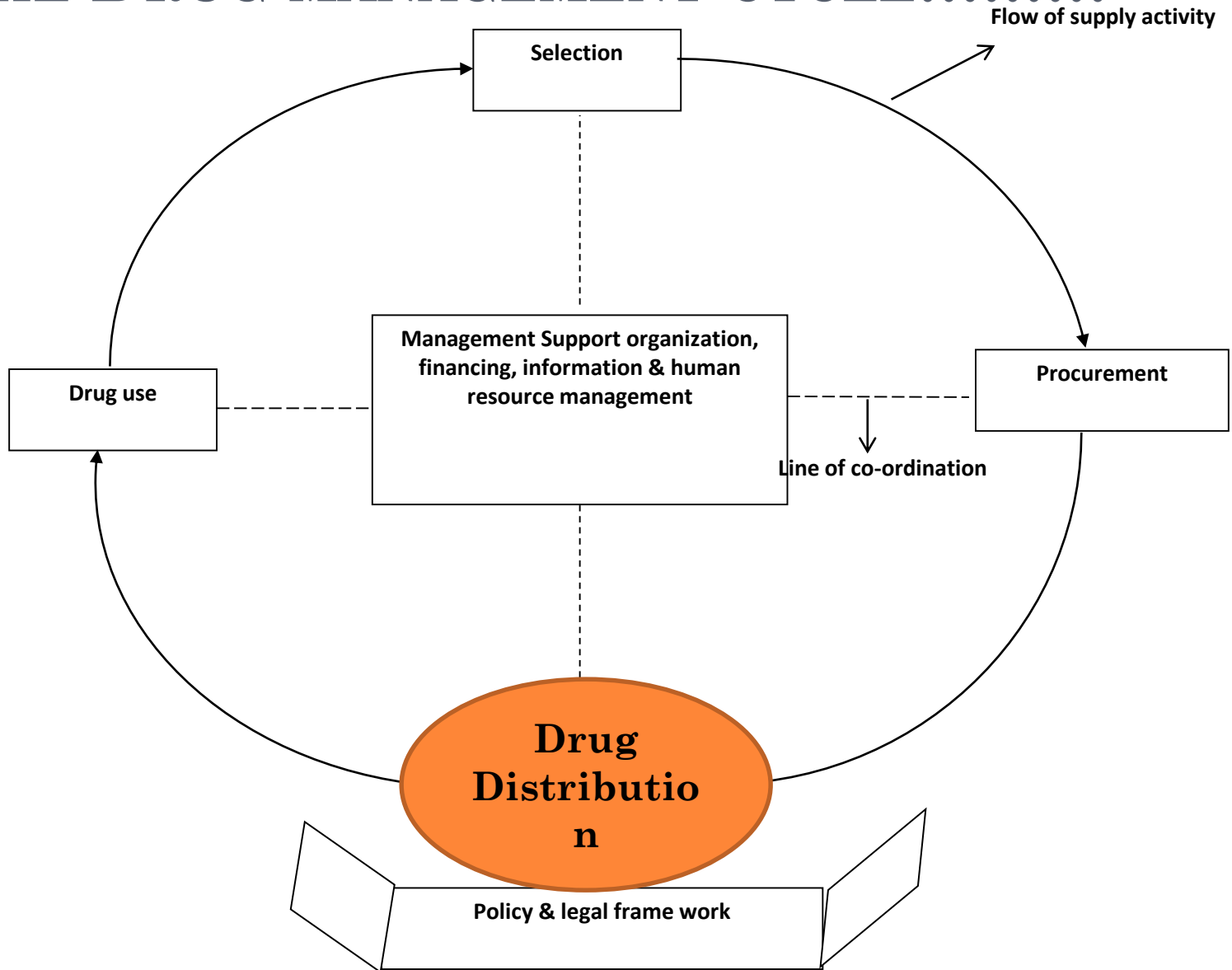




DISTRIBUTION

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THE DRUG MANAGEMENT CYCLE.....



28/06/2020

DRUG DISTRIBUTION.....

- ***Drug distribution*** is a continuous process of receiving drugs from the supplier and moving them safely/securely to the many points in the health care system at which the drugs will be dispensed to patients.
- **Distribution** includes clearing customs, stock control, and stock management of delivery to drug Depots or health facilities.

GOALS OF DRUG DISTRIBUTION MANAGEMENT

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- Storage and distribution costs are a significant component of the health budget.
- Transportation costs may exceed the value of the drugs distributed to some locations, especially in large countries with low population densities.
- Reducing these costs can mean that more money is available for drugs purchases and for clinical care.

GOALS OF DRUG DISTRIBUTION MANAGEMENT

- Health programs are frequently managed by well-qualified health personnel who lack logistics experience.
- *Logistics* is the science and art of getting the right amounts of the right things to the right place at the right time.
- Warehouse and transport managers, storekeepers and drivers may have these skills but may have little influence on decision-making.
 - ☞ the best way to use their knowledge and skills is to make them part of a logistics team to manage the system design process.

GOALS OF DRUG DISTRIBUTION MANAGEMENT

- The primary goal is to maintain a steady supply of **drugs** and **supplies** to facilities where they are needed while ensuring that resources are being used in the most effective way. A good distribution system is cost effective system.
- The objective of drug distribution is to provide a steady supply of drugs of the required quality, in the required quantity, at the right time, and in the right place for the delivery of continuous health services.

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GOALS OF DRUG DISTRIBUTION MANAGEMENT.....

○ A well-designed and well-managed distribution system should:

- Maintain a constant supply of drugs
- Keep drugs in good condition
- Minimize drug losses due to spoilage and expiry
- Rationalize drug storage points
- Use available transport as efficiently as possible
- Reduce theft and fraud
- Provide information for forecasting drug needs
- Incorporate a quality assurance program

THE DISTRIBUTION CYCLE

- The distribution cycle begins when drugs are **dispatched** by the manufacturer or supplier.
- The distribution cycle ends when **drug consumption information is reported back to the procurement unit.**
- The distribution cycle includes the following steps:

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THE DISTRIBUTION CYCLE.....

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The distribution sequence intersects the procurement process at the point at which drugs are available for the delivery to the health facilities.

THE DISTRIBUTION CYCLE.....

i. Port-Clearing

- Unless the drugs are acquired locally or the international supplier takes responsibility for it, port-clearing is the first step in making drug available for distribution.
- Port-clearing involves:
 - Identifying shipments as soon as they arrive in port
 - Processing all important documents
 - Completing any customs requirements
 - Storing drugs properly until they leave the port
 - Surveying the shipments for **losses** and **signs of damage** and
 - Collecting the drugs as soon as they are cleared
- **Port Clearing** may be managed directly or through a separate contract with **port clearing agent**.

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THE DISTRIBUTION CYCLE.....

ii. Receipt and inspection

- When Items first delivered from the port or directly from a supplier to the store room; they must be kept **separate from the other stock** until the store staff has performed a complete formal inspection of the supplies.
- Inspectors should check for **damaged** and **missing items** and for compliance with the contract conditions concerning: **drug type, quantity, presentation, packaging, labeling** and **any special requirements**.

THE DISTRIBUTION CYCLE.....

iii. Inventory control

- It is the process of maintaining of stock properly at all levels and at all times.
- Is used for **requisitioning** and **issuing drugs**, for financial accounting and for **preparing the consumption** and **stock balance** reports necessary for procurement.
- Inventory records must be monitored regularly by supervisors :
 - to ensure accuracy and
 - to avoid or detect losses.
- Careful inventory control is a key to providing a cost-effective and responsive distribution system.

THE DISTRIBUTION CYCLE.....

iv. Storage

- Proper location, construction, organization and maintenance of storage facilities help:
 - maintain **drug quality**
 - **minimize theft**, and
 - **maintain regular supply** to health facilities.

V. Requisition of supplies

- Drug supply systems operate under a push or a pull system.
- The **forms** and **procedures** for requisition are a key part of the inventory control system .
- They may vary from country to country and from one level to another within the same country.
- ❖ The requisition system may be manual or computerized, but it should always be designed to simplify distribution by:
 - facilitating inventory control,
 - providing an audit trail for tracing the flow of drugs,
 - Assisting in financial accounting, and listing drugs issued.

THE DISTRIBUTION CYCLE.....

vi. Delivery

- Drugs may be delivered by warehouse staff or collected by health facilities staff.
- Transport may involve air, water, railway, road vehicles or on- and off-road vehicles, porters, or a combination of means.
- Transportation methods must be carefully selected and schedule deliveries realistically and systematically, to provide punctual and economic service.

THE DISTRIBUTION CYCLE.....

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vii. Dispensing to patients

- The distribution process achieves its purpose when drugs reach hospital wards, outpatient clinics, health centers, or community health workers and are appropriately prescribed and dispensed to patients.
- When adequate inventory and requisition records are kept, compiling consumption reports is straightforward.

THE DISTRIBUTION CYCLE.....

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viii. Consumption reporting

- The closing link in the distribution cycle is the flow of information on **consumption** and **stock balances** back through the distribution system to the procurement office for use in **quantifying procurement needs**.

MAJOR ELEMENTS OF A DISTRIBUTION SYSTEM

- **System design**

- Geographic or population coverage
- Number of levels in the system
- Push versus pull system
- Degree of centralization

- **Information system**

- Inventory control records and forms
- Consumption reports
- Information flow

MAJOR ELEMENTS OF A DISTRIBUTION ...

- **Storage**
 - Selection of items
 - Building design
 - Materials handling systems
- **Delivery:**
 - Collection versus delivery
 - Choice of transport
 - Vehicle procurement
 - Vehicle maintenance
 - Routing and scheduling of deliveries

DISTRIBUTION SYSTEM DESIGN

- Designing distribution system or, as is more likely in practice, evaluating and planning improvements to an existing system, requires systematic cost-effectiveness analysis and operational planning.
- Once the system is in place, regular performance monitoring is needed to ensure that the system functions as intended.

DISTRIBUTION SYSTEM DESIGN

Basic design features include:

The basic characteristics of a distribution system include:

- Its degree of centralization
- The number of levels in the system
- The geographic or population coverage

DISTRIBUTION SYSTEM DESIGN

- ➔ In a typical **central supply model(system)**, drug procurement and distribution are coordinated at the national level.
 - ☞ Drugs received at the central medical stores (CMS) are distributed to lower-level warehouses and onward to the health facilities.
- ➔ In a **decentralized system**, the **districts** or **regions** are responsible for receiving, storing and distributing drugs.
 - ☞ In some cases, the **districts** or **regions** may also be responsible for procurement.

DISTRIBUTION SYSTEM DESIGN

- In **designing** a distribution system or **redesigning** an existing system the following important steps have to be taken:

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- i. Determine the number of storage levels in the system.

Factors to consider in determining the number of storage level are:

- Geographical factors, Population, availability of storage space, staff, Availability and cost of transport, political and other resource constraints.

DISTRIBUTION SYSTEM DESIGN

- ii. Determine the location of storage sites.
- iii. Decide at which level of the supply system decisions will be made concerning orders.
- iv. Fix re-supply interval or frequency of placing orders.
- v. Select a method of distributing drugs to user units.
 - Select a collection or delivery method for distributing medicines to user units

DISTRIBUTION SYSTEM DESIGN

- vi. Select an appropriate method of transport.
- vii. Determine the amount of inventory to be held at each level in the system
- viii. Develop a set of feasible and economical delivery routes and work out a practical delivery schedule and appropriate modes of transport to service these routes; determine whether it is more efficient to keep and maintain vehicles or contract out the delivery service

DISTRIBUTION SYSTEM DESIGN

- ix. Estimate the operating costs and assess the cost-effectiveness of contracting for storage and transport at one or more levels
- x. Establish a warehouse management system based on a set of standard operating procedures

DISTRIBUTION SYSTEM DESIGN

Requisition of supplies

- An essential decision must be made as to which levels of the system will order drugs and which, if any will passively receive drugs distributed from higher levels.
- Drug supply systems may operate under a push or a pull system.

DISTRIBUTION SYSTEM DESIGN

The two basic alternatives are:

- **Pull system:** Each level of a system determines **what types** and **quantities** of drugs are needed and places orders with the supply source.
 - It is sometimes known as *independent demand* or a *requisition system*.

DISTRIBUTION SYSTEM DESIGN

- **Push system:** Supply sources at some level in the system determine *what types* and *quantities* of drugs will be delivered to lower levels.
- A delivery plan is made at the beginning of a planning period, usually a year, and supplies are delivered according to the plan.
 - This is also known as an *allocation* or *a ration* system.

DISTRIBUTION SYSTEM DESIGN

Conditions favoring a pull system

- Conditions favorable to a pull system of inventory management include—
 - ☞ Lower-level staff are competent in assessing needs and managing inventory.
 - ☞ Sufficient supplies are available at supply source to meet all program needs.
 - ☞ A large range of products is being handled.
 - ☞ Field-staff members are regularly supervised, and performance is monitored.
 - ☞ Good data are available to decision makers.

DISTRIBUTION SYSTEM DESIGN

Conditions favoring push systems

- Conditions favorable to a push system of inventory management include—
 - ☞ Lower-level staff are not competent in inventory control.
 - ☞ Demand greatly exceeds supply, making rationing necessary.
 - ☞ A limited number of products are being handled.
 - ☞ Disaster relief is needed, or the situation calls for short-term supply through pre-packed kits.

DISTRIBUTION SYSTEM DESIGN

Resupply interval

- Once the choice b/n a push or a pull system has been made, the next step is to select an appropriate resupply interval .
 - ☞ Determine whether deliveries are made to user units **quarterly, monthly, weekly** or **at any other time**.
- If deliveries are made weekly,
 - ✓ **average stock levels will be low** and
 - ✓ the likelihood of **stock outs** will **decrease**,
 - ✓ But transport costs will be very high.

DISTRIBUTION SYSTEM DESIGN

- If deliveries are made **only a year**,
 - ✓ transport costs will be low,
 - ✓ but **the average stocks** and **storage costs** will be high.
- It is important to consider the following factors before making a decision:

DISTRIBUTION SYSTEM DESIGN

- Storage capacity at each level of the system
- Availability, order size, carrying capacity, & cost of transport
- Seasonal factors that influence transport reliability
- Staffing levels and competence of staff at each level of the system
- Other factors-expiration dates, security against pilferage, cash flow and other local relevant concerns.

DISTRIBUTION SYSTEM DESIGN

Storage

- Well-sited stores are vital to the success of distribution system.
- the following points are important to remember during selection of storage points:

i. Map the demand for drugs

- Map the geographical distribution of drug demand, where are new or expanded health facilities ? which ones serve the most people?

ii. Locate supply entry points

- Airports, ports, railway terminals, etc

DISTRIBUTION SYSTEM DESIGN

iii. **Select primary storage points**

- Review the location of the existing primary stores and consider whether they are well placed for current and future needs.
 - based on geographic, demographic & communication factors

iv. **Plan primary distribution routes & locate intermediate stores**

- 1⁰ stores → intermediate stores

v. Plan secondary distribution routes

- Intermediate stores → health facilities

Vi. Size the stores

- the maximum volume of drugs to be held in each store depends on supply frequency:
 - programs that receive single annual drug deliveries require larger primary stores than those supplied more frequently.

DISTRIBUTION SYSTEM DESIGN

Transport

- Transport is frequently the least reliable link in the distribution system & is often a source of great frustration.
- Transport planning requires the selection of appropriate means of transports & the procurement and maintenance of vehicles or other conveyances.

DISTRIBUTION SYSTEM DESIGN

- Issues to be considered during designing Transport system include:
 - using private—sector alternatives
 - Planning transport system improvements
 - Acquiring and disposing of vehicles
 - Managing vehicle use
 - Maintaining vehicles
 - Maintaining drug quality during transport

DISTRIBUTION SYSTEM DESIGN

Delivery

- Drugs may be delivered by warehouses or collected by health facilities.
- Transport may involve air, water, railway or road vehicles.
- Timely delivery of items in health facilities is very important.

DISTRIBUTION SYSTEM DESIGN

Delivery schedules

- good planning is needed to ensure that each facility receives supplies regularly & on time
- When determining the appropriate delivery intervals for each stores and health facility, consider the following factors:
 - Storage capacity of **primary, intermediate & health facility** stores.

Deliveries must never exceed the holding capacity of any store.

- Increased transport Costs per unit supplied for deliveries to small, remote facilities,
- An obvious solution is to supply these areas infrequently
- efficient vehicle usage,
- Climatic factors.

MEDICAL STORES MANAGEMENT

- Assist the movement of supplies from source to user
 - As cheaply and reliably as possible, and
 - Without significant wastage or theft
- The purpose of store is to receive, hold and dispatch stock
- This process is controlled by an inventory control system
(manually or computer based)

THE CHARACTERISTICS OF A WELL-MANAGED STORES OPERATION

- The store be divided into zones that provide a range of environmental conditions and degrees of security
- Stock should be arranged within each zone according to some orderly system
- Stock should be placed on pallets, pallet racks, or on shelves
- Good house keeping that is cleaning and inspection should be maintained
- Staff should be appropriately qualified, trained, disciplined, and rewarded
- To promote efficiency, staff should have good working conditions and facilities

FLOW OF STOCK

- There are six stages to this process:

1. Receiving:

- Goods arrive in the receiving room and are inspected and entered into stock recording system and receiving reports are prepared

2. Storage:

- Accepted goods are moved to their allocated storage positions in the warehouse
 - Stored in FIFO or FEFO order

FLOW OF STOCK...

3. Allocation of stock:

- The manager determines whether or not to allocate the complete quantities requested when a requisition is received

4. Order picking :

- To identify and collect the allocated items from the warehouse

FLOW OF STOCK...

5. Order assembly for delivery:

- Individual orders are assembled and checked in packing area
- They are then packed for delivery and delivery documentation is prepared

6. Dispatch and delivery:

- The packed goods are loaded onto the transport and dispatched, accompanied by the necessary documentation

CONTROLLING STOCK ROTATION

- Stock rotation can be controlled using **FIFO** and **FEFO/LIFO**
- To avoid accumulation of expired, items should be stored and issued on a FIFO or FEFO basis
- Stock must be stored so that earliest expiring or first delivered batches are picked and issued first (FEFO/FIFO)
- Newly arrived stock sometimes has an earlier expiry date than a previously received batch of the same item (LIFO)

ZONING STOCK WITHIN THE STORE

- Drugs and essential medical supplies must be located in the store with the correct combination of temperature and security
- Zone can be
 - Separate building, or room (e.g. flammables),
 - A locked cupboard (eg. for narcotics and other controlled substances),
 - A refrigerator (eg. for vaccines, sera, test kits), a freezer, or a cold room
- Store drugs based on the product manufacturer's storage instructions

STOCK CLASSIFICATION

1. Therapeutic or pharmacological category:

- Convenient in small ware houses e.g.
Antihypertensives
- Limitation: many drugs may have multiple clinical indications

2. Alphabetical order (by generic name):

- May not result in optimal use of available space

3. Dosage form

- In smaller warehouses
- It allows optimal use of space

STOCK CLASSIFICATION...

4. Level of use:

- In higher level stores, products used in only one level of facility are stored together e.g. hospitals, health center

5. Random Bin:

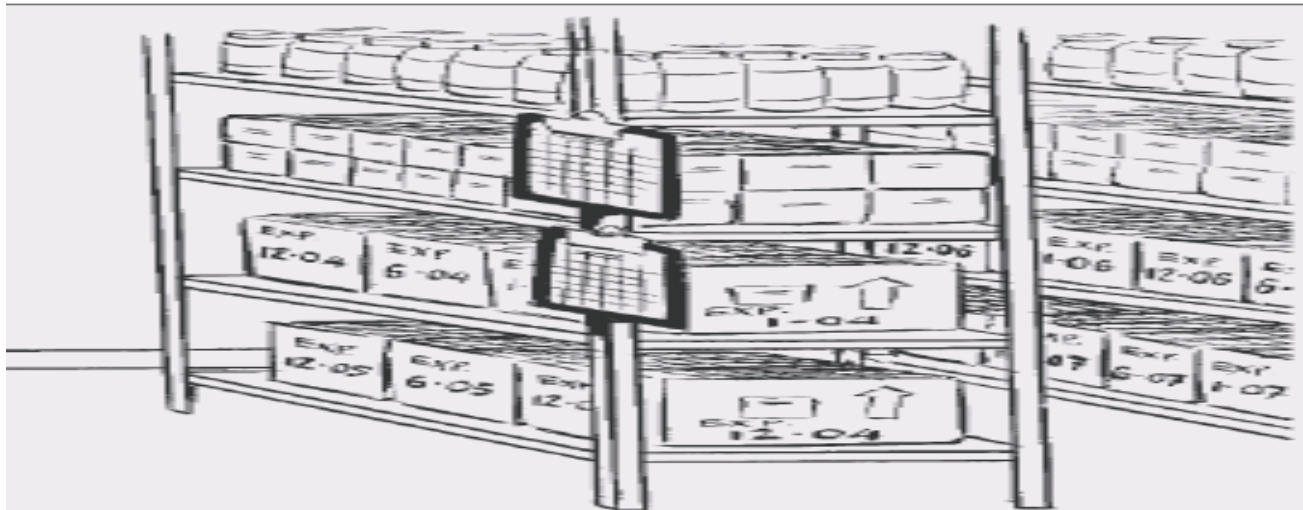
- Identified by a unique **location code**
- It can combine the methods described above (alphabetically and therapeutic classification)

6. Commodity code:

- Based on a **unique article code** combined with a unique location code.

STOCK STORAGE AND HANDLING

- There are four basic systems for storage
 1. **Shelves**: when the **volume and weight** are too small
 - Manual goods handling is locally more reliable or economical than mechanical handling



STOCK STORAGE AND HANDLING...

2. Floor pallets:

- In warehouse with ceiling heights of less than 3 meters and in stores where the cost of pallet racking and forklift trucks can **not** be justified
- Many **heavy or bulky** items, such as rolls of cotton, drug kits or large hospital equipment, require floor locations



STOCK STORAGE AND HANDLING...

3. Block stacked pallets: pallets containing **light goods** may be stacked on top of one another in blocks

- For items without expiry dates or with very high turnover, because the first in items are at the bottom of the stack
- Cheap and space efficient method of storage, and no racking is required



STOCK STORAGE AND HANDLING...

4. **Pallet racking:** combines the benefits of shelving and pallet

- Simplest pallet racks generally have two or three tiers.
- It is possible to have several more tiers, but sophisticated mechanical handling equipment is required.



Hand pallet truck

DRUG MANAGEMENT FOR HEALTH FACILITIES

- The purpose of inventory control at the facility level is to:
 - Record the receipt and issuance of stocks
 - Maintain sufficient stock to last between deliveries
 - Maintain stock at the lowest possible cost, and within budget limits
 - Provide appropriate, safe, and secure storage
 - Prevent expiry of drugs

DRUG MANAGEMENT FOR HEALTH FACILITIES...

- **Benefits of Inventory control system at the facility level:**
 - Patients receive drugs promptly
 - Stock outs can be prevented even when deliveries are delayed
 - Supplies can be replenished at scheduled intervals, saving on administrative costs and transport time
 - Patients have confidence in the facility and seek help when they are ill

DRUG MANAGEMENT FOR HEALTH FACILITIES...

Problems of poor stock control:

- A patient's condition may worsen because of the delay in treatment
- A patient may even die if a life saving drug is out of stock
- Patients may have to make long and expensive journeys to obtain treatment if drugs are not available in rural facilities
- When a drug is out of stock, less suitable alternative may be prescribed

DRUG MANAGEMENT FOR HEALTH FACILITIES...

- If drug availability at the secondary level is better than the primary level, the community will lose confidence in primary health care and seek hospital treatment instead
- Frequent stock outs may establish or re-enforce poor prescribing habits
- Emergency orders, which are expensive for the purchaser and inconvenient for the supplier, may be required

STORAGE OF SUPPLIES

Categories of drugs requiring special storage facilities:

- Products that must be kept frozen (usually vaccines, and sera)
- Products sensitive to heat that require refrigeration
- Products that have a reduced shelf life at uncontrolled room temperature and need mechanical ventilation or air-conditioning
- Flammable products that require separate, fire proof premises
- Products prone to theft or misuses

STORAGE OF SUPPLIES...

Products needing controlled environment:

- Some injectable drugs (for e.g. adrenaline)
- IV fluids (particularly if purchased in plastic containers)
- Some suppositories, pessaries, creams, and ointments
- X-ray films and chemicals

STORAGE OF SUPPLIES...

Products needing Freezing or Refrigeration:

- Vaccines
- Blood products
- Some other drugs lose potency,
- If kept, even briefly, at temperatures outside the recommended range
- Therefore for these products, the cold chain must be maintained at every stage

MONITORING AND EVALUATION

- Drug distribution is monitored against set objectives using some indicators:
 - Inspection of time of arrival and storage
 - Availability of suitable and adequate storage facility
 - Use of stock record card (documenting and keeping records of activities)
 - Maintenance of different stock levels

THANK YOU!!!