecessary mistakes.</td>
<td></td>
</tr>
<tr>
<td>8. Check storage conditions, including temperature readings, on a regular basis (and, whenever indicated or required, ensure that a proper cold chain is maintained). GPP4 requires that a dispensary or medicine room be air-conditioned so as to maintain an ambient temperature of below 25 °C. Furthermore, a dedicated refrigerator is required for thermo-labile (i.e. temperature-sensitive) medicines. Both the air conditioner and the refrigerator should be kept in good working order and cleaned regularly. The temperature inside the refrigerator should be maintained between 2 and 8 °C and a suitable thermometer should be used to verify this. Access to the medicine room and pharmaceutical stock should be controlled.</td>
<td></td>
</tr>
<tr>
<td>9. The storage of drugs and preparations for internal use must be clearly marked and separated from products for external use to prevent any mistakes. Inflammable agents should also be separated from the other stock. When not in use, keep drug cabinets or medication trolleys locked to prevent unauthorised access and possible stock losses.</td>
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</tr>
</tbody>
</table>
**Monitoring of physical conditions**

To ensure and maintain the quality of medicines, make sure that the following conditions are in place:

- **Physical structure:** The medicine room or cupboard should be large enough to safely store all ward stock. Inspect the medicine room for damage to the roof, walls, floor, doors and windows and report any damage immediately.

- **Temperature:** Control the temperature to below 25°C. The medicine room or storage area should have an air-conditioner in good working order. If there is no air-conditioner, allow warm air to escape, e.g. open the door and windows of the medicine room. They should have air vents in walls or the ceiling. Refrigerators in the same room could generate addition heat.

- **Light:** Control the light in the medicine room. If windows are present, block the incoming light with paint or curtains.

- **Humidity and water:** Check for any leakage and report immediately to maintenance – to reduce moisture and water damage. Keep all containers closed, except for dispensing of medicines.

- **Pests:** Keep the medicine room free of pests, e.g. cockroaches, ants, wasps and rats. Remove any broken containers and clean up spills immediately. Ensure that there is a proper pest control policy in place.

- **Dust and dirt:** Dust and dirt could damage packaging and labels and contaminate medicines. Spills and breakages collect dirt. Dust the shelves, wipe the walls with a damp cloth and mop the floor on a regular basis.

**Physical condition of pharmaceutical stock**

Inspect all medicines on a regular basis for any signs of damage or deterioration due to physical conditions. Refer to Table II for a list of indicators to use.

**Security of medicines**

It is of the utmost importance to control the movement of stock and prevent theft. Remember the following key points to ensure security of medicine:

- When not in use, keep the medicine room, drug cupboard or medication trolleys locked to prevent unauthorised access and possible stock losses.

- Ideally there should be two locks with different keys.

- Limit access to the medicine room. Allocate one responsible professional nurse to have access to the medicine room and the key should be kept on her person.

- Check that all openings are secured with bars or grills to prevent theft.

- Have a standard operating procedure (SOP) in place for security and control of keys.

**Ordering**

To ensure that the ward carries optimum stock levels:

- Each ward should have a medicine list, showing prescriber levels needed to access each item. The medicine list should be displayed in the medicine room or cupboard and the stock on the shelves should correspond to the stock listed on the medicine list.

- Assign regular (fixed) intervals for checking and replenishing ward stock. Only stock printed on the medicine list may be ordered. Any item not on the list (non-ward items or motivated items) must be ordered by the doctor on a prescription (bed letter) per patient.

- The medicine list should have regularly updated reorder levels for each item. Use historical consumption to calculate and update minimum or maximum reorder levels.

- Orders must be placed in writing and signed by the sister in charge of the ward. Separate order forms must be completed for Schedule 5 and Schedule 6 medicines.

**Receiving**

To ensure that stock received is of good quality:

- All ward boxes should be received by the responsible person.

- Check the number of ward stock boxes and verify that...
they are still locked before signing the delivery note.

- Store all refrigerated items first, therefore check them first.
- Check the supplies received against the items, strength and quantities on the requisition and tick off all correct items.
- Check the expiry dates of all items. Do NOT receive any expired medicines.
- Check the quality of all items received according to the indicators in Table II.
- Note any discrepancies, sign and date the requisition.
- Complete a discrepancy report for any missing items, short supplied, over-issued, incorrectly supplied, expired or of poor quality.
- Store the received supplies correctly in the medicine store or cupboard.
- Record the information for each item on the stock card (date, quantity, reference number, signature, balance in stock).

**Storage and organisation of stock**

**Organisation of the medicine room**

The medicine room needs to be organised in such a way that one can easily find the required ward stock, determine how much of a particular item is still in stock, and separate and clearly identify items that are similar in appearance or have similar names. Table III summarises principles for the organisation of a medicine room or drug cupboard.

**Label the shelves**

- Attach a printed or written label for each item to the front of the shelf, containing the following information:
  - **Generic name**
    - An international non-proprietary name (INN) which refers to the chemical make-up of a medicine, rather than to the brand name under which the medicine is sold.
  - **Brand name**
    - The name given to the drug by the manufacturer. There may be many brand names for the same generic medicine.

**Table III: Stock organisation in the medicine room or drug cupboard**

<table>
<thead>
<tr>
<th>Storage place</th>
<th>Group</th>
<th>Precautions</th>
<th>Principles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top shelves</td>
<td>Dry medicines</td>
<td>Store in airtight containers. If the top shelf is near the ceiling or out of reach, use that shelf to store items that are not heat-sensitive and that are not used regularly.</td>
<td>• By generic name.</td>
</tr>
<tr>
<td></td>
<td>• Tablets</td>
<td></td>
<td>• In alphabetical order/according to the ward stock list.</td>
</tr>
<tr>
<td></td>
<td>• Capsules</td>
<td></td>
<td>• Arrange identical items in amounts that will be easy to count, e.g. pairs, groups of five or ten.</td>
</tr>
<tr>
<td></td>
<td>• Powders</td>
<td></td>
<td>• Use FEFO and FIFO.</td>
</tr>
<tr>
<td>Middle shelves</td>
<td>Liquids</td>
<td>Do not store oral medicines below, as it could be spoiled by leaking liquids or ointments. Liquids are heavy, thus do not over-pack these shelves, as they may break if not strong enough.</td>
<td>• Store all products in their original containers.</td>
</tr>
<tr>
<td></td>
<td>• Ointments</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Injectables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bottom shelves</td>
<td>Other supplies</td>
<td>Do not store anything on the floor. Moisture on the floor could cause damage to boxes and stock.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Surgical items</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Sheets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fridge or freezer</td>
<td>Cold chain items</td>
<td>In accordance with the manufacturer’s instructions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Vaccines</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• HIV test kits</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Certain ARVs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secured area or drug cupboard inside medicine room</td>
<td>Controlled medicines (Schedule 5 and 6)</td>
<td>In accordance with national guidelines.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Antiretroviral drugs and expensive items</td>
<td>Arrange according to therapeutic class (e.g. NRTI, NNRTI, PI) or according to inclusion in first- or second-line regimens.</td>
<td></td>
</tr>
</tbody>
</table>

*Use order list as a guideline
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pack size, schedule, item code, minimum/maximum reorder level.
• Use different colour labels to differentiate between internals and externals.

Storage of cold chain items
The quality, proper management and monitoring of thermo-labile (i.e. temperature-sensitive) pharmaceuticals have to be ensured. The following points are important to ensure proper maintenance of the cold chain for these items:
• Maintain the temperature of the refrigerator between 2ºC and 8ºC.
• Monitor and record the refrigerator temperature twice daily.
• Use a World Health Organization (WHO) approved dial thermometer or alcohol or mercury thermometer. A minimum/maximum thermometer must not be used. Hang the thermometer from the middle shelf of the refrigerator.
• Limit opening and closing of the door, as it may increase the temperature and cause cold chain items to deteriorate.
• Pack the refrigerator correctly and ensure that there is enough space around the refrigerator, so that air can move freely.
• Only store pharmaceuticals in the refrigerator – do not keep any food inside.
• Ensure that the refrigerator is kept in good working condition. Connect the refrigerator to a standby generator or other emergency power system to ensure uninterrupted power supply in case of power failure.

Inventory management

Stock rotation
To prevent having expired and obsolete stock on the shelves, assign a specific method for unpacking (or rotating stock), using the principles listed in Table IV.

Stock control and record keeping
Should include the following:
• Periodic stock counts to check if medicines have expired.

Table IV: Stock rotation (FEFO and FIFO principles)

<table>
<thead>
<tr>
<th>Example</th>
<th>FEFO (First Expiry First Out)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Same items with different expiry dates. Different consignments of the same stock item come from different batches and therefore (probably) different expiry dates.</td>
<td>Storage</td>
</tr>
<tr>
<td>Use</td>
<td>First use the items that are closest to their expiry date (items in front).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Example</th>
<th>FIFO (First In First Out)</th>
</tr>
</thead>
<tbody>
<tr>
<td>More than one consignment of the same item (same batch; same expiry date) are received on two or more consecutive occasions. OR The same items are received but from a different batch and with no expiry date.</td>
<td>Storage</td>
</tr>
<tr>
<td>Use</td>
<td>First use the items in front (items that were received first), followed by the second consignment.</td>
</tr>
</tbody>
</table>
to the wards as ward stock. Patients admitted to the wards and who are on the ARV treatment programme should bring their medication from home. If this is not possible, a supply for the period of admission must be provided on an individual prescription. On discharge, the medication must be given to the patient to take home.²,⁶

A three-day supply of the most common ARVs should be kept in the emergency cupboard under the control of the sister in charge for patients on ARVs who are admitted after-hours. A prescription with the patient, doctor and ward information is left in the emergency cupboard for the pharmacist to follow up. It is the responsibility of the sister in charge to ensure that the prescription is provided.²,⁶

**Expired, damaged and poor quality items**
It is important to reduce waste caused by expiry and to maintain the quality of the product given to the patient.²,⁴ After a medicine has reached its expiry date, when the product is of poor quality or damaged, its effectiveness may be reduced, it might have no effect or it might have adverse effects on the patient. The following points should be taken into consideration when dealing with expired medicines:²,⁴,⁶

- Expired medicines should NOT be used at all. Identify items which are short-dated or overstocked but still within their expiry date, and return these items to the pharmacy in a timely manner.
- Different products and dosage forms show damage or poor quality in different ways. Use the indicators of poor quality or damaged items in Table II as a guideline to determine what to look for when checking stock.
- Check all stock and identify and remove expired, damaged, poor quality, short dated or overstocked items at regular intervals.
- Count the stock that must be returned.
- Record the transaction on the necessary forms and record all information on the stock cards (date, time, name of witness, manner of removal).
- Place the stock in the ward stock box and lock the box.
- The cost of expired and damaged medicines must be calculated and the reasons for expiry or damage investigated.
- Ensure that there is an SOP in place for expired, damaged, short-dated and excess stock.
- NO MEDICINE MAY BE DUMPED INTO MUNICIPAL SEWERAGE SYSTEMS.

### Standard operating procedures

Appropriate SOPs or guide-lines should be in place.²,⁶

**Essential SOPs**
- Security and access to keys
- Pest control
- Cold chain management
- Ordering of supplies
- Receiving of supplies
- Storage of supplies
- Emergency medicine trolley
- Expired, short-dated, damaged and excess stock
- Controlled medicines

**Communication**

It is imperative for the ward staff to communicate with the pharmacy, especially when it comes to out-of-stock situations and problems with ward stock management and the receipt of supplies.²,⁶ Establish and ensure open lines of communication between ward staff and pharmacy staff, especially with the ward pharmacist.²,⁶

Effective communication can identify and resolve problem areas and improve the quality of care rendered to the patients.²

### Conclusion

In order for the patient’s medicines rights to be fulfilled, sound pharmaceutical ward stock management principles should be in place. These principles include various aspects from ensuring physical safety and security of the medicine room up to dealing with expired medicines. SOPs may serve as the golden thread tying all these aspects together and ensuring quality control in each step. Good communication between the nursing practitioner and the pharmacist enables continuous and safe medicine delivery to the patient.

### Bibliography