

# THE RAPID SYPHILIS TEST TOOLKIT MANAGEMENT 2

Supply and Stock Management  
for Healthcare Workers and  
Healthcare Facility Staff



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# Supply and Stock Management for Healthcare Workers and Healthcare Facility Staff

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## Hyperlinks

Please note that hyperlinks within this document are indicated by text underlined and **emboldening**.

## Abbreviations

**ANC:** Antenatal Care

**HCW:** Health Care Worker

**OOS:** Out of Stock Event

**SOP:** Standard Operating Procedure

**STI:** Sexually Transmitted Infection

## Glossary

**Forecasting** is the process of determining the quantity of supplies required by a facility for the future using data collected over the previous months' use.

**Inventory Control** is the management of supplies at a facility: dealing with the quantity to order and quantity to retain as buffer stock.

**Lead time** is the amount of time it takes for an order to be received at a facility after a requisition has been submitted.

**Procurement** is the process of acquiring products, from the requisition stage through to the receipt and approval of the product at the order site. It usually also involves setting standards, developing specifications, supplier research and selection, product evaluations, financing, and price negotiation.

**Requisition** is a formal request (in paper or electronic format), to a purchasing department or central warehouse, that specifies the quantity of product required and the time frame it is needed within.

**Supply Chain Management** is the process of planning, implementing, controlling and monitoring of supply chain activities. It ensures the adequate movement and storage of supplies from supplier to central warehouse to health centre.

**Stockouts**, or **Out of Stock (OOS) events**, occur when inventory or supplies are exhausted.

**Wastage** is the loss of a product through deterioration, or destruction.

## 1. Executive Summary

The Guide to Supply & Stock Management for Health Care Workers and Health Care Facility Staff is intended to provide all staff who work at a facility that offers rapid syphilis testing with the information and tools required to manage facility supplies. The guide is designed to be user-friendly and provide a “how-to” approach to stock management. Please note that the information presented in this guide is designed to be used alongside national guidelines for procurement and stock management and should not replace the official standards for supply chain management.

The guide focuses on three components of stock and supply management. 4. Managing Consumption of Supplies covers ordering and receiving supplies, 5. Ordering and Receiving Supplies discusses how to store supplies at a facility and what is required of a sound and secure store room, and 6. The Store Room covers how to track and manage consumption of supplies. This document should provide you with a complete overview of the supply management at a health care facility.

## 2. Aims and Objectives

The overall aim of this guide is to provide health care staff with a comprehensive guide to the process of supply and stock management. In addition, it:

- Provides details on ordering, receiving, storing and managing supplies.
- Provides examples and tools to assist in supply and stock management at health care facilities.
- Aims to equip health care staff with the knowledge and tools required to manage supplies to minimize stockouts of essential supplies and ensure that services remain uninterrupted.



The guide discusses the components of supply and stock management that are relevant to a health care provider working at a facility. It provides information on all stages of the process needed to maintain a sufficient quantity of essential supplies at the health care facility. As one of the sections of the Toolkit for the Introduction of Rapid Syphilis Testing, the guide uses the supplies needed to offer rapid syphilis testing services as examples throughout the text. However, the information is not unique to rapid syphilis testing and may be applied to other essential supplies.

When using this guide, it is important to refer as well to your national guidelines for supply and stock management. Each country, and in some cases each district, has its own schedule and policy for ordering. This may be on a monthly, quarterly, or annual basis. This guide is designed to cater to any ordering schedule but it is important that you are aware of the schedule and have this information posted clearly in the facility so that no order deadline is missed.

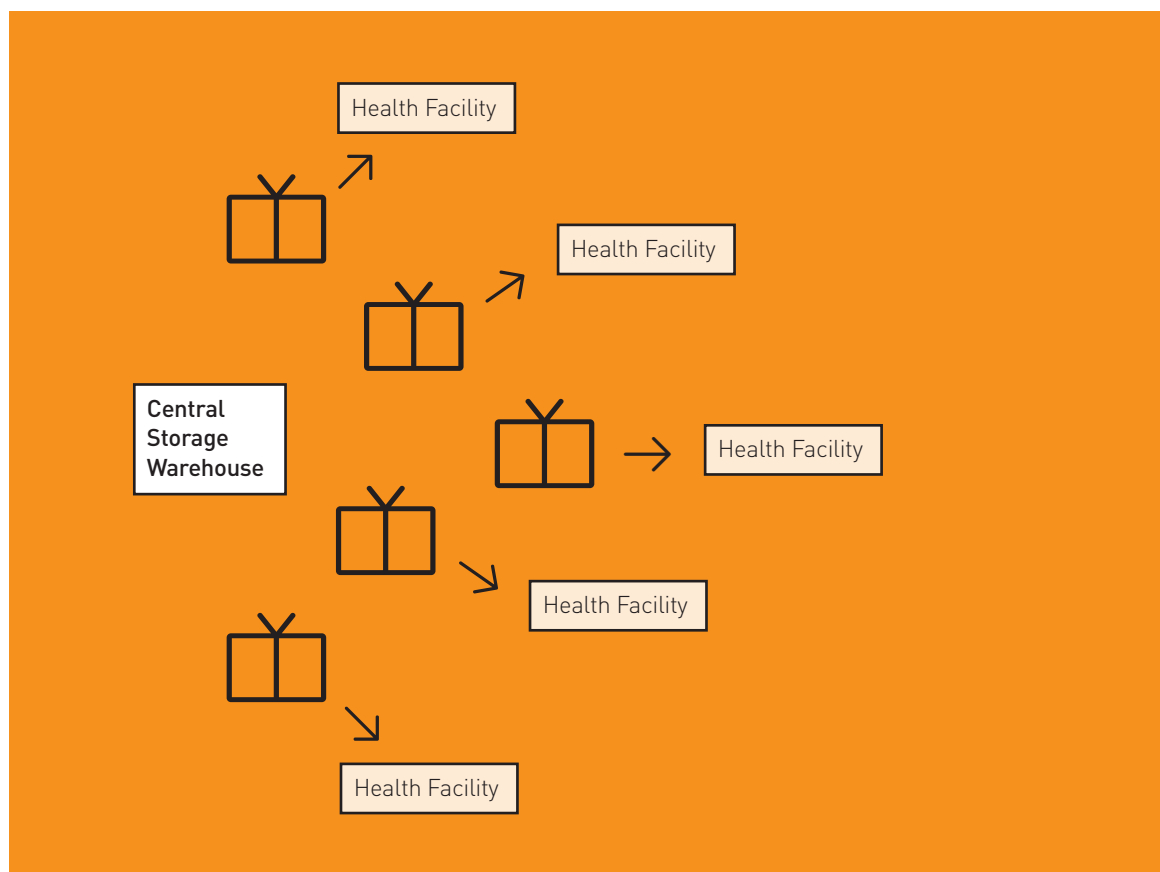
### 3. Introduction

Supply and stock management is a highly complex subject area. You need to consider many components in order to have a supply chain system that functions and is capable of reaching multiple remote health facilities in a timely fashion. Stockouts can interrupt health care services and impede upon a health care worker's ability to provide patients and clients with a high level of care. For patients to seek out a health care facility only to discover a service cannot be provided because of a stockout of essential supplies is a waste of time for everyone involved. Effective supply chain management is therefore an essential part of a functioning health care system.

#### How to Order Supplies

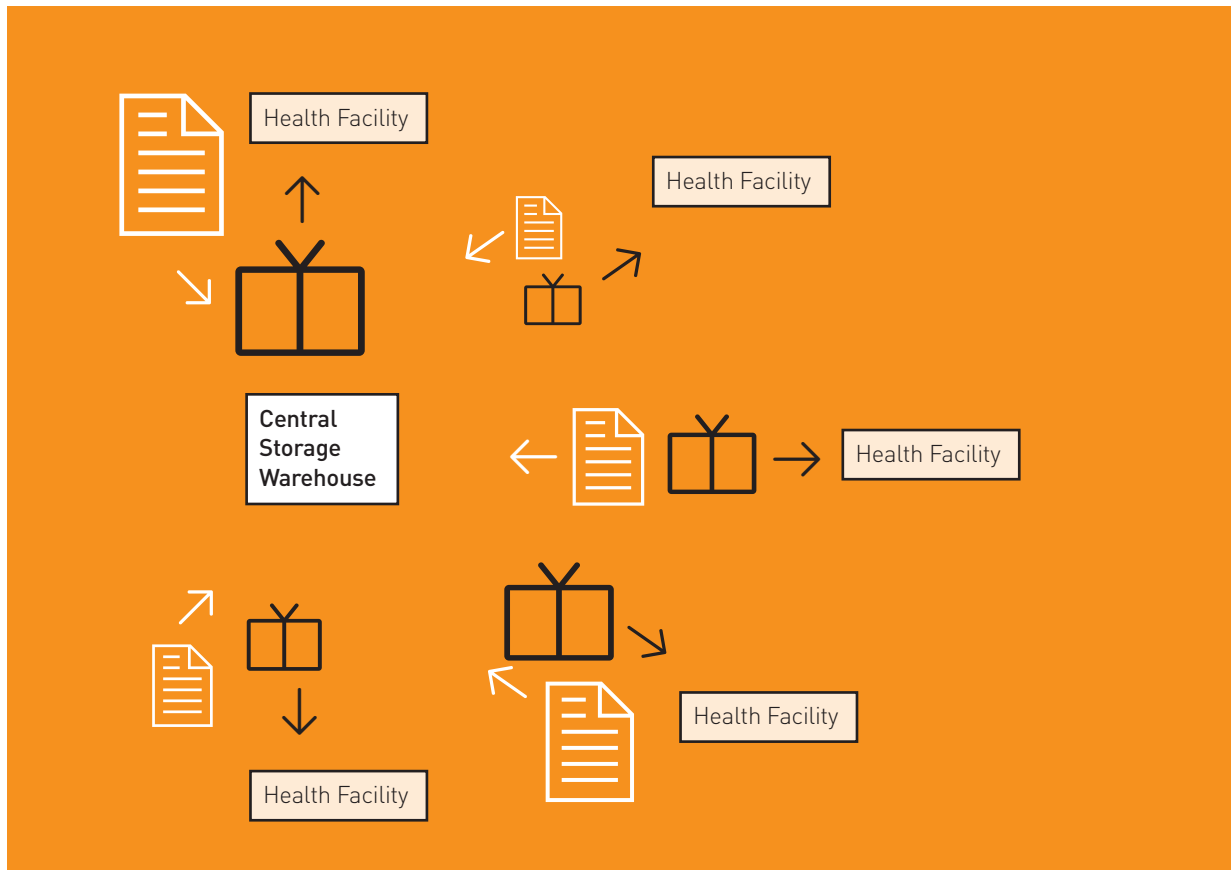
There are several systems for ordering supplies. The two main systems are push and pull. In a push system, supplies are sent from central stores to facilities on a regular basis. The quantity is determined by the Central Stores based on assumed consumption and patient flow data (see Figure 1). This may lead to facilities having too much or too little supplies because the quantity is not specific to their setting.

Figure 1. A Push Approach to Supply Chain Management



In a pull system, facilities order supplies from the central stores (see Figure 2). The quantity is determined using existing patient data and stock records. In Figure 2, the quantity of supplies ordered is represented by the size of the order form, and the matching quantity of supplies delivered to a facility is represented by the size of the box of supplies. In a well functioning pull system, the distribution of supplies reflects the needs of individual health facilities. However, if the system fails at any point, there is a propensity for stockouts, which lead to an interruption of services. A pull system requires facility staff to have a strong understanding of supply and stock management, and of recording mechanisms. This guide will provide health care facility staff with the information they need to manage a pull system effectively.

Figure 2. A Pull Approach to Supply Chain Management



Delivering rapid syphilis tests to a remote community in the Amazonas state, Brazil

## 4. Managing Consumption of Supplies

### Collecting Consumption Data

There are two types of consumption data: dispensed-to-user data and issues data.

**Dispensed-to-user data** is information about the quantity of goods actually put in the hands of end users. This includes the tests performed on clients/ patients, the gloves worn during testing to protect the health care worker, and the syringes used to administer benzathine penicillin.

**Issues data** is information about the quantity of goods moved from one level of the system to another. This may be the transfer of gloves from the antenatal clinic stores to the laboratory stores. Both dispensed-to-user and issues data should be documented on the store card kept with the item in the central store. If a clinic, pharmacy or laboratory keeps a small store of supplies, its staff should also maintain an up-to-date store card with both dispensed-to-user and issues data.

### 4.1 Stock card

Stock records are an essential part of the stock management system. Stock records track quantities of supplies used or disposed as wastage in a given period of time. This information is vital to guide facility ordering.

Stock cards should be completed every time stock is consumed, moved between locations, disposed as wastage or delivered. The stock card should record:

- Item name
- Item expiration date
- Stock balance at the beginning of the day
- Quantity consumed/ moved/ added/ disposed as wastage
- Stock balance at the end of the day

The stock card should also be signed by the person who removes or adds items to the store room. Stock cards should be kept in the store room, either alongside the stock or bound in a folder to avoid loss. The balance of stock remaining can be double checked with a physical count to ensure it is accurate and no errors have been made. See [Appendix 1](#) for an example of a stock card.



### Tanzania

- Problems with supply chain management led to ongoing stockouts in health facilities in north-western Tanzania, which continually interrupted syphilis testing services. As part of the project to introduce rapid syphilis testing, stock cards were introduced to all health facilities. This improved staff understanding of consumption needs.

As a result, forecasting was improved and stockouts became less frequent. Staff reported that the stock cards allowed them to track how many tests they used and clearly showed them how many they had left. This improvement benefited all facility services by reducing frequent interruptions to services.

## 4.2 Avoiding Wastage

It is important to minimize wastage of supplies. Disposing of large quantities of stock as waste contributes to stockouts and is costly for the health care system.

One way to avoid wastage of rapid syphilis testing is to be prepared for testing and follow the standard operating procedure (SOP) while performing and interpreting the test result. This will prevent the need to repeat the test if a step is skipped or because the result is unclear.

*A test should only be repeated if no “C” (control) line appears on the test strip.*

Another way to minimize unnecessary waste is to pay attention to expiration dates. Always follow this simple rule: “first to expire, first to be used”. When preparing for a clinic in the morning, the stock that is closest to its expiration date (but not yet expired!) should be selected for use. This will help the facility avoid the need to dispose of expired goods.

Wastage can also be reduced by correctly following storage guidelines. Guidelines for appropriate storage of supplies may be national, district or programme specific. Check with the district supervisor or programme manager for more information on storage guidelines in your country. Stock that has been damaged by water or extreme temperatures should not be used. Refer to [6. The Store Room](#) of this document for further guidance on how to prepare a store room that will help to minimize damage to supplies.

### Brazil

- In the Amazon region of Brazil, temperatures at health posts reach over 35°C with extreme humidity. The health posts do not have adequate cold storage for the rapid syphilis and HIV test kits. Health care providers screen all available members of the community for syphilis and HIV using the rapid tests on the same day that the test kits are delivered. This is made possible by working closely with the local indigenous

leader who informs the community of the day and time of the outreach program workers arrival. This approach to testing allows health posts in hot and humid regions to offer syphilis testing services without running the risk of compromising the stability of the test kits due to inadequate storage.



### 4.3 Physical Count

A physical count is the process of counting, by hand, the actual usable quantities of a given commodity available at a given time. It is recommended that a physical count be done at the end of the report period, before placing an order.

A physical count is conducted:

- To check that recorded stock card balances match actual quantities on the shelves
- To verify product quality
- To identify any losses or adjustments in the quantity
- To identify and correct errors in the stock card
- For purposes of accountability

## 5. Ordering and Receiving Supplies

Having supplies available in the facility is essential in order for health care workers to offer clients/ patients with syphilis testing services. If there is a stockout of a key consumable, the health care worker will not be able to offer a complete package of care. If there are no vials of benzathine penicillin in stock to treat a syphilis positive pregnant woman, she will not be able to receive treatment and will be at risk of having a stillbirth, a baby with low birth-weight, or a very sick baby with congenital syphilis. Likewise, correctly receiving supplies is the final action in completing the cycle of ordering and distribution. This ensures that the facility receives the correct supplies in the correct quantity and that records are updated so that accurate tracking of consumption can continue.

### 5.1 Ordering Supplies

#### 5.1.1 Forecasting

Forecasting is the term used to describe the process of determining the quantity of supplies required by a facility in the upcoming months. To forecast is to make a prediction based on data collected over the previous months. The data is collected on the stock cards, and using this information, staff at the facility can accurately determine the quantity of a consumable that the facility needs to order to prevent a stockout.

#### 5.1.2 Order Frequency

Ordering supplies on a regular basis in accordance with national and district policies will help to reduce stockouts. It is important to know the ordering schedule and protocols for your country so that forms are submitted on time to the correct place and person. If a request for supplies is delivered late, a stockout may occur. Regularly ordering supplies will also help staff to better understand the needs of the facility. This will be of benefit when forecasting for future orders.

There are three reasons that it is important to know what supplies are needed at your health care facility, and in what quantity:

- To avoid not having enough stock of an item.
- To avoid having too much stock: *overstocking can result in three possible outcomes – expiration of supplies, mismanagement of supplies, or loss of supplies – all of which can lead to wastage. In addition excess stock takes up too much space in the facilities.*
- To be able to offer *reliable health care services* to your community.

### 5.1.3 Facility Consumption

Accurate forecasting requires you to have a strong understanding of the true needs of the facility. This understanding is based on consumption data.

The quantity of tests consumed at the facility in one month can be calculated using the following equation:

$$\text{Facility Consumption (month)} = (\text{Quantity dispensed to user}) + (\text{Quantity disposed as wastage})$$

Facility consumption is based on the number of tests dispensed-to-user. There may be more than one clinic at the facility with its own small store cupboard and store card to track dispensed-to-user data. The facility dispensed-to-user information needs to include all dispensed-to-user data from all clinics.

**For example, if the antenatal care clinic dispensed 5 vials of benzathine penicillin in March, and the Sexually Transmitted Infection (STI) clinic dispensed 2 vials of benzathine penicillin in March, the number of vials the facility dispensed-to-user would be  $(5) + (2) = 7$ .**

To avoid wastage, use the dispensed-to-user data instead of the issues data recorded on the stock card at the facility's central storage room when making orders. Using only issues data to determine your order can lead to overstocking.

Facility consumption in one month also includes the quantity of an item disposed as wastage during that month. Items may have to be disposed of because they have expired or damaged. This should be recorded on the stock card as wastage.

### 5.1.4 Average Monthly Consumption

The quantity of any consumable that a facility requires for future months depends on how much it has used in the past. The stock card is intended to track consumption, or usage, of a supply. Average monthly consumption can be calculated using this information. This may be done using data from three months, six months, or even one year.

You will need to know the quantity of a supply consumed for each of the past three, six, or twelve months. If patient flow varies widely from month to month, a twelve month history may be most appropriate. If you do not have twelve months' worth of data, use three or six months' worth.

**If 10 vials of benzathine penicillin were issued to the antenatal care (ANC) clinic, and 10 to the Sexually Transmitted Infection clinic, using issues data would result in an order for 20 vials of benzathine penicillin when only 7 were dispensed-to-user.**

To calculate the average monthly consumption, add the quantity of an item consumed or wasted each month and divide by the number of months, as in the equation below.

$$\text{Average Monthly Consumption} = \frac{(\text{Quantity, Month 1}) + \dots + (\text{Quantity, Month X})}{X \text{ (number of months)}}$$

**For example:**

- Quantity, Month 1: 97
- Quantity, Month 2: 105
- Quantity, Month 3: 91
- X (number of months): 3
- **Average Monthly Consumption: 98 (exact answer is 97.7, rounded up to 98)**

For new intervention programmes, and in regions where syphilis testing has not been performed before, a supply forecast can be estimated based on the numbers of patients attending sexual and reproductive health services or antenatal care services, depending on the target population for the intervention.

#### 5.1.5 Buffer stock

A buffer stock is an additional quantity of a consumable. It is stored at a facility to prevent a stockout from occurring if a delivery of supplies is delayed or if there is an unusually high level of consumption or wastage at the facility. A buffer stock is a theoretical quantity of supplies. It does not refer to a separate stock of a consumable but to the total quantity of a consumable stored at the facility. It should not be a separate stock or else it would expire from not being used. The quantity of buffer stock a facility should maintain depends on its average weekly consumption and the maximum lead time. Lead time is the amount of time it takes for an order to be received at a facility after a requisition has been submitted.

$$\text{Target Buffer Stock} = (\text{Average Weekly Consumption}) \times (\text{Maximum lead time, in weeks})$$

**For example:**

- Average weekly consumption:  
25 syphilis tests
- Maximum time for a delivery to reach the facility (lead time): 4 weeks
- **Buffer stock required: 100 syphilis tests**

The quantity of buffer stock may differ between countries and districts according to national and district level policy.

It will not be necessary to order the full quantity of buffer stock at every order. The buffer stock is an additional quantity of an item stored at a facility to prevent stockouts. When completing a requisition for supplies, it is only necessary to order enough supplies to retain an adequate buffer stock. To determine how much additional stock is required to replenish your buffer stock, use the following equation:

$$\text{Additional Buffer Stock} = (\text{Target buffer stock}) - (\text{Remaining buffer stock})$$

**For example:**

- Average weekly consumption: 25
- Maximum lead time: 2 weeks
- Target buffer stock: 50
- Remaining buffer stock: 7
- **Additional buffer stock (to be ordered): 43 (50 – 7)**

### Zambia

- In Zambia, facilities order supplies every three months and always maintain a one month buffer stock. This means that after a delivery has been received at a facility, they have four months of supplies in the store room. The one month buffer level is standard across all facilities and simplifies the ordering process. If the level of supplies ever dips below one month, there is a protocol for placing an emergency order. This back-up system helps to prevent stockouts and interruptions to key services.



### 5.1.6 Order Quantity

The final order quantity will depend on the frequency of ordering, the calculated average monthly consumption, and the calculated buffer stock requirements. The equation below outlines one approach to calculating order quantity.

Order Quantity	=	Avg. Monthly Consumption	x	Number of Months Ordered for	+	Additional Buffer Stock
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**For example:**

- Average monthly consumption: 100
- Frequency of ordering: every 3 months
- Additional buffer stock required: 43
- **Order quantity: 343**

### 5.1.7 Documentation: Ordering

All orders should be completed using the national or district requisition forms. A record of the form should be kept at the facility alongside all stock management regulations, documents and standard operating procedures. It should be kept in a bound folder to prevent loss. The requisition form should contain the following information:

- Date of requisition
- Name of each item requested
- Quantity of each item requested
- Signature of staff member

## 5.2 Receiving Supplies

When supplies are received at a facility, a few important steps need to be taken.

- If the facility staff member present when the delivery is made is not responsible for stock management and is unfamiliar with the process, s/he should contact an experienced colleague.
- The receiving facility must ensure the supplies delivered to the facility are the correct items and the correct quantity.
- The delivery will have to be documented and the supplies stored according to the manufacturer's instructions as soon as possible.
- Product inserts should be checked for storage instructions.
- Supplies requiring refrigeration should be placed in a refrigerator immediately to avoid unnecessary wastage.
- Supplies that can be stored at room temperature should be placed in a secure store room.
- With all deliveries received at a facility, it is important that the documentation is completed at the time of delivery.

### 5.2.1 Inventory Control: Visual inspection

When a delivery is received at a facility, the responsible staff member should perform a visual inspection of the items and quantity of items that are delivered. The original order requisition should be used to ensure that the correct items and the correct quantity of each item were delivered. If the items and quantity delivered match the requisition, the responsible staff member should sign and date the delivery form to accept the delivery.

It is important that any incorrect deliveries are noted in the stock records and that excess supplies are not accepted, as this will lead to wastage and additional expenses for the district. Any incorrect or excess supplies should be returned to the district central store and re-distributed according to need.

If the quantity delivered is less than what was ordered, the responsible staff member should sign and date the delivery form to accept the delivery. S/he should then immediately complete an additional requisition for the additional quantity. It is important that this additional quantity be requested a second time to prevent a stock out at the facility and an interruption to services.

In addition to determining that the correct items and the correct quantity of an item were delivered, you should use a visual inspection to inspect the delivery for quality. Test kits should be visually inspected to ensure that there has been no damage to the packaging, that there are no leakages and that the kits are within the expiry date. A visual check to ensure that all reagents and consumables are provided will also be necessary. It is important not to accept items that are expired or damaged: these will compromise the quality of services, increase facility wastage and lead to stockouts. Items that are close to expiry or of poor quality should not be accepted. Instead, the original requisition should be re-submitted.





### 5.2.2 Documentation: Receiving supplies

When a delivery is received, and the items pass the visual inspection, the staff member responsible will need to sign and date the delivery form. This form should be filed and bound in a stock management folder alongside requisition forms. Having a folder containing all information on requisitions and deliveries will allow facility staff to track deliveries, identify the maximum lead time and better understand facility needs and the supply chain system.

Next, stock cards will need to be updated for each item received as part of the delivery. The stock card should note that a delivery was made, the date of the delivery, and the quantity of the item delivered. The stock card should then be signed by the individual responsible for transporting supplies to the storage room. Stock cards should be stored in the store room with the item and should only be updated once the item has been securely stored. Performing a physical count at this point will check that the final balance (after the delivery) is correct and that all supplies are accounted for.

## 6. The Store Room

Supplies must be stored in accordance with the manufacturer's instructions, as expiration dates are set according to these conditions. The expiration date should be visible on the outside packaging, and the instructions for storage should be provided in the package insert. If an item is stored at temperatures exceeding the recommended limit, its shelf life may be compromised. In the case of rapid tests, incorrect storage may affect the ability of the test cassette to identify patient specimens correctly.

Supplies that require refrigeration must not remain at room temperature for extended periods. They should be moved immediately from the delivery vehicle to the facility refrigerator, and the refrigerator door properly sealed to retain the correct temperature range. Supplies that can be stored at room temperature should be moved to a store room. This is to limit exposure to extreme temperatures, humidity or potential water damage from rainfall.

Each facility should have a dedicated store room for supplies. Depending on the size of the facility and the quantity of supplies which need to be stored, the store room may be anything from a large cupboard to a separate cabinet. Regardless of the size of the store room, all storage facilities should have the following:

- Lock – to prevent theft
- Shelving – to avoid storing supplies on the floor where they can be damaged by flooding water or spills
- Space – to allow all supplies to be kept off the floor
- Stock cards – to monitor consumption of supplies
- Temperature log – to record daily temperatures
- Thermometer – to monitor temperature
- Window – to improve ventilation
  - If the facility has a store cabinet, the cabinet should be located in a well ventilated room
- Window covering – to prevent rain from damaging supplies

Stock cards and temperature logs should be updated regularly. Stock cards allow for the quantity of a stock to be documented and tracked, and temperature logs allow for tracking of extreme temperatures which may compromise the validity of supplies. Extreme temperatures may affect test kits or medicines. If they are observed, appropriate measures should be implemented. Some precautions are described in the *Brazil case study* above. If a health care worker is worried that a test has been damaged by heat, s/he should perform a quality control test.

## 7. Appendix 1. Stock Card

Item Name: \_\_\_\_\_ Unit: \_\_\_\_\_

Manufacturer:

Kit Lot Number \_\_\_\_\_ Expiration Date: \_\_\_\_\_

\*\*Minimum Stock (Re-Order Level):

[illegible]

## 8. References

- World Health Organization (2006) Handbook of Supply Management at First-Level Health Care Facilities, 1<sup>st</sup> version for country adaptation.
- USAID DELIVER Project (2009) The Logistics Handbook: A Practical Guide for Supply Chain Managers in Family Planning and Health Programs.
- Centers for Disease Control and Prevention (2005) Guidelines for Assuring the Accuracy and Reliability of HIV Rapid Testing: Applying a Quality System Approach.