AIDSFree NIGERIA TRAINING MANUAL

LOGISTICS OF INFECTION PREVENTION AND CONTROL AND HEALTH CARE WASTE MANAGEMENT COMMODITIES

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AIDSFree
Strengthening High Impact Interventions for an AIDS-free Generation

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ACRONYMS

AD	auto disable
A&E	accident and emergency ward
AIDSFree	Strengthening High Impact Interventions for an AIDS-free Generation
AMCR	average monthly consumption rate
B/F	balance brought forward
CSCMP	Council of Supply Chain Management Professionals
DAR	daily activity register
EOP	emergency order point
FEFO	first to expire, first out
FIFO	first in, first out
FMOH	Federal Ministry of Health
GOPD	general outpatient department
HCW	health care waste
HCWM	health care waste management
IPC	infection prevention and control
IS	injection safety
IV	intravenous
LGA	local government area
MOH	Ministry of Health
MOS	months of supply
PPE	personal protective equipment
RIV	requisition issue voucher
RUP	reuse prevention
SIGN	Safe Injection Global Network
TB	tuberculosis
QA	quality assurance
USAID	United States Agency for International Development
VEN	vital, essential, or nonessential
WHO	World Health Organization

INTRODUCTION

The Council of Supply Chain Management Professionals (CSCMP) defines logistics management as "the part of supply chain management that plans, implements, and controls the efficient, effective forward and reverses, flow and storage of goods, services, and related information between the point of origin and the point of consumption in order to meet customers' requirement" (CSCMP 2011).

Logistics management must be considered at every facility, at every level of the supply chain. It plays an important role in ensuring that the product conforms to customer requirements. It also involves efficient integration of suppliers, manufacturers, warehouses, and stores and encompasses activities at many levels, from the strategic level through the tactical and operational levels.

The concepts described in this training manual will help anyone who is responsible for improving, revising, designing, and operating all or part of a logistics system. This handbook is the starting point for anyone interested in learning about and understanding the key principles and concepts of supply chain management for infection prevention and control (IPC), including commodities for health care waste management (HCWM). For any public health program to deliver high-quality, comprehensive services and to ensure IPC/HCWM commodity security, a robust logistics system for managing IPC/HCWM commodities must be in place.

This training manual was adapted from *The Logistics Handbook: A Practical Guide for the Supply Chain Management of Health Commodities,* developed by the USAID | DELIVER PROJECT (2011). That handbook is a valuable asset for anyone who manages health commodities—from policymakers and program managers to storekeepers, service providers, technical assistance providers, and public- and private-sector partners. The technical topics apply to managing a variety of health commodities, including essential drugs, vaccines, contraceptives, TB medicines, antiretroviral and antimalarial medicines, HIV and malaria rapid diagnostic tests, and others. For more information, visit the USAID | DELIVER PROJECT website at deliver.jsi.com.

SUPPLY MANAGEMENT IN THE CONTEXT OF IPC AND HCWM COMMODITIES

Introduction to logistics

Good logistics ensure the continued availability of supplies and equipment, thus meeting customers' needs, a positive effect for a program or service. As part of the three-prong approach to injection safety developed by the World Health Organization (WHO) and the Safe Injection Global Network (SIGN), a full supply of commodities for injection safety and HCWM must be available at all service delivery points.

Logistics: The operational component of supply chain management, including quantification, procurement, inventory management, transportation and fleet management, and data collection and reporting. The terms logistics and supply chain are often used interchangeably.

Why logistics matters

The goal of a health logistics system is much larger than simply making sure a product gets where it needs to go. Ultimately, the goal of every public health logistics system is to help ensure that every customer has commodity security. Commodity security exists when every person is able to obtain and use quality essential health supplies whenever he or she needs them. A properly functioning supply chain is a critical part of ensuring commodity security—financing, policies, and commitment are also necessary. Effective supply chains also help determine the success or failure of any public health program. By ensuring the continued availability of supplies and equipment, logistics positively affects the outcome of a program or service, by meeting a customer's needs.

NO PRODUCT?
NO PROGRAM!

Logistics increases program impact

If a logistics system provides a reliable supply of commodities, more people are likely to use health services. Clients feel more confident about a health facility or program when it has a constant supply of commodities—they are motivated to seek and use services.

Logistics improves the quality of care

Well-supplied health programs can provide high-quality service; poorly supplied programs cannot. Well-supplied health workers can use their training and expertise fully, directly improving the quality of care for clients. Clients are not the only ones who benefit from consistent availability of commodities. Providing adequate, appropriate supplies to health workers, an effective logistics system also increases their professional satisfaction, motivation, and morale. Motivated staff are more likely to deliver a higher quality of service.

Logistics improves cost-effectiveness and efficiency

An effective supply chain contributes to improved cost-effectiveness and can stretch limited resources. Strengthening and maintaining the logistics system:

- Reduces losses due to overstock, waste, expiration, damage, pilferage, and inefficiency
- Protects other program investments
- Maximizes the potential for cost recovery.

> **The Six Rights of Logistics**
>
> The **right** goods in the **right** quantities in the **right** condition, delivered . . . to the **right** place at the **right** time for the **right** cost.

Logistics System

Customer expectations define the purpose of a logistics system—it ensures that the right goods, in the right quantities, and in the right condition, are delivered to the right place, at the right time, for the right cost. In logistics, these "rights" are called "the six rights." Whether the system manages contraceptives, essential drugs, or IPC/HCWM commodities, these six rights always apply.

The Right Goods

- Based on product selection and specification
- Based on meeting appropriate quality/standards
- Based on suitability for customers.

The Right Quantity

- Based on consumption
- Based on amount of time between placing the order and receiving the commodities in your store ready for use
- Enough to serve the customer.

The Right Condition

- Not damaged or expired
- Stored per the manufacturer's instructions.

The Right Place

- Accessible to the client
- Accessible to the provider in stores and in facilities.

The Right Time

- Available when needed.

The Right Cost

- Affordable by the client
- Cost-effective for the program
- Distributable by affordable modes of transport.

Logistics for IPC/HCWM

HCWM and injection safety (IS) are both elements of IPC. Health care waste (HCW) is generated during diagnosis at health facilities, laboratories, and research facilities; during human and animal immunization and medical treatment and research; and during the production or testing of biological products. Sharps (including used needles), used gauze, blood/IV lines, gloves, infusion sets, scalpels, blades, and broken glass are examples of HCW. Expired drugs, laboratory reagents, and cleaning solvents are also HCW products. The HCW stream also includes non-hazardous waste—paper and packaging, bottles, and cans.

HCW is a major health and environmental concern; the primary objective in HCWM is to protect health workers and facility staff, the community, and the environment. A well-functioning logistics system is critical to proper HCWM at various levels in the logistics system. HCWM includes adequate waste collection, storage, and handling, and transport from the point of generation to its final treatment and disposal.

The 2015 WHO policy on injection safety emphasizes the importance of the availability of safety-engineered injection devices—specifically, reuse prevention (RUP) syringes and needles. The policy also calls on governments to transition to exclusive use of these RUP devices by 2020 and recognizes the need for health system-wide policies and standards for their procurement as well as the importance of the availability of commodities for safe disposal of injection devices. The availability of IPC commodities, including IS and HCWM supplies and equipment, is crucial to the safety of health workers, patients, and communities.

WHO Policy on Injection Safety (2015)

Governments

By 2020, transition to the exclusive use, where appropriate, of safety-engineered injection devices with reuse prevention and sharps (needle) injury prevention. These devices should meet WHO quality standards.

Set health-system-wide policies and standards for procurement, use, and safe disposal of disposable syringes in situations where they remain necessary, including in syringe programs for people who inject drugs.

Develop an implementation strategy for procurement of safety-engineered syringes, training and education of health workers, and sound waste management. Establish a targeted communications program and a framework for evaluating overall progress.

KEY LOGISTICS MANAGEMENT TERMS

Pipeline: The entire chain of storage facilities and transportation links through which supplies move from one manufacturer to end user, from the time of order to the time the supplies reach the end user.

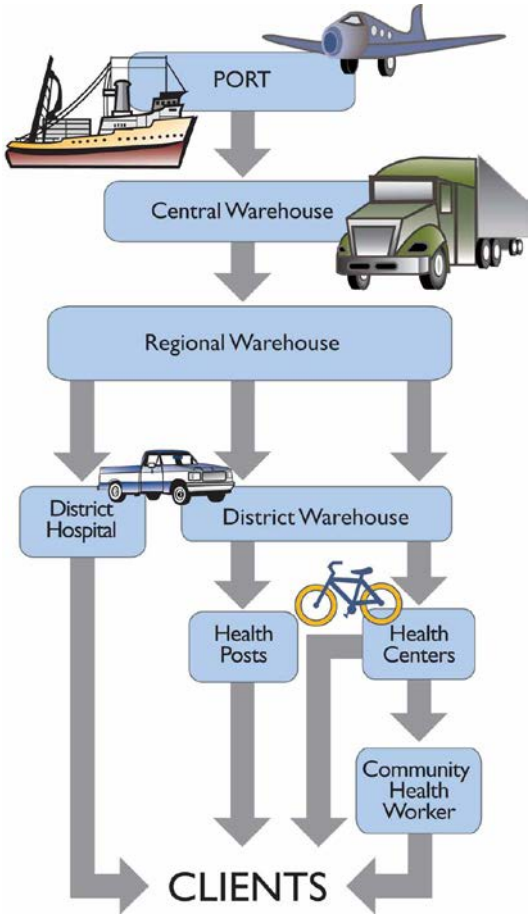
Pipeline length: The total time required for a product to move from the top of the pipeline to the customer/client.

Lead time: The amount of time between placing the order and receiving the commodities in your store ready for use. Stock that has been received, but not inspected, recorded, and put on the shelf is not ready to be issued and is not available to be used. To satisfy the client's need, stock must be available for the customer when requested or needed.

Lead time stock level: The level of stock used between when new stock is ordered and when it is received and available for use. The lead-time stock level is expressed in number of months of supply or as a quantity.

Push system: A distribution system where higher-level facilities determine order quantities for lower-level facilities. Also called an "allocation system," because it is the higher-level facilities that allocate products to client facilities.

Figure 1. Sample In-Country Pipeline



(Source: USAID | DELIVER PROJECT, 2011)

Pull system: A distribution system where lower-level facilities decide how much they require and when and then pull the products down. Also called a "requisition system."

Minimum (min) stock level/min quantity: The amount of an item below which a store or warehouse should not allow its stock to fall under normal circumstances—that is, the level of stock at which actions to replenish inventory should occur under normal conditions. The min stock level should be expressed in months of stock; it can then be converted to a quantity.

Maximum (max) stock level/max quantity: The amount of commodity above which a store or warehouse should not allow its stock level to rise under normal circumstances. The max stock level should be expressed as a number of months of stock; it can then be converted to a quantity. The amount stated indicates how long supplies will last.

Ending balance: The quantity of stock on hand at a given period, as determined by a physical count.

Safety stock: The amount of a commodity kept as reserve (buffer) so as to prevent stockouts resulting from delayed deliveries or increased demand.

Bin card: An individual stock-keeping card that provides information about a single lot of a given product by lot number or batch number.

Physical inventory: The process of counting, by hand, the total number of units of each commodity type in a store, warehouse, or health facility.

Requisition and issue voucher: A document that lists the items and quantity of each issued to a facility as well as in a separate column of those received; also known as the RIV.

Review period: The routine interval of time between an assessment of stock levels to determine whether additional stock is needed.

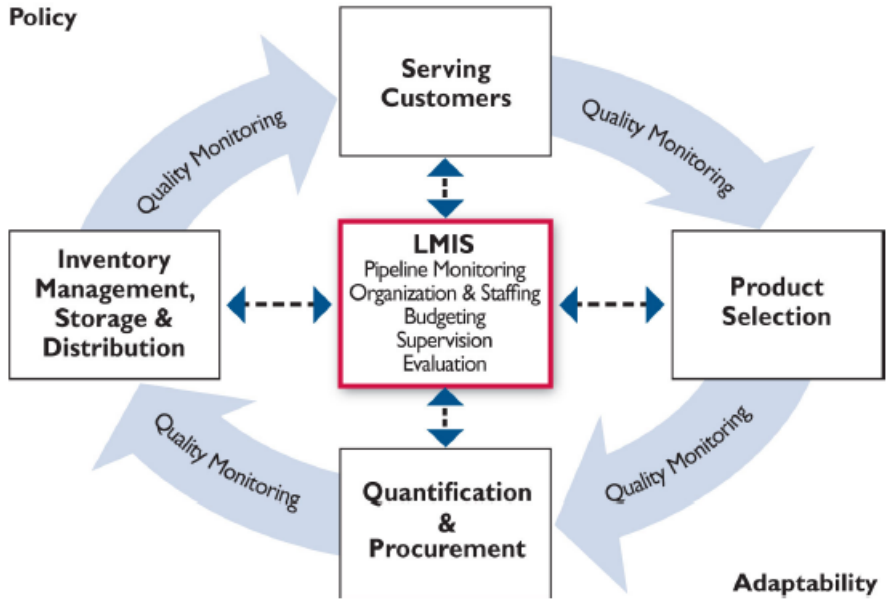
Emergency order point: The level of stock that triggers an emergency order (the EOP); it can be reached at any point during the review period. The EOP must be lower than the min.

Safety stock: The amount of a commodity (expressed in months) kept as reserve (buffer) stock to prevent stockouts resulting from delayed deliveries or increased demand.

THE LOGISTICS CYCLE

Logistics management includes a number of activities that support the six rights. Logisticians have developed a model to illustrate the relationship among the activities in a logistics system. This model is known as the logistics cycle.

Figure 2. The Logistics Cycle



(Source: USAID | DELIVER PROJECT)

Components of the logistics cycle

The logistics cycle is circular. Each activity—customer service, product selection, quantification and procurement, and inventory management—depends on and is affected by the other elements of the cycle. Activities in the center of the cycle—the logistics management information system (LMIS), pipeline monitoring, organization and staffing, budgeting, supervision, and evaluation—represent the management support functions that inform and impact the other elements of the cycle.

Serving customers

This is the priority of the logistics cycle. All who work in logistics must remember that meeting customer needs is the reason they select, procure, store, or distribute products.

Product selection

Products selected for use will impact the logistics system, so logistics requirements must be considered during product selection. Products key to IPC and HCWM include:

- Single-use syringes and needles
- RUP syringes
- RUP and needle-stick prevention syringes
- Safety boxes
- Bin liners

Quantification and procurement

Quantification is the process of estimating the quantity and cost of the products required for a specific health program (or service) and, to ensure an uninterrupted supply, determining when the products should be procured and distributed. *Forecasting* is the projection of actual needs based on historical data (i.e., consumption data), future program plans, and the underlying assumptions. Forecasting allows the right goods to be acquired, in the right quantities, and at the right cost.

Procurement involves the process of planning, forecasting, specification development, bids, orders, and facilitation of delivery and regulatory needs. Procurement requires financial resources, technical skills, and management systems. Health programs can procure from international, regional, or local sources of supply—procurement should follow a set of specific procedures that ensure an open and transparent process that supports the six rights.

Inventory management, storage, and distribution

This is the process of receiving, storing, issuing, ordering, and distributing commodities, such as for IPC, IS, and HCWM, to various sites. After items have been procured and received by the health system or program, they must be transported to the service delivery point, where they will be received by the client. During the process, they must be stored until they are sent to the next lower level, or until the customer needs them.

Center of the logistics cycle

Logistics management information system: Information is the engine that drives the function of the logistics cycle; without information, the logistics system would not run smoothly. Information is needed for making logistics decisions, including when and how much to order.

Organization and staffing: A logistics system can work only if stock levels are monitored, orders placed, and products provided to clients by well-trained, efficient staff.

Budget: Allocation and management of finances directly affect all parts of the logistics cycle, including the quantities of products that can be procured, the amount of storage space that may be available, the number of vehicles that can be maintained, and the number of staff needed to work in logistics. Mobilizing resources and securing a budget line item for IPC/HCWM commodities and logistics activities are extremely important to ensure that these products are available and that the logistics system operates effectively.

Components of Inventory Management

- Determining order quantities
- Receiving commodities
- Storage
- Issuing commodities
- Records
- Reporting

Supervision: Supervising staff who work within the logistics system keeps it running smoothly and helps make it possible to anticipate needed changes. Routine, effective supervision, coupled with on-the-job training in logistics, facilitates prevention and resolution of supply problems and human resource constraints.

Monitoring and evaluation: Routine monitoring and periodic evaluation of logistics system activities help demonstrate how well the system is performing, the areas that can be improved, and the system's impact on service provision.

Quality monitoring

Quality monitoring, which surrounds the logistics cycle, ensures an efficient, effective system and appears between each activity of the cycle. Quality monitoring involves both the quality of the products and the quality of the information and day-to-day logistics decisions. To satisfy the six rights and ensure that you receive the right goods—in the right condition—you need to institute measurements for quality assurance (QA) throughout the supply chain.

Policy and adaptability

The logistics system also needs to operate within a supportive policy environment, as government regulations and procedures affect all elements of the logistics system. Logistics systems must be designed to be flexible and adapt to constantly changing circumstances, such as changes in demand for a product and changes in policies for funding logistics activities.

DETERMINING ORDER QUANTITIES

The first step of inventory management is determining order quantities. No matter which inventory control system is used, the formula for calculating the order, or issue quantity, is the same. This is true whether the system is an allocation system (i.e., a push system) or a requisition system (i.e., a pull system). In the former, the quantity to issue is calculated at a higher level of the logistics system; in the latter, the quantity to order is calculated by the store or warehouse that will receive the product.

TIP! If you find that stock-keeping records do not match the actual stock, conduct a physical inventory count more often and take steps to improve recordkeeping.

To calculate the order or issue quantity, storekeepers must be able to convert max and min stock levels into actual quantities of product needed. A storekeeper cannot send an order to the central warehouse for "two months of stock" of an item. The central warehouse would not know what that meant.

Maximum–minimum inventory control system

To ensure a continuous supply of health products at service delivery points, logistics managers monitor stock levels and establish ordering and distribution procedures to maintain stocks between recommended maximum and minimum levels. This is called a maximum–minimum inventory control system ("max–min" for short). Ideally, to prevent stockout and to avoid having stock expire in store, an order is placed when the stock hits the minimum—known as the "reorder level" or "reorder point."

Determining order quantities

Before calculating the number of months of stock on hand (that is, to determine the amount to be ordered), it is necessary to establish what is in stock. This is done through physical inventory.

Purpose of Physical Inventory

- To identify discrepancies between actual supplies and what is recorded in the bin card
- To detect any supplies that have expired, nearly expired or are damaged
- To know how much of each commodity is in stock.

A physical inventory is the process of counting, by hand, the total number of units of each commodity type in a store. A physical inventory count is used to compare actual stock on hand for each commodity with the amount recorded on the stock card. For QA, a physical inventory count also provides an opportunity to visually inspect products.

Types of Physical Inventory

Complete Physical Inventory

All products and commodities are inventoried at the same time—this is normally done annually. At the clinic level, you may want to conduct a physical inventory count as often as once a month when you complete your monthly report.

Partial or Sample Physical Inventory

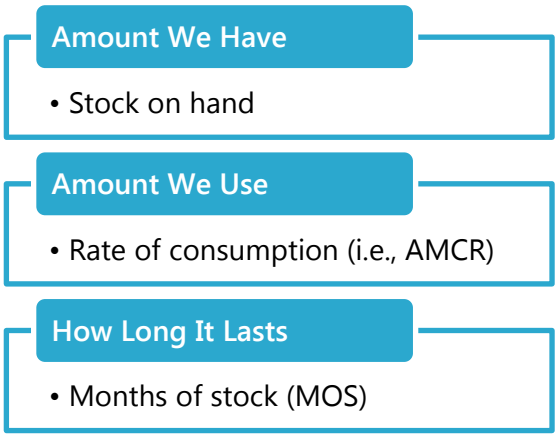
In this type of physical inventory, some products are inventoried at different times—for example:

- **Cycle counting:** Warehouse managers conduct a physical inventory count of a fraction of items each month. By the end of the year, all items will have been counted. When the next year starts, the process begins again. Regular cycle counting can keep physical inventory up to date without disrupting store operations.
- **Vital, essential, or nonessential analysis:** This analysis (also known as a VEN analysis), involves counting the most essential, or most expensive items, more often. This analysis categorizes products as vital, essential, or nonessential, enabling you to assess stocks of vital items more often than stocks of nonessential items.
- **ABC analysis:** In this process, you divide products into three categories based on their monetary value and then inventory them with a frequency in proportion to this value. Alternatively, as a logistician, you might use an ABC analysis based on how often a receipt or issue is made of a product. For example, if bin liners are issued more often from the health facility store or warehouse while PPE is less frequently issued, you might count and assess bin liners more often.

Steps in conducting physical inventory

- Count every item in stock by commodity type.
- Record findings of the physical inventory—including date—on bin cards and stock registers.
- Mark expiration dates on cartons and boxes where they are not already marked.
- Reorganize commodities according to first to expire, first out principles (FEFO), if not already done.
- Reorganize supplies and equipment according to first in, first out principles (FIFO), if not already done.
- Separate expired and damaged items from those that are usable; make appropriate entries in the registers.
- In case of discrepancy (i.e., shortages or excess), adjust the records.

Figure 3. How to Assess Stock Status



Key measurements in inventory control

- Average monthly consumption rate (AMCR)
- Months of supply on hand (MOS)
- Maximum and minimum stock levels
- Amount of commodity to order

The formula for assessing stock status is expressed as:

$$\frac{\text{STOCK ON HAND}}{\text{AMCR}} = \text{MONTHS OF STOCK ON HAND}$$

Average monthly consumption rate

The AMCR is the average number of a commodity issued to clients or patients during a given period—often the most recent three months. The AMCR:

- Helps determine the amount of each commodity that must be kept on hand in order to prevent stockouts.
- Must be adjusted according to the current consumption trends. Because consumption fluctuates over time, you should not use data from one month only.

How to calculate AMCR

AMCR = TOTAL CONSUMPTION ÷ TOTAL MONTHS (DURING A SPECIFIED REVIEW PERIOD)

Example: If your facility used 500 syringes (5 ml) in January, 1,000 syringes in February, and 300 syringes in March (a period of three months), what is your AMCR?

AVERAGE MONTHLY CONSUMPTION = TOTAL CONSUMPTION ÷ STOCK-TAKING PERIOD IN MONTHS:
1,800 ÷ 3 MONTHS = 600

TIP! When you calculate the AMCR, the answer will probably have a decimal. Because you cannot distribute a portion of a product, always round up the AMCR to the nearest whole number.

Months of supply on hand

The MOS is the actual amount of each commodity on hand expressed in months.

Why determine the MOS?

- To avoid over- and under-stocking.
- To have the right amount of commodity on hand at all times.
- To facilitate determining the amount of supplies to order.

JANUARY	**500**
FEBRUARY	**1,000**
MARCH	**300**

How to calculate MOS

STOCK ON HAND ÷ AMCR = MOS

If the stock of 5 ml syringes on hand is 3,000 and your AMCR (calculated above) is on hand:

3,000 ÷ 600 = 5 MONTHS OF STOCK ON HAND

Maximum and minimum stock levels

Max–min stock levels are based on AMCR and the maximum and minimum number of months assigned to each level, which differs by facility level. Maximum and minimum stock levels are measured in months of stock and are established based on the review period and the lead time.

- **Maximum months of stock:** The amount of commodity, expressed in months, above which the store or warehouse stock level should not rise under normal circumstances.
- **Minimum months of stock:** The amount of commodity, expressed in months, below which a store or warehouse stock level should not fall under normal circumstances.

MAXIMUM STOCK LEVEL = AMCR X MAX MONTHS OF STOCK

MINIMUM STOCK LEVEL = AMCR X MIN MONTHS OF STOCK

Amount of commodity to order

The following steps should be taken to determine the amount of commodity to order:

- Calculate maximum stock level based on AMCR and maximum MOS.
- Subtract the amount of stock on hand from the maximum stock level.

AMOUNT OF EACH COMMODITY TO ORDER = MAX STOCK LEVEL – STOCK ON HAND

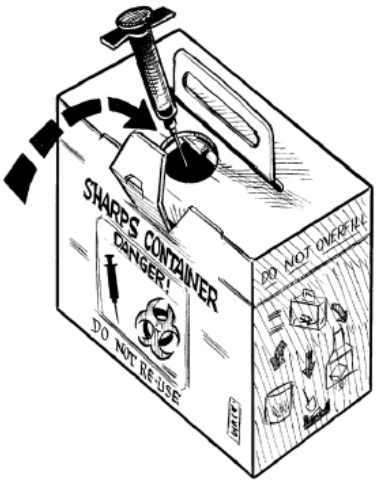
QUANTIFYING PRODUCT NEEDS FOR HCWM COMMODITIES

Effective forecasting for HCWM commodities depends on the availability of accurate information about the usage or consumption of those products. If this information is not available—either because the data on usage is unreliable or because the situation is new—the need is estimated based on the expected usage of the commodities. Such estimates are usually based on observation or information obtained in interviews with relevant health facility staff regarding the number of staff involved in IPC/HCWM activities and waste volumes. Future quantifications should be estimated using a consumption model based on actual consumption or on usage quantities collected by the health system. Once the quantity is determined, the optimum time to reorder supplies may be determined, so as to ensure a constant and adequate supply of IPC/HCWM commodities.

HCWM commodities

Hazardous waste must be contained and separated from general waste. You will need a variety of packaging supplies to collect or store HCW at every facility, including non-corrosive color-coded bins or containers and bin liners. Sharps containers (or safety boxes) are utilized to dispose of used needles, syringes, scalpels, blades, broken vials or ampoules, and any other items that could injure service providers or workers in charge of handling HCW. In addition, people handling waste should have access to protective equipment that will enable them to carry out their duties safely. Waste bins are durable goods that a health facility orders when needed; bin liners and sharps boxes are consumable items that require regular resupply.

Figure 4. Safety Box



In all cases, the type and quantity of each product required by a health facility depends on three variables:

- The number of points (or locations) of waste generation.
- The amount of each type or category of waste generated at these locations during a given period.
- How often waste is removed from the points of generation.
- How many needles/syringes are used (to help determine the number of safety boxes that will be required).

In general, the Ministry of Health (MOH) or a health facility should identify waste bins that will be used at the points of generation as well as sharps boxes.

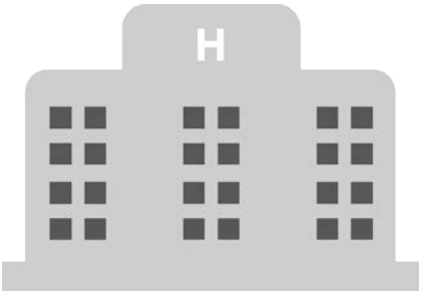
After the container types and sizes are determined, the points of generation for the following waste categories must be identified:

- General (non-hazardous)
- Hazardous/infectious
- Highly infectious
- Sharps.

Typical points of waste generation at a **primary health care facility** for both hazardous and general waste include:

- Family planning clinic
- Immunization clinic
- Antenatal clinic
- Outpatient clinic.

The points of waste generation vary for both **secondary and tertiary hospitals** and usually include any of the following:



- Family planning clinic
- Immunization clinic
- Antenatal clinic
- Outpatient clinic
- Male and female inpatient wards
- Laboratory
- Pharmacy
- Radiology
- Operating theater.

Secondary and tertiary hospitals' points of waste generation may also include such specialty clinics as:

- Pediatrics
- Gynecology
- Ophthalmology
- Dentistry.

Personal protective equipment

The commodities used during collection, on-site transport, and intermediate storage of HCW are known as personal protective equipment (PPE). This equipment is usually quantified and ordered depending on the number of staff who require PPE and how often specific items need to be replaced. Waste handlers, including housekeepers/cleaners and laundry staff, require equipment that will protect them against the possibility of contamination, such as plastic aprons and gloves. Incinerator operators require a full set of PPE, including a respirator, heavy boots, and eye protection (goggles).

The first PPE quantification is relatively simple. By interviewing health facility administrators/managers, it can be determined which categories of personnel deposit waste into bins, which categories remove waste from bins, and which categories clean the facility and wash the linen; the number of personnel can also be determined. Each waste handler should receive his or her own set of PPE—this equipment is not to be shared. Thus, the only time that PPE needs to be reordered is when it is damaged or lost or when a new waste handler is employed.

Standard precautions and safe injection commodities

In the context of IS, the term *bundling* is defined as the process of matching quantities of syringes ordered with corresponding number of safety boxes required for disposal. Bundling also refers to matching high-quality injectables with appropriate diluents, where applicable. When requesting IS commodities, you should always bundle the supply of devices ordered with the appropriate number of safety boxes. IS commodities include:

- Single-use diluents
- RUP and single-use syringes for injection administration
- Vacutainers for phlebotomy (blood-taking single-use devices)
- Intravenous devices (if possible, single use)
- Lancets
- Safety boxes (estimate 80 syringes to a safety box of 5 cc syringes and 100 syringes to a safety box for 2 cc syringes—usually used for immunizations).

RECEIVING COMMODITIES

Material receiving and incoming inspection occurs during the unloading of vehicles and includes the visual inspection of delivered packages to ensure that products were not damaged during transport. It is also important during this activity that you verify the quantities of products received against the packing slip or shipping invoice. Report any discrepancy.

Receiving checklist

The following checklist must be completed as commodities are received (Table 1):

- Ensure supplies received tally with ordering form—self-verify all received commodities
- Check expiration date and batch numbers
- Arrange commodities on shelves in the store
- Update record (i.e. bin card/stock registers)
- Sign and file the issue /receipt voucher.

Table 1. Self-monitoring checklist for receiving commodities

Question	Yes	No	Remarks
1. Did I ensure that the quantity of commodities received matches the quantity written on the issue/receipt voucher?			
2. Did I check the manufacturing and expiration dates of the commodities received?			
3. Did I check the quality of the commodities received?			
4. Did I resolve the situation with the supplier if a damaged or expired item was supplied?			
5. Did I ensure that the supply source authority duly signed copies of issue/receipt vouchers?			
6. Did I send countersigned copies of issue/receipt vouchers to the supply source?			
7. Did I store the commodities received following FEFO?			
8. Did I store the supplies and equipment received following FIFO?			
9. Did I update records?			
10. Did I keep a copy of the issue/receipt voucher in the respective file?			

Visual Inspection

Visual inspection is the process of examining products and their packaging to look for obvious problems with product quality.

Checking for quality

Two basic types of damage occurring during shipping and storage affect products' quality: mechanical and chemical.

Mechanical damage is caused by crushing or tearing when the products are loaded or off-loaded, or when cartons or inner boxes are stacked. This kind of damage is usually limited to crushed or torn parts.

Chemical damage, more difficult to detect, is usually not obvious during a visual inspection—laboratory testing is usually required. Some indications of chemical damage may include changes in the color, odor, or consistency of the product.

Generally, mechanically damaged items are removed from stock; the remainder of the box, or carton, is distributed as usual. You should remove chemically damaged items from inventory, and remove all like items (i.e., items from the same lot) from inventory; quarantine and destroy them following local disposal procedures.

Actions to be taken in case of excess/shortages or quality issues

- Commodity manager (pharmacist or store officer) should liaise with the source of supply for further advice.
- If excess, commodity should be returned to source of supply for re-distribution.
- Update records—record damaged goods.

Storage

Products are stored at every facility in the pipeline—almost everyone working in the supply chain is responsible for product storage. Storage ensures the physical integrity and safety of products and their packaging until they are dispensed to clients. An important goal in storage of health products is staging them correctly to ensure that orders can be filled and distributed.

Shelf life

Shelf life is the length of time from manufacturing date to the final date a product can be safely used, or the length of time that product can be stored without affecting its usability, safety, purity, or potency. Many IPC/HCWM commodities have a long shelf life (e.g., bins, bin liners, boots, and aprons). Nonetheless, these should always be stored in a dry, well-lit, well-ventilated storeroom.

To maximize the shelf life of products and make them available for distribution, you must have procedures for safe storage for all products.

Storage layout

Storage layout is critical to ensure the maximum and best use of the available storage space. Principles of storage layout include:

- Store fast-moving commodities in an easily accessible place.
- Store each type of commodity in the same area.
- Segregate unusable and date-expired commodities.
- Keep all commodities off the floor (known as “palleting”).

Guidelines for Proper Storage of Health Commodities

- Clean and disinfect the storeroom regularly, to discourage harmful insects and rodents from entering the storage area.
- Store IS commodities in a dry, well-lit, well-ventilated storeroom.
- Protect the storeroom from dampness.
- Keep functional fire safety equipment handy.
- Store latex products away from electric motors and fluorescent lights.
- Maintain cold storage as required.
- Limit storage area access to authorized personnel.
- Stack cartons at least 10 cm (4 in) off the floor, 30 cm (1 ft) away from walls and other stacks, and no more than 2.5 m (8 ft) high.
- Arrange cartons with arrows pointing up and with identification labels, expiration dates, and manufacturing dates clearly visible.
- Store health commodities to facilitate FEFO procedures and stock management.
- Store health commodities away from chemicals, flammable products, and hazardous materials.
- Separate damaged and expired health commodities from usable commodities.
- Keep narcotics and other controlled substances in a locked place.
- Store flammable products separately, with appropriate safety precautions.
- Store topical preparations separately.

Table 2. Job aid—USAID | DELIVER PROJECT storage guidelines

Storage procedure	Why this procedure is important
Clean and disinfect storeroom regularly	Rodents and insects (e.g., termites and roaches) eat oral contraceptives and their packaging. If you clean and disinfect your storeroom (and keep food and drink out), pests are less attracted to storage areas. A regular schedule for extermination will also help eliminate pests. Where rodents are a serious problem, cats may be an inexpensive, nontoxic alternative to traps or poisons.
Store supplies in a dry, well-lit, well-ventilated storeroom out of direct sunlight	Extreme heat and exposure to direct sunlight can degrade contraceptives and essential drugs and can dramatically shorten shelf life. For example, if warehouse temperatures rise above 40°C (104° F), the latex in condoms can begin to break down. If exposed to heat for a long time, condoms may expire well before the end of their stated shelf life. Although air conditioning is an ideal means of controlling temperature, it is expensive; alternatives include ceiling fans and forced ventilation. Direct sunlight is also a danger, as it raises the temperature of a product. For this reason, store products in their original shipping cartons and shade the interior of the storeroom from sunlight. At lower levels, store products in the inner boxes (i.e., those that came inside the cartons), and leave medicines in their dark-colored or opaque bottles.
Secure the storeroom from water	Water can destroy both supplies and their packaging. Even if a product itself is not damaged by water, damaged packaging makes the product unacceptable to the customer. Repair leaky roofs and windows. To avoid water damage from moisture that seeps through walls and floors, stack supplies off the floor on pallets at least 10 cm (4 in) high and 30 cm (1 ft) away from walls.
Ensure that fire safety equipment is available and accessible and that personnel are trained to use it	Stopping a fire before it spreads can save thousands of dollars of supplies and the storage space itself. Have the right equipment available to extinguish fires; water suffices for wood and paper fires but will not work on electrical or chemical fires. Place appropriate, well-maintained fire extinguishers throughout the storage facility (especially near doors). If extinguishers are not available, provide buckets of sand. No matter which method you use, train your staff to use it.
Store condoms and other latex products away from electric motors and fluorescent lights	Latex products, such as condoms and gloves, can be damaged if they are directly exposed to fluorescent lights and electric motors. Electric motors and fluorescent lights create ozone, a chemical that can cause condoms to deteriorate rapidly. Condoms and gloves stored in their proper packaging (i.e., boxes and cartons) will not be affected by limited exposure to ozone. Whenever possible, keep condoms and gloves in their paper boxes and cartons. Where this is not possible, move them away from lights and motors.
Maintain cold storage, including a cold chain, for commodities that require it	Cold storage, including the cold chain, is essential for maintaining the shelf life of drugs and vaccines that require it. These items are irreparably damaged if the cold chain is broken. If electricity is unreliable in your storeroom or warehouse, you may need to use bottled gas or kerosene-powered refrigeration. During immunization campaigns, cold boxes or insulated coolers may be sufficient for rapid transport.

Storage procedure	Why this procedure is important
Keep narcotics and other controlled substances in a locked place	Narcotics and other controlled substances are dangerous when misused and may be stolen for sale on the black market. Like many other drugs, contraceptives can be sold on the black market as well. For this reason, stock managers should ensure that all stock movement is authorized. Limit access to the storeroom and track the movement of products. To deter thieves, lock the storeroom and restrict access to the storekeeper and assistants. Restrictions on access must not, however, prevent appropriate distribution. For this reason, always have several sets of keys—one for the warehouse manager, one for the assistant, and a spare set in the office of the medical officer in charge. Additionally, by keeping inventory records up to date, managers can ensure that both incoming and outgoing stock matches documentation. Physical inventories should be conducted regularly to verify recorded amounts.
Store flammable products separately from other products. Take appropriate safety precautions	Some medical procedures use flammable products. Bottled gas or kerosene powers refrigerators; alcohol is used in sterilization; and mineral spirits power Bunsen burners. Store these highly flammable products away from other products and near a fire extinguisher.
Stack cartons at least 10 cm (4 in) off the floor, 30 cm (1 ft.) away from walls and other stacks, and not more than 2.5 m (8 ft.) high	Pallets are used to keep products off the floor so that they are less susceptible to damage by pests, water, and dirt. By keeping pallets 30 cm (1 ft) away from walls and from each other, you promote air circulation and facilitate the movement of stock, cleaning, and inspection. If storekeepers can walk around the stacks, they are more likely to be able to follow other good storage practices (e.g., sweeping, reading labels, and FEFO). For larger warehouses, pallets are frequently more efficient than shelving for storing products. Pallets reduce the amount of unpacking for storage and repacking for delivery; facilitate shipment in lot sizes; are cheaper to construct; and hold more stock in the space they occupy. Stack cartons not more than 2.5 m (8 ft) high, whether or not you use pallets. If you stack products higher than this, the cartons at the bottom may be crushed. Stacks of this height are also more stable than taller stacks, reducing the possibility of injury to warehouse personnel. At lower levels, where pallets are inappropriate, shelving is an excellent way to store contraceptives. Metal shelving is preferred to wood shelving, which may attract termites.
Store medical supplies away from insecticides, chemicals, old files, office supplies, and other materials	Exposure to insecticides and other chemicals may affect the shelf life of medical supplies. Old files and office supplies, although not a direct hazard, may get in the way and reduce space available for medical supplies or make them less accessible. Keep medical supplies in a separate area to ensure that they are readily accessible.
Arrange cartons so that arrows point up. Ensure that identification labels, expiration dates, and manufacturing dates are clearly visible	It is essential that goods that are the first to expire are also the first products issued (FEFO)—regardless of when they arrive at the storage facility. If shipping cartons do not show the manufacture or expiration dates, or if this information is difficult to read, use a marker to rewrite the dates on the cartons in large, easy-to-read letters and numbers. Items should always be stored according to the manufacturer's instructions on the carton, with attention paid to the direction of the arrows on the boxes. Storing cartons upside down, for example, can affect the usability of Depo-Provera®.

Storage procedure	Why this procedure is important
Store supplies in a manner accessible for FEFO, counting, and general management	In addition to ensuring the visibility of expiration or manufacture dates, store products so that the first to expire are the easiest to reach. This will ensure that the first product to expire is the first out. Unfortunately, some warehouses base shipping on the date they received a product, rather than on the manufacture or expiration date. FIFO, a common practice, works well in most cases, but managing by FEFO ensures that the oldest products leave the warehouse first. You should confirm that FEFO is being followed every time you take a physical inventory. At the service delivery point, old stock should be moved or rotated to the front of the shelf, with new stock placed at the back of the shelf. By rotating stock so that the first stock to expire is the most accessible, staff can ensure that the first stock to be issued is the stock that is accessible. The goal is to get the product to the customer, not to have it expire on the shelves.
Separate and dispose of damaged or expired products immediately	Shipping expired products down the pipeline is a costly mistake. Not only do clinics (or worse, customers) receive unusable products, but also money and resources are wasted in the shipping, storing, and handling of unusable products. To avoid this waste, designate a part of your warehouse for damaged and expired goods. If possible, dispose of them quickly. Check policies for destruction. Donors and governments usually have specific guidelines for disposing of damaged and expired products.

ISSUING COMMODITIES

As a standard of practice, when commodities are distributed in standard packaging such as cartons and boxes, they are accounted for on all records and reports in the smallest unit of issue (e.g., piece, vial, tablet, cycle) and not by packaging forms.

Commodities can be issued in a variety of units:

- Pieces
- Boxes
- Cartons
- Packs
- Vials
- Ampoules
- Doses.

Steps when issuing commodities

- Review the issue voucher.
- Ensure the correctness of the referenced information.
- Review the correctness of the issue quantity.
- Review the correctness of the filing of the issue/receipt voucher.
- Ensure the completeness of the issue/receipt voucher.

RECORDS IN INVENTORY CONTROL

In a logistics system you must collect the right data needed to make logistics decisions, and you must transmit that data to the people making those decisions. You do not want people spending their valuable time collecting and reporting information that will *not* be used for making decisions.

- *Stock-keeping records* hold information about products in storage.
- *Transaction records* hold information about products being moved.
- *Consumption records* hold information about products being consumed or used.

Table 3. Types of Records and Uses

Record type	Examples	Use
Stock-keeping records	Bin cards	Individual stock-keeping cards Keep information about a single lot of a given product Usually displayed at the bins or shelves where the commodity is found
	Inventory control cards	An individual stock-keeping card that keeps information about all lots of a product One inventory card for each product
	Stores ledgers	A bound book (instead of an individual card)
Transaction records	Issue vouchers Requisition vouchers Integrated vouchers (e.g., SIV and RIV)	Used to record information on the movement of stocks from one storage facility to another
Consumption records	Daily activity registers Tally sheets	Used to record the quantity of each item dispensed to customers

Stock-keeping records

Stock-keeping records must contain the quantity of stock on hand, the quantity of losses, and the quantity of adjustments, by individual product. Stock-keeping records are completed by anyone who receives or issues stock from storage and by anyone who takes a physical inventory of the stock, including the warehouse manager and other warehouse staff, and service delivery point staff. Pharmacies store stock; their staffs should also use stock-keeping records. The pharmacist and other pharmacy staff are responsible for completing these records.

Bin card

A bin card is an individual stock-keeping record that holds information about a single product by lot number or batch number. Every item in that lot will have the same expiration date. Bin cards are usually displayed at the bins (or on the shelf or at the pallet position) where the lot is found.

Inventory control card

An inventory control card is an individual stock-keeping record that holds information about *all* the lots of a single product. You should keep one inventory control card for each product. The inventory control card may be a summary of many bin cards for a particular product.

Stores ledger

This stock-keeping record that contains the same information as the inventory control card. However, unlike an inventory control card, a stores ledger is bound like a book—it is used instead of individual cards.

Transaction records

Transaction records are used to record information about the movement of stock from one storage facility to another. In addition, transaction records are proof of requisition, issue, and/or delivery. They are started any time a facility requests or issues supplies. They are filled in at any point in the order, issue, and receipt process, whenever custody of the product being moved changes. They are completed when the receiving facility confirms receipt of the items shipped.

Consumption records

Consumption records record the quantity of each item dispensed to customers. The data contained in this report is therefore user data (i.e., quantity of each product received by a customer). Consumption records do not usually record stock on hand or losses and adjustments.

- Consumption records can include service statistics (e.g., for new patients or continuing users). However, the collection of this kind of data should be kept to the minimum to avoid compromising client privacy.
- Personnel at service delivery points complete consumption records as supplies are dispensed to the customer.
- Consumption records are usually bound in a book or are printed on oversized paper. One record (perhaps consisting of several pages) is usually used per month; in a bound book, a new page is started each month. Consumption records generally do not move; they usually remain at the service delivery point.

REPORTING

Stock-keeping, transaction, and consumption records document data. To make the collected data useful, the records must be available to logistics-system managers in a form useful for decision making and planning. For these purposes, managers need certain critical information:

- Current stock levels
- Amount of stock on order (for requisition systems)
- Quantity of injection equipment and related supplies required at health facilities
- Historical data on times and shipment quantities, both into and out of the facility
- Losses and adjustments.

The six rights also apply to data. We need *the right data* (the essential data items), *at the right time* (in time to take action), *at the right place* (the place where the decisions are made), and *in the right quantity* (having all essential data from all facilities). The data must be *of the right quality* (we have to believe that the data are complete and accurate) and *at the right cost* (we should not spend more to collect information than we spend on supplies).

Summary reports

Reports move information up and down through a logistics system and provide decision makers at various levels the right information, at the right time, in the right place, in the right quantity, of the right quality, and at the right cost. A reporting system must be in place to ensure that this information flows correctly and consistently. A summary report is used to move all essential logistics data items for products for a specific facility and for a specific time period (e.g., monthly, bimonthly, or quarterly) to decision makers. A reporting timeline must be established.

Service delivery points

- Report to the head of the facility every month.

Health facilities and district stores

- Report to the head of the facility monthly or quarterly.

LOGISTICS MANAGEMENT INFORMATION SYSTEM

To have a relevant, useful system, you must consider first what decisions are being made and, second, how they are being made—knowing both is the most important principle of an LMIS. Only with this understanding can you say what information is needed and how to collect it. Information systems fail most frequently because the information they collect is not useful for decision making.

Three things happen to supplies in a logistics system:

- Supplies can be *stored* as inventory.
- Supplies can be *distributed* from one facility to another.
- Supplies can be *dispensed* to customers at a facility.

These are the three activities that a LMIS needs to track in order to support managers in decision making.

Data items needed for LMIS include:

- **Stock on hand:** Quantities of usable stock available at all levels of the system. Do not count any items that are unusable. These should be considered losses to the system.
- **Rate of consumption:** The average quantity of a particular item dispensed to users during a particular time period.
- **Losses and adjustments:** Losses are the quantities of stock removed from the pipeline for any reason other than consumption by client (e.g., expiration, theft, damage). Adjustments include a quantity issued to or received from other facilities. Adjustments may also be administrative changes, such as resulting from a physical count that revealed a different amount from the quantity listed on bin cards. Adjustments may be either positive or negative changes in stock.

Tasks for a Functional LMIS

- Keep the data items that need to be collected to a minimum—do not collect unnecessary data.
- Ensure that the forms are not complicated. Include precise and concise instructions for completion.
- Ensure that the forms do not take a long time to complete. Staff completing forms should not take time off from other activities.

Role of LMIS in ensuring the six rights

The LMIS ensures the six rights of logistics. It first answers the question:

***WHICH* GOODS ARE REQUIRED?**

To determine the right quantities of the right goods required, we then need to ask:

WHAT QUANTITIES* OF GOODS ARE REQUIRED*?

To determine the right condition in which the right quantities of the right goods are required, we need to ask:

***WHAT KIND* OF GOODS ARE REQUIRED?**

To determine the right place for the goods to be delivered, we need to ask:

***WHERE* ARE THE GOODS REQUIRED?**

To determine the right time for goods to be delivered to the right place, we need to ask:

***WHEN* ARE THE GOODS REQUIRED?**

To determine how much it will cost to deliver the goods to the right place at the right time, we need to answer the question:

***HOW* ARE THE GOODS GOING TO GET THERE?**

The LMIS supports logistics managers in answering these questions in order to make the right decisions to best serve the customer.

Importance of the LMIS

- It indicates when to order supplies.
- It highlights the position of supplies in the pipeline and whether commodities need to be pushed from higher to lower levels.
- It captures information on where consumption is highest and whether more resources are required.
- It highlights losses in the system, which requires action.
- It points out system bottlenecks, enabling adjustments.
- It provides information on "nearly expired" commodities, thus enabling re-distribution. Expired ones are also noted, thus enabling destruction.

The flow of the logistics cycle is not only of goods to the customer but also of information to and from each element in the logistics cycle. LMIS is at the center of the cycle, interacting with each element: the LMIS is the engine that runs the logistics system.

MONITORING, EVALUATION, AND SUPERVISION

Collecting data for monitoring and evaluation (M&E) enables program managers to provide feedback to staff throughout the supply chain to improve system performance; to report results to funders and other stakeholders; and to justify the need for additional resources, when appropriate. One important reason for M&E is to improve program management and, ultimately, logistics system performance. Improving program management and system performance are critical to improving customer service and to ensuring *commodity security*—in other words, that clients have the products they need whenever and wherever they need them.

Monitoring is the routine collection and analysis of measurements or indicators to determine ongoing progress toward objectives. Evaluation is periodic comparison of objectives, with accomplishments, to determine how well the objectives were achieved. With both monitoring and evaluation, it is important to build in processes for QA for the data collected. Quality control checks are vital to ensure that data collected are accurate and complete.

Supervision is the process of ensuring that personnel have the knowledge and skills required to carry out their responsibilities effectively and of providing immediate on-the-job training when needed.

Importance of Monitoring and Evaluation

- Provides feedback and report results
- Mobilize resources
- Improve program management and system performance.
- Allows accountability to health workers, clients, and the community
- Provides appropriate selection of safety devices and other IPC/HCWM commodities.

Logistics evaluation

Logistics evaluations are important because they:

- Enable informed logistics decisions regarding operations and service delivery
- Help ensure the most effective and efficient use of resources
- Illuminate the extent to which a program or project is having or has had the desired impact
- Determine the extent to which a program or project is on track, with a goal of facilitating needed course corrections.

REMEMBER, NO PRODUCT, NO PROGRAM!

Purpose of monitoring and evaluation

Monitoring and evaluation provide important benefits. They:

- Ensure that planned logistics activities are carried out according on schedule.
- Ensure that records are correctly maintained and reports submitted in a timely manner.
- Provide guidance on data collection and reporting for IPC/HCWM plans, implementation, monitoring, and supervision.

Indicators

Indicators provide evidence that interventions and results have been achieved and help measure progress toward objectives and goals. Indicators can use quantitative or qualitative data.

Sample indicators

- Quantity of syringes/bins/bin liners/PPE supplied (issue voucher)
- Number of commodities received (per stock card/bin card receipts)
- Number of commodities used (stock card supplies)
- Availability of injury reporting forms and log books
- Availability of RUP injection devices (stockouts)
- Stockouts of color-coded bin liners/safety boxes in the last six months
- Number of health workers trained in IPC/HCWM logistics
- IPC/HCWM committee exists with a logistician in place
- Number of meetings on IPC/HCWM in which injection devices and other IPC/HCWM commodity security issues were discussed
- Availability of displayed IPC/HCWM information, education, and communication materials (e.g., posters and leaflets giving information on IPC/HCWM)
- Reported incidences of sharps injuries
- Observable practice on injection and sharps disposal using program-supplied commodities.

Logistics core indicators

These indicators cover most aspects of a logistics cycle and are used to monitor, evaluate, and supervise many types of interventions:

- LMIS quality
- Storage conditions
- Order fill rate
- Stockout frequency
- Adequate stock status
- Forecast accuracy
- Stakeholder commitment to procurement plan
- Existence of an adequate multiyear procurement plan.

TIP! A supervision checklist can guide supervisors to do monthly checks, with questions such as:

- Are bin cards correctly filled?
- Are stock cards used for the control of stocks?
- Are expired drugs on the shelf?
- Do staff verify orders received against orders placed?
- Are monthly stock counts done?

Purpose of Logistics Supervision

- To ensure health workers have the knowledge and skills to effectively manage the logistics system and to provide on-the-job training
- To identify performance levels and take appropriate actions
- To ensure that established logistics guidelines and procedures are followed
- To ensure that personnel at all levels carry out their responsibilities.

In a typical program cycle for supply chain systems improvement (Figure 5), M&E plays an integral, continuous role in supply chain management and system strengthening. M&E must be built into a program from the beginning or from the launch of a new workplan cycle.

Figure 5. Program Cycle for Supply Chain Systems Improvement

(Source: Adapted from USAID | DELIVER PROJECT)

INVENTORY MANAGEMENT AND IPC/HCWM QUANTIFICATION EXERCISES

Exercise 1. Average monthly consumption rate

Facility A in Bwari Local Government Area (LGA) used the following 2 ml syringes.

- January 2,100
- February 2,800
- March 2,000

What is the AMCR for this facility?

Exercise 2. Determining months of supply on hand

In Store D, there was a balance of 180,000 pieces of syringes and needles at the end of the first quarter; the AMCR for the store is 60,000 pieces.

How many MOS does this store have?

Exercise 3. Maximum–minimum stock level

In Facility F, the AMCR of 2 ml syringes is 125. The maximum MOS for the facility is two months, while the minimum MOS is one month.

What is Facility F's maximum–minimum stock level?

Exercise 4. Estimating quantity needed to order

In Abaji LGA store, the AMCR for syringes and needles is 12,000 pieces of 5 ml, the store is supposed to keep maximum of three months' stock. The ending balance at the end of second quarter 2014 was 5,000 pieces.

What quantity does this store need to order?

Exercise 5. Quantifying HCWM commodities

As the IPC/HCWM focal person in a newly refurbished general hospital, you are mandated by the hospital management to make a quantification for the procurement of IPC/HCWM commodities through a request you previously submitted for approval. The facility has 12 waste handlers for each unit. Use the following unit/department details as a guide:

- Accident and emergency (A&E) ward wound dressing room
- A&E observation room
- Gynecology outpatient department, with four consulting rooms
- Gynecology outpatient department injection room
- One general laboratory
- One laboratory bleeding room
- One infectious disease isolation room
- Postnatal ward with four beds
- Female surgical ward with four beds
- Male surgical ward with four beds
- A single one-bedded theater
- Pharmacy

Questions

Based on the above information, estimate (quantify) the following:

a) Number of each color of color-coded waste bins required by each department
b) Number of bin liners required by each department, based on the quantity of waste you arrived at in Q1—assuming bin liners are changed twice a day
c) List of PPE required for the facility's waste handlers and total number of sets.

Exercise 6. Daily activity register and data reporting form

You are a facility in-charge at Garki Health Facility, Amac LGA. Use the information provided below to:

a) Fill in the daily activity registers for April 2015 for 2 ml and 5 ml syringes.
b) Make a report for the month ending April 30, 2015, for both 2 ml and 5 ml syringes.

The maximum stocking levels for 2 ml and 5 ml syringes at this facility are 1,000 and 1,500 respectively.

Table 2. Ministry of Health Daily Activity Register: 5 ML Syringes

Date (A)	From/to	Received	Used	Stock on hand (balance)
01/04/2005	B/F	—	—	250
01/04/2015		—	14	
02/04/2015		—	4	
02/04/2015	Main store	600	—	
04/04/2015		—	8	
05/04/2015		—	—	
20/04/2015	Main store	300	—	
21/04/2015		—	7	
30/04/2015		—	10	
30/04/2015		—	—	

B/F: balance brought forward

On April 30, 2015, a physical inventory was taken, and the balance was 1,107.

Table 3. Ministry of Health Daily Activity Register: 2 ML Syringes

Date (A)	From/To	Received	Consumed	Stock on hand (balance)
01/04/2015	B/F	—	—	200
01/04/2015	—	—	16	
02/04/2015	—	—	17	
02/04/2015	Main store	400	—	
03/04/2015	—	—	13	
04/04/2015	—	—	15	
05/04/2015	—	—	—	
20/04/2015	Main store	200	—	
21/04/2015	—	—	12	
30/04/2015	—	—	4	
30/04/2015	—	—	—	

B/F: balance brought forward

On March 4, 2015, a physical stock was taken and the balance was 728.

Answer key

Exercise 1. Average monthly consumption rate

The AMCR is the total number of commodities used divided by the number of months in which they were used.

Answer: Facility A used the following 2 ml syringes:

JANUARY	2,100
FEBRUARY	2,800
MARCH	2,000
TOTAL	6,900

What is the AMCR for this facility?

6900 / 3 = 2,300

AMCR FOR 2 ML SYRINGES = 2,300

Exercise 2. Determining MOS

MOS = stock balance/AMCR

Answer: In store D, there was a stock balance of 180,000 pieces of syringes and syringes at the end of the first quarter; the AMCR for the store is 60,000 pieces

How many MOS does this store have?

MOS = 180,000 / 60,000 = 3.0 MONTHS

Exercise 3. Maximum–minimum

In Facility F, the AMCR of 2 ml syringes is 125. The maximum MOS for this facility is two months while the minimum MOS is one month.

What is Facility F's maximum–minimum stock level?

MAXIMUM STOCK LEVEL = AMCR X MAXIMUM MOS

= 125 X 2 = 250 SYRINGES (MAX STOCK LEVEL)

MINIMUM STOCK LEVEL = AMCR X MINIMUM MOS

=125 X 1 = 125 SYRINGES (MIN STOCK LEVEL)

Exercise 4. Amount to Order

In Abaji LGA store, the AMCR for needles and syringes is 12,000 pieces of 5 ml, the store is supposed to keep maximum stock of 3 months. The ending balance at the end of second quarter 2014 was 5,000 pieces.

What quantity does this store need to order?

AMOUNT TO ORDER = (MAXIMUM STOCK) MINUS (ENDING STOCK ON HAND)

MAXIMUM STOCK LEVEL = AMCR X MAXIMUM MONTHS OF SUPPLY

=12,000 X 3 = 36,000

ENDING BALANCE = 5,000

NUMBER OF 5 ML SYRINGES TO ORDER = MAX STOCK – ENDING BALANCE

= 36,000 – 5,000

NUMBER TO ORDER = 31,000

Exercise 5. Quantifying HCWM Commodities

	Department/unit	Waste bins required (12 L): one-time requirement			Bin liners required (12 L fit): required daily			Safety box	PPE (HD boots, HD gloves, apron, nose mask, goggles)
		Black	Yellow	Red	Black	Yellow	Red	5L	Complete set
1	A&E wound dressing room	1	1	1	2	2	2	1	1
2	A&E observation room	1	1		2	2		1	1
3	General outpatient department (GOPD) consulting rooms: 4	1	1		2	2			1
4	GOPD injection room	1	1		2	2		1	1
5	General laboratory	1	1	1	2	2	2	1	1
6	Laboratory bleeding room	1	1	1	2	2	2	1	1
7	Infectious disease isolation room	1	1	1	2	2	2	1	1
8	Postnatal ward: four beds	2	2		4	4		2	1
9	Female surgical ward: four beds	2	2		4	4		2	1
10	Male surgical ward: four beds	2	2		4	4		4	1
11	Operating theater	1	1	1	2	2	2	1	1
12	Pharmacy	1			2				1
	Total	**15**	**14**	**5**	**30**	**28**	**10**	**15**	**12**

Exercise 6. Daily activity register and data reporting form

Ministry of Health Daily Activity Register

NAME OF SECTION/UNIT: All sections **FACILITY NAME:** Garki **LGA:** AMAC
MONTH: April **YEAR:** 2015 Commodity: **2 ml syringe**

Syringe size		2cc			
Date (A)	Voucher to/from (B)	Quantity received (C)	Quantity used (D)	Losses (–) or adjustments (+) (E)	Quantity on hand (balance) (F)
01/04/2015	B/F	—	—	—	200
01/04/2015	—	—	16	—	184
02/04/2015	—	—	17	—	167
02/04/2015	T776761	400	—	—	567
03/04/2015	—	—	13	—	554
04/04/2015	—	—	15	—	539
05/04/2015	—	—	—	—	539
20/04/2015	T776766	200	—	—	739
21/04/2015	—	—	12	—	727
30/04/2015	—	—	4	—	723
30/04/2015	**—**	**—**	**—**	**5**	**728**

Ministry of Health Daily Activity Register

NAME OF SECTION/UNIT: All sections **FACILITY NAME:** Garki **LGA:** AMAC
MONTH: April **YEAR:** 2015 Commodity: **5 ml syringe**

Syringe size		5cc			
Date (A)	Voucher to/from (B)	Quantity received (C)	Quantity used (D)	Losses (–) or adjustments (+) (E)	Quantity on hand (balance) (F)
01/04/2015	B/F	—	—	—	250
01/04/2015	—	—	14	—	236
02/04/2015	—	—	4	—	232
02/04/2015	T776761	600	—	—	832
04/04/2015	—	—	8	—	824
05/04/2015	—	—	—	—	824
20/04/2015	T776766	300	—	—	1,124
21/04/2015	—	—	7	—	1,117
30/04/2015	—	—	10	—	1,107
30/04/2015	**—**	**—**	**—**	**—**	**1,107**

Ministry of Health Daily Activity Register

NAME OF SECTION/UNIT: All sections **FACILITY NAME:** GARKI **LGA:** AMAC

Period of reporting: Beginning ___**01/04/2015**___ Ending ____**30/04/2015**_____

Commodities	Beginning balance (A)	Total amount received (B)	Total amount used (C)	Total losses/ adjustments (D)	Current balance (E)	Quantity to order (F)
2 ml syringe	200	600	77	+5	728	272
5 ml syringe	250	900	43	0	1107	393
Name of Reporting Officer **Ted** Designation **NO/IC** Date **30/04/2015**						
Comments: When carrying out a physical count, five pieces of 2 ml syringes were found to be in excess. It could have been oversupplied during the receipt of the last supply of 20/04/2015.						

MINISTRY OF HEALTH

Stock Card

Code:		**Product:**				

ANNEX 1. HOW TO COMPLETE A STOCK CARD

When conducting a physical inventory, the stock card must be updated. Complete the instructions in the following box:

Task: Filling in the stock card

Completed by: Facility in-charge, district store in-charge

Purpose:
1. To maintain a continuous record of all IPC, including IS/HCWM transactions
2. To record results of a physical inventory.

When to perform: Each time you—
1. Receive or issue IPC commodities
2. Record a loss or adjustment
3. Conduct a physical inventory.

Note: Complete one stock card for each IPC commodity and other related supplies. Enter only one transaction on each line.

After recording a physical inventory on the stock card, skip a line on the stock card, leaving it blank, and begin recording the next month's transactions on the next line.

There should be one stock card for each size of syringe or safety box of the commodity you store. When you have completed both sides of a stock card for a product, attach a new stock card to the top of the old card and write the words *Balance Forward* or *B/F* on the first line. Write the quantity brought forward from the old card in the first Quantity On Hand space on the new card.

Step	Action	Notes	Example
1.	**Product**: Enter the name of the health commodity.	Use one stock card for each health commodity.	Product: 5 ml syringe
2.	**Date**: Enter the transaction date.		12/4/2015
3.	**Voucher to/from**: Enter the delivery note number of the item received or issued.	Get this from the requisition or issue voucher that accompanies the item.	Voucher #: 0039
4.	**Quantity received**: Enter the exact amount of the product received on this date in red ink.	Stock received at service delivery points from the district store and stock received at the district store from Medical Stores.	Syringes received: 50
5.	**Quantity issued**: Enter the exact amount of the product issued on this date.	Stock that has physically left the storage area.	5 ml syringe: 60

Step	Action	Notes	Example
6.	**Losses/adjustments**: Enter the exact amount of losses or adjustments (additions) to inventory on this date.	Always use a (-) sign to indicate losses and a (+) sign to indicate adjustments (additions). Losses include theft, expiration, and damage. Adjustments include usable stock returned from lower-level facilities or transferred from one facility to another, and products returned to the District Store.	Syringes Losses/adjustments: (-) 2
7.	**Quantity on hand**: Add any receipts or adjustments and subtract any issues or losses from the existing Quantity on Hand to determine the new Quantity on Hand. Write this figure in the Quantity on Hand column for this date.	This column should always represent the amount of this item presently in your store. When conducting a physical inventory, always record the exact amount counted. If the physical count does not match the amount recorded in this column, review the issues and receipts against the delivery vouchers, check the math, note the adjustment in the losses/adjustment column and update the figure in this column. Record losses or adjustments discovered during a physical inventory before and on a separate line from the physical inventory entry. Record the physical inventory on the stock card ***in red ink***.	Quantity on hand = 98 Physical inventory = 98
8.	**Remarks**: 1. When an item is received, enter the origin. 2. When an item is issued, enter the destination. 3. When there is a loss or adjustment for an item, provide a brief explanation. 4. When conducting a physical inventory, sign your name.		1. **Received (Origin):** Med Store 2. **Issued (destination):** John 3. **Loss/adjustment:** Damaged by water 4. **Physical inventory:** Ibrahim

This task is complete when—

- The Product Name, Date, Voucher To/From, Batch Number, Quantity Received, Quantity Issued, Losses/Adjustments, Quantity on Hand, and Remarks columns are correctly completed.

MINISTRY OF HEALTH
Stock Card

Product: 5 ml syringes						
10/4/15	B/F	—	—	—	110	—
12/4/15	0039	50			160	Medical Stores
20/4/15	121		60		100	John
30/4/15	—	—	—	(-) 2	98	Damaged by water
30/4/15					**98**	Ibrahim

B/F - Means balance brought forward

ANNEX 2. DAILY ACTIVITY REGISTER FOR IS COMMODITIES

Ministry of Health Daily Activity Register for IS COMMODITIES

Facility Name: _____ **State:** _____ **LGA:** _____

Type of Syringe: (select one) _____ Standard Disposable _____Re-Use Prevention (RUP)/Needlestick Prevention

Period of reporting: **Beginning:** _____ **Ending:** _____

Syringe size		2cc				3cc				5cc				10cc				
Date (A)	Voucher To/From (B)	Quantity Received (C)	Quantity Used (D)	–Losses / +Adjustments(E)	Quantity on Hand (Balance) (F)	Quantity Received (C)	Quantity Used (D)	–Losses / +Adjustments (E)	Quantity on Hand (Balance) (F)	Quantity Received (C)	Quantity Used (D)	–Losses / +Adjustments(E)	Quantity on Hand (Balance) (F)	Quantity Received (C)	Quantity Used (D)	–Losses / +Adjustments (E)	Quantity on Hand (Balance) (F)	Remarks (G)
	B/F																	

ANNEX 3. HOW TO COMPLETE THE DAILY ACTIVITY REGISTER

The following instructions are for completing the Daily Activity Register for IPC (IS/HCWM) commodities. This form is completed by the service provider at the service delivery point.

Task:	Completing the Daily Activity Register for IPC (IS/HCWM) commodities
Completed by:	Health facility service providers and/or in-charge
Purpose:	To record the usage of IPC (IS/HCWM) commodities.
When to perform:	Daily, or whenever an IPC commodity is used.
Materials needed:	Forms booklet with the Daily Activity Register

	Action	Notes
1.	**Facility name:** Write the name of the section, facility, district and province.	
2.	**Period beginning:** Write the date of the first day covered by this DAR.	Enter as day/month/year
3.	**Period ending:** Write the date of the last day covered by this DAR.	Enter as day/month/year
4.	**Balance brought forward:** Write the ending balance from the bottom of the previous DAR for each type IS commodity	The ending balance from the previous DAR is always the balance brought forward on the current DAR.
5.	**Quantity received:** Write the total number of commodities, by type received from the LGA store or state medical store (NMS) during the period covered by the DAR.	Get this number from the Quantity Received column of the product stock card. Only enter the number of commodities received from the district store or central warehouse. Any commodities received from other sources should be recorded as a positive adjustment
6.	**Losses/adjustments:** Write the number of commodities by type that were removed from/added to inventory for reasons other than usage or receipts from official suppliers.	Include commodities that were damaged, expired, transferred to/from other facilities, etc., during the period. Also include commodities received from suppliers other than the district store or central warehouse and record them as a positive adjustment.
7.	**Balance on hand:** Write the number of commodities that were available for use during the period.	Add the quantity received to the balance brought forward, then subtract losses/adjustments to obtain this number.
8	**Date:** Write the date that the commodity was given.	Enter as day/month/year

	Action	Notes
9	**Quantity used:** Write the total number of commodities used during the period by type and size.	Add all daily tallies (used) for each type and size of commodity and enter the total here. Refer to your tally sheet.
10.	**Ending balance:** Write the total number of commodities remaining in the facility at the end of the period.	Subtract the quantity used from the balance on hand and enter the result here.

This task is complete when—

- The date and type of commodity are filled in for every commodity used.
- The quantity used and ending balance are filled in for each type and commodity.

ANNEX 4. HOW TO COMPLETE THE CONSUMPTION DATA REPORT

Ministry of Health Daily Activity Register for IPC Commodities

Facility Name _____ **State** _____ **LGA** _____

Type of Syringe: (select one)

_____ Standard Disposable _____ Re-Use Prevention (RUP)/Needlestick Prevention

Period of reporting: **Beginning** _____ **Ending** _____

Commodity	Beginning balance (A)	Total received this period (B)	Total amount used (C)	Adjustment (D)	Total losses (E)	Current balance (F)	Quantity required (G)
2 cc needle gauge (23Gx1)							
3 cc needle gauge (25Gx5/8)							
5 cc needle gauge (21Gx1.5)							
10 cc needle gauge (20Gx1.5)							
Safety boxes 5 L							
Comments:							

Signature: _____ Date: _____

The following instructions are for completing the *Consumption Data Report and Request for IPC/HCWM Commodities*. This form is completed by the health facility in-charge or the LGA store in-charge (for the LGA store). Prior to completing the Consumption Data Report, the in-charge should conduct a physical inventory. See page 14 for instructions on conducting a physical inventory.

Task:	Completing the Consumption Data Report for IPC/HCWM Commodities
Completed by:	Health facility in-charge or LGA store in-charge
Purpose:	To report information on stock balances and quantities used by service delivery points and on stock balances and quantities issued by the LGA store; and to order the quantity of commodities and related supplies required at health facilities.
When to perform:	No later than the fifth day of every month (service delivery points), or the tenth day of the month every two months (LGA stores).
Materials needed:	To complete this form at a service delivery point, including district stores use the Daily Activity Register for IS commodities and the health facility stock cards. To complete this form at the district level, use the district store stock cards.

	Action	Notes
1.	**Facility name:** Write the name of the facility that the Consumption Data Report is being completed for.	
2.	**LGA :** Write the name of the LGA the facility is located in.	
3.	**State:** Write the name of the state the facility is located in.	
4.	**Period beginning:** Write the date of the first day covered by this report.	Enter as day/month/year
5.	**Period ending:** Write the date of the last day covered by this report.	Enter as day/month/year
10.	**Column E, Losses:** Write the number of commodities that were removed from the store's, unit's or facility's inventory for reasons other than usage.	Include commodities that were damaged, expired, lost, etc., during the period. Also use this column to record any negative discrepancies between stock records and physical counts discovered during a physical inventory.

	Action	Notes
11.	**Column F: Ending Balance/Physical Count (Current Balance):** Write the total number of commodities remaining in the facility at the end of the period.	This number should always be the same as the result of the physical inventory you conducted prior to completing this report. If the number is not the same, there is an error. Recheck the math calculations and losses and adjustments. If necessary, repeat the physical count. If the number is still not the same, use the number obtained from the physical count and add or subtract the amount of the discrepancy/losses in Column D.
12.	**Column G: Quantity Required**	Quantity required = max stock level - ending balance
13.	**Name:** Write the name of the person preparing this report.	
14.	**Signature:** The person preparing this report should sign here.	
15.	**Designation:** Write the job position of the person preparing this report.	Write facility in-charge, or LGA store in-charge.
16.	**Date**: Write the date you are preparing this report.	
17.	**Explain losses, adjustments**	Please include any additional information that could assist in the interpretation of data from your facility/district.

This task is complete when:

- All identifying information for the facility and the report period has been filled in.
- All columns of the report have been completed for each commodity used at the facility.
- The quantity requested is calculated for each type of commodity.
- The person who prepared the report has included his or her name, designation, date, and signature.
- The completed report has been submitted to the HF/LGA IPC focal person (if the report is prepared at a service delivery point) or when the report has been submitted to the state medical store (if the report was prepared by an LGA store).
- A copy of the report has been filed at the facility.

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