MATERIAL MANAGEMENT

Abstract

A scientific approach that focuses on planning, organizing, and controlling the flow of materials from their original acquisition to their final destination. The goal of material management in the health care system is to provide adequate medicines, supplies, and equipment's that medical staff members need to provide healthcare and in educational institution to manage the classrooms, labs, libraries, and offices adequately. Material management is an important management tool that will be very helpful in obtaining the right quality and quantity of supplies at the right time. Having good inventory control and adopting sound condemnation and disposal methods will increase the organization's efficiency and also create a healthy working environment for any type of organization, including private, public, small, large, and household businesses.

Nursing has such a central coordinative function for patient care in hospitals and educational institutions. It is appropriate for nurse managers to promote high quality patient care through the provision of safe, effective equipment and technology.

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I. INTRODUCTION

A scientific approach called material management focuses on planning, organizing, and controlling the flow of materials from their original acquisition to their final destination. Its main objectives are to organize, plan, and manage the flow of resources from their original acquisition via internal procedures to the service point and distribution. The goal of material management in the health care system is to provide the medicines, supplies, and equipment that medical staff members need to provide healthcare. The provision of materials consumes over 40% of the expenditures in the healthcare system. Providing consumers with materials of the proper quality is very important.

Material management integrates all materials functions

- Materials planning
- Demand estimates
- Purchasing
- Inventory management
- Inbound traffic
- Warehousing and stores
- Incoming quality control

II. CONCEPTS

Material management is concerned with the medical staff needs in order to provide medical services, including the medications, supplies, and equipment. In order for medical professionals to provide medical services, the appropriate medications, supplies, and equipment must be available in the appropriate quantities, at the appropriate times, and at the proper locations. Without the right tools, health professionals struggle to do their jobs well, become frustrated, and the community loses faith in the medical system. As a result, productivity of staff members will fall short of expectations unless the right tools are providedin the required quantity and at the appropriate time.

1. **Definition:** The provision of the medicines, supplies, and equipment required by medical personnel to deliverhealthcare services is the focus of material management.

   Objectives of material management.
   Decrease the cost of materials.
   Ensure adequate vendor support.
   Handle materials effectively and efficiently at all stages and in all parts.

In contrast, material management goals include:

- Low purchasing price
- Maintaining continuous supply
- Maintaining quality
- Maintaining quality
- Having a good relationship with the supplier
- Having low pay roll costs

- Developing a vendose
- Having solid proof, having low storage costs
- Having new materials and goods are just a few of the benefits
- Standardization
- Product improvement
- Interdepartmental harmony
- Economic forecasting

2. **Material management objectives:** The best practices for purchasing, storing, managing, and using goods must befollowed while purchasing materials.

- **Optimal inventory turnover rate:** All inventories must be kept at their lowest ideal level.
- **Good vendor relationships:** An organization's capacity to get materials on the most favorable conditions directly depends on its relationships with its vendors.
- **Materials cost control:** Every effort should be made to acquire materials as cheaply as feasible. A program of ongoing cost reduction is required.
- **Effective issue and distribution:** The issue and distribution system must take into account economical holdings at the point of utilization, with no chance of excessive stock accumulations.
- **Elimination of losses and pilferage**: A system of internal audit should be used to control theft and wastage.

3. **Aims of material management**

To get

- The right quality
- The proper amount of supplies
- Appropriately timed
- Located appropriately
- At the proper price.

4. **Purpose of material management**

- To increase buying efficiency
- To meet demand during the replenishing period
- To maintain reserve inventory to prevent stock outs.
- To control consumption fluctuations
- To offer customers services at a fair level
- Improve the performance of healthcare systems.
- Enhance your medical knowledge and expertise.
- Deliver materials as needed in the amount and quality necessary.

5. Basic Principles of material Management

- Effective management and supervision deals with the practical tasks of staffing, budgeting, planning, organizing, and controlling.
- Reliable purchasing strategy
- Clever and well-timed negotiating
- Successful purchasing method
- Should be simple It should be easy
- A straightforward inventory control application.

6. Functions of Material Management

- Budgeting and planning for materials
- Purchasing
- Invention supervision
- Reduced expenses
- Value analysis
- Receiving & inspection
- Stocking & distribution
- Disposal.

7. Methods

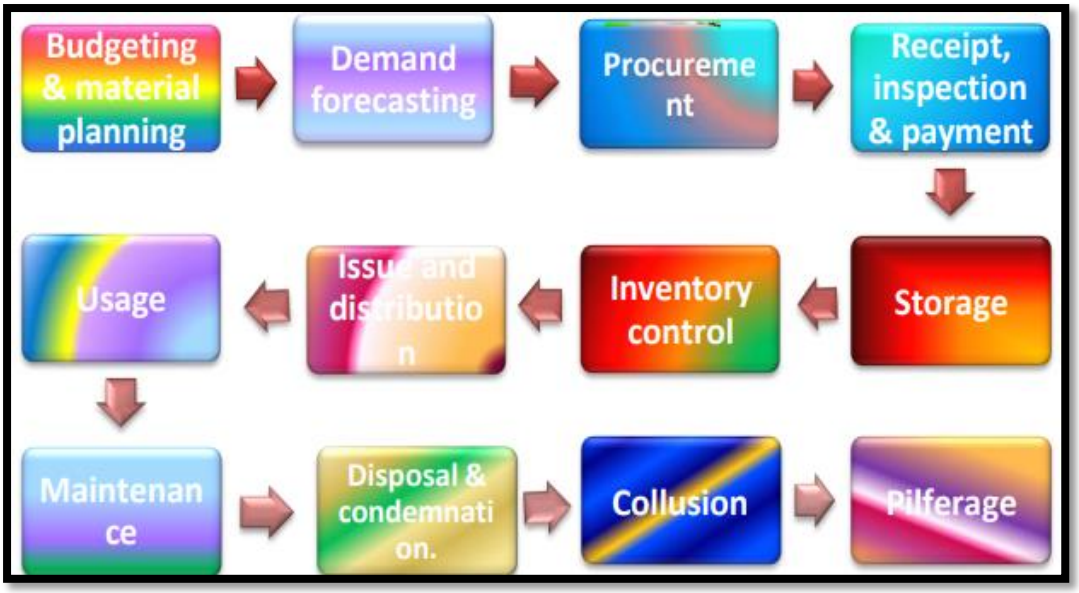
Good material managers adopt the following procedures:

- Regular and systematic inventory taking.
- Requisitioning at indenting in accordance with real demands.
- Receiving and inspecting incoming items.
- Protecting and storing goods.
- Issuing objects for usage.
- Use of goods properly.

8. Some more methods

- Identification of the necessity
- Establishment of norms, specifications, and detailed descriptions of character and quality
- Creation of indents or requisitions in the predesigned
- Choosing the appropriate source or provider
- Establish the appropriate cost, availability, and delivery date
- Making a purchase order
- Following up
- Planning for receiving, inspecting, and rejecting faulty items and replacing them.
- A check of the bills
- Bills must be paid.
- preservation of records

III. PROCESS OF MATERIAL MANAGEMENT



The process of material management involves planning, review and control of

Planning for finances and materials.
Demand projection.
Procurement
Receiving, checking, and paying.
Storage
Inventory management.
Distribution and issue.
Usage.
Maintenance.
Elimination and censure.
Collusions
Pilferage.

1. **Budgeting and material planning:** Department-by-department forecasts for the procurement of capital goods, consumables, and supplies for the following year may be made using performance data from the past as well as anticipated/planned levels of performance. This is the materials budget, which needs to be created every year. Identify the difference between theaccruals and the budget by conducting budgetary assessments on a regular basis.

   The idea of standardization is important for maintaining financial control and lowering material costs. This entails assembling comparable things according to their specification, use, or application in order to select one of them that is more widely regarded as suitable for the task. Benefits of standardization include increased relative usage of the standard item in contrast to comparable goods on the market, lack of inventory duplication, lower purchase costs, and more efficient resource utilization. In a hospital, standardization is made feasible by choosing ISI-approved products, restricting

the brands of drugs that can be supplied, and selecting furniture and equipment made of readily available, standard parts.

Value analysis, a method related to standardization, looks at all the relevant information on the cost and to determine if the cost may be reduced without compromising the overall performance or qualityof a product or item already in use.

The following difficulties are addressed by value analysis:

- Which item(s) or component(s) are they?
- What does it aim to accomplish?
- How much is it?
- What else could accomplish the same task?
- How much is the recommended alternative?

Non-disposable, autoclavable plastic syringes have been substituted with more expensive, easilybreakable glass syringes using the value-analysis technique.

2. **Demand forecasting:** Estimation of right amount of each material is the most crucial factor for maximisingavailability with minimum wastage.

A hospital may request materials for immediate or urgent use, or in anticipation of a need; once only,or often and continually to replenish the supply; either as a single item or a huge order.

The procurement price and incidental costs of acquisition will rise in proportion to the urgency of thesituation, the urgent demand for the item, and the desired quantity. Be prepared for the item's necessity. Through demand forecasting, bulk prices may be changed with the greatest price reductions.

3. **Methods of forecasting:**

Demand estimation or forecasting is done by various methods which includes

- **Demand from the past:** Forecasting is done based on the amount of demand that was experienced during the prior period (demand from last year is taken into consideration).

- **Average in mathematics:** For anticipating demand, the average of all prior demands is used. Calculated by average results over a period of time is arithmetic.

- **Average movement:** The approach with the highest usage is the moving average approach. A moving average precisely reflects the midpoint of the period it is calculated across. Half of the time/span is represented by a time/lag that serves as a forecast for the following time period. A moving average will lag behind real demand and provide continuously low estimates when used to anticipate demand, which is exhibiting an upward trend. When the tendency is downward, the opposite happens.

- By averaging the actual demand over the last n time periods, the projection for the

upcoming period is created. The value of the "n" should be determined using experimental data.It may be a two- or three-period moving average (which takes into account demand from the previous 2-3 years).

- The unexpected transitory spikes in demand can be efficiently countered by a moving average, which employs a long time horizon. But the longer the time period, the longer the lag and hence the greater the forecast inaccuracy. Only current demand values—which can be skewed due to sporadic short-term fluctuations—will be relevant over such a short period of time. The selection of a time frame is therefore based on past performance and an examination of how well the prediction matches actual demand levels.

4. Procurement: An efficient procurement system strives to purchase goods of a reasonable quality, in the right quantities, for the lowest possible cost, and within the allotted period.

The hospitals' separate departments may make purchases, or a single buying department may. The benefits of centralized purchasing include the availability of quantity discounts due to standardization and large purchases. Due to the consolidation and lack of duplicate orders, the cost of purchasing ha dropped. Due to the administration's ability to inspect every part of a transaction, management control is improved. It is typical for hospitals to offer both centralized purchasing by the main shops purchase department and department purchasing by the pharmacy and the dietary department. A collection ofhospitals that share a common interest, such as being located in the same area, may band together andform an agency to make large-scale acquisitions on their behalf.

Goals of the procurement system

- Purchase necessary goods as cheaply as feasible.
- Acquire superior supplies
- Ensure reliable and timely delivery.
- Distribute the task for procurement to prevent periods of inactivity and overwork.
- Improve inventory management through methodical purchasing practices

5. Methods in procurement process and negotiation strategies

Open tender

- **Public bidding, resulting in low prices**

  - Featured in publications
  - Duration - 4 weeks
  - Before the time and date specified in the tender form, quotations must be deliveredin the precise forms that are sold.
  - When it comes to technological equipment, the "two packets or two bins" techniqueis used. Offers come in two distinct packs.
    - Technical bid
    - Financial bid

- The initial technical offer is opened and shortlisted.
- The lowest financial bid from the shortlisted firms is then chosen.
- Late and delayed bids are not accepted. However, if the rate given in the event of delayed tenders is extremely low, it may be accepted.
- Accounts, the indenting department, and the authorized party members are present when the quotations are present
- Validity of tenders – generally 90 days

- **Limited or restricted tender**

  - From a select few vendors (10)
  - Lead time is shortened
  - Superior quality

- **Negotiated acquisition**

  - The buyer personally approaches a few potential suppliers.
  - Used in long time supply contracts

- **Direct purchasing**

  - purchased from a single supplier at the price he offered
  - Prices might range from expensive
  - Reserved for emergency purchases, low cost, small quantity, or proprietary items

- **Rate contract:** Businesses are required to provide retailers at predetermined rates for the duration of the contract.

  - **Spot buying:** A committee that consists of a representative from each of the departments of stores, accounting, and buying handles it.

  - **Purchase at risk:** If the supplier fails, the item is bought from other organizations, and the cost difference is repaid to the initialider.

- **Numerous Suppliers**

  - Many sources per item
  - Oppositional connection
  - Short –item
  - Minimal openness
  - Negotiated ,irregular PO’s
  - High prices
  - Infrequent ,large lots
  - Delivery to receiving dock

- **Few Suppliers Strategy**

  - 1-2 sources per item
  - Partnership(JIT)

- Enduring and reliable
- Visits and audits on the spot
- Exclusive contracts
- Low costs(big orders)
- Small,frequent lots
- Providing at the point of usage

- **Stockless Purchasing:** In this scenario, the provider holds onto the inventory for the customer**.** In this case, the supplier has temporarily taken over responsibility for paying the cost of stocking goods from the buyer. This method may result in net savings if the provider can keep stockpiles for a wide range of clients who utilize the same items. If not, purchase expenses might increase. Creating a partnership with the distributor and the hospital is one of them, as are making regular, planned deliveries to the distributor, determining the needs of the facility with hospital administration and materials management, and creating a "stockless policy."

- **Just in time purchasing:** With just-in-time (JIT) buying, waste (present at inbound inspection, extra inventory, and subpar quality) and delays are being reduced. All industrial processes contain this waste and delay. JIT technique is therefore applicable to all aspects of manufacturing, not only purchasing.

  - **JIT aims to cut back on any activities that don't offer value**: Purchased products may be delivered without counting or inspection if buying staff could choose more trustworthy vendors.

  - **Elimination of in-plant inventory:** If supplies are correctly transported to the location where they are needed, there is no need for a raw material inventory. When necessary, material should be supplied in tiny batches straight to the department using it. Eliminating inventory enables managers to detect production issues that were previously disguised by such inventories..

  - **Elimination of in-transit inventory:** Inventory that is in transit between a plant and its suppliers is referred to as in-transit inventory. By encouraging suppliers to set up shop close to the factory, it might be decreased. (There will be less inventory and lower transportation costs the shorter the material flow.) Having stock on consignment is an additional strategy for reducing in-transit inventory. In a consignment agreement, the supplier keeps ownership of the stock. However, it places its warehouse next to the user's stockroom.

  - **Quality and reliability improvement:** Vendors and customers need to trust one another in order to achieve higher quality and reliability. The level of suppliers' long-term commitment to the partnership should be raised.

- **Contractual services followed by health Institutions:**

  - **Static quantity contract:** Suppliers are requested to make an offer to supply a particular number of outlets by a given deadline. Both parties are bound by these contracts.

- **Running Contract:** These contracts are for the provision of an approximate number of stores at a particular price for a predetermined amount of time.
- **Rate contract:** most typical contracts in medical facilities, where businesses are required to provide stores at predetermined prices for the duration of the agreement. There isno specific number provided. This technique provides the greatest degree of flexibility whenordering a certain number of items on a regular basis. This reduces the likelihood of degradation or obsolescence of the medical supplies and helps to maintain optimal stocks. It is important to receive, store, and handle the supplies properly to ensure their availability when needed.

- **Things to consider when buying a piece of equipment**

  - Brand-new technology
  - Availability of a facility for maintenance and repairs, with minimaldowntime
  - Post-warranty upkeep at a reasonable cost
  - Upgradeability
  - reputable producer
  - Consumables are accessible
  - a low cost of operation

- **Steps in purchasing**

  - writing up specifications
  - requesting quotes,
  - comparing bids (based on basic price, freight and insurance charges, taxes and levels, quantity and payment discounts, payment terms, delivery period, guaranty, vendor reputation,)
  - Reduce offers
  - Struggle for improved conditions,
  - Place orders for purchases,
  - Carefully outlining all institution requirements,
  - Request a ruling
  - Thank you and follow-up for the early supply.

- **Purchase order to be legally valid and compete should include the following**

  - The order reference number and date.
  - The buyer's name and address.
  - The consignee's home and name.
  - The provider's name and location.
  - Date and citation information (when repeat order is give, the previous order reference is to be given).
  - Product details (specifications, brand name, catalogue number as per sample).
  - Quantity (units, pack size, weight, quantity per bag).
  - Price (unit price, quantity discount, payment discount, handling charges, sales tax, excise duty, surcharge).
  - Insurance costs (insurance by supplier and buyer).Total cost (helps comparison with other supplier offers, ensures review of order size and availability of cash).

- The packaging (free or extra, need special packaging, case marks.)
- Shipping recommendations (despatch made by air, rail, road, sea, coast, name of the port, railway station, and post office)
- The delivery date (definite date to be specified).
- Order acknowledgment (ensures receipt of orders, binds and supplies).
- Terms and conditions.
- Evaluation (at suppliers site, at hospital)
- Billing instructions (number of copies of invoice, purchase order, copy to be attached andwhom to be submitted)
- The payment method (through draft, cheque and cash)
- Guarantee.
- The designation and signatures of authorized purchasers.

- **Foreign medicine and medical supply purchases:**

  - Acquired the product information and a pro forma invoice with the price, the manner of payment for the shipment, and the conditions.
  - Import licenses are typically not necessary since hospitals are recognized by the government as being covered by open general licenses and are allowed to import commodities of any value without a particular license. Other hospitals are allowed to import medications worth up to Rs. 2 lakhs within a fiscal year.
  - Drug importation needs a test license from India's drug controller. Only through India's main ports, including Delhi, Bombay, Calcutta, and Chennai, are drugs permitted for import.
  - If an item is not listed for duty-free import, request a duty exemption. A non-manufactured India certificate and a customs duty exemption certificate can be obtained from the director general of health services in New Delhi, via the state health department.
  - Send bank drafts while making small transactions. Create a letter of credit for significant imports.
  - Upon notification of receipt, quickly clear things via customs. Deter dissent.

6. Receipt, inspection, acceptance and payment

- **Procedure for supply receipt, examination, and acceptance:**

  - When receiving containers from road carriers, railroads, and customs, inspect them fordeficiencies and defects.
  - If the packaging is broken, demand a "open" delivery and compare the amount of parcels, theweight of each item, and other details to the packing slip or challan.
  - Any loss or damage should be reported right away using a "claims" statement.
  - Compare the purchase order.
  - The hospital inspects supplies upon delivery for inconsistencies in quantity, quality, productrequirements, etc.
  - Keep track of shortages, inaccurate damage, and out-of-date supply, and take appropriateaction.
  - The purchase/stores department should check and certify all supplies. For large orders,random sampling could be sufficient.

- Complete all required paperwork, including the daybook of receipts, the goods inward note,the stock ledger, the purchase register, and the bin card.
- Inform indenters when special purchase orders for materials are received.

- **Material receipt register format:**

Date	Sr. No	Supplier"s Name	P.O. Ref. & Date	Challan No. Dt	Quantity receiver	Quantity accepted	Quantity rejected	MRN no

- **Procedure for payment:** On accepting the goods and certifying correctness, send the bills to the accounts department for payment. Before releasing payment, the account department should ensure that the bills bears proof of receipts of goods, certification of acceptance and completion of purchase documentation.

5. **Storage:** An essential component of the storekeeping role is storage and preservation. Materials that are left unused at the store should be carefully handled and cared for. If not, these materials could deteriorate naturally by chemical reactions like rusting from moisture, melting from heat, etc., or they might be harmed by rodents, insects, etc. The right kind of storage guarantees that the supplies are appropriately protected until they are released for use, preventing loss or damage. There should be a suitable location for the department shops to simplify the process of receiving goods from vendors and distributing them quickly to the departments and wards. The materials should be sufficiently safeguarded from hazards like fire, pests, water, sewage, etc.

- **Actions to protect the materials from various adverse effects**

  - Store must be of adequate space.
  - Set up uniform parts of the shop with designated locations for various groupings of goods, such as stationery, furniture, etc.
  - Materials shouldn't be stored on the floor since they might be harmed by moisture, white ants, etc.
  - Sort goods into groups based on their common names or uses, and keep related items together in storage.

Example:

- The steel racks may be stocked with stationary, electrical, civil engineering, cleaning, and similar items.
- Medicine supplies can be kept in the refrigerator.
- You can keep perishable products in the cold rooms.
- Items including explosives, film, and fuses may be kept in the AC room.
- Eye-catching things may be kept on shelves behind locks and keys.
- Cleaning should be done regularly and daily.

- To verify the accuracy of the stock, daily and periodic stock verification should be done.
- To make retrieving easier, keep heavy objects as low and close to the door as you can. You may put light objects on the upper shelves.
- The right handling technique should be used to prevent material damage.
- To preserve the objects, preservation materials should be used.
- It is best to separate and store hazardous goods in a separate storage facility, far from other storage facilities.
- Safety measures should be performed, and safety equipment should be available..
- First-in, first-out principle to be followed
- Use a double-shelf or two-bin arrangement to prevent stock outs.
- The reserve bin should have enough stock to cover the lead period and a small amount of safety stock.

- **Codification and preparation of bin card:** Each item that is purchased and stored should be assigned a code—an identifying number—based on the kind of material used and the application for which it is known by its generic name. An item's bin card and other permanent places must both bear this number, whichmust be different for each item.

  Bin Cards are also known as Cardex, Tag Cards, and so on. The Bin Card includes all of the specific details on the items. Bin cards often contain data such as quantity received, quantity issued, minimum and maximum stock levels, reorder level, reorder quantity, closing stock, opening stock, and so on. Bin Card System upkeep is a function of the perpetual inventory accounting system.

  Each stock item ought to have a corresponding bin card. An item's name, description, code, unique identifier, location, minimum and maximum stock levels, as well as transactionsinvolving receipts, issues, and the stock value balance of the pertinent item at the time of suchtransactions, are all listed on such a card. Bin cards are organized in accordance with the materials' categorization and code numbering system, then placed in the appropriate cabinets for convenient access and updating.

  Each ward will have a department store in addition to the main retailers. The maximum stock levels in this situation need to be established at the departmental and ward levels while taking into account the frequency of problems and the rate of consumption. To avoid stock hoarding in sub stores, the material sanctioning authority must conduct periodic physical inspections.

- **Stock register:** A stock register is kept by the stores in charge to track all purchases and releases of stock goods. Th provided format is a standard stock register format that includes all of the information on material coming in and going out within the specified time period. To aid the businesses in charge of maintaining better control over the flow of the materials, we have compiled a report of all the stock items. Effectiveinventory control is ensured by maintaining the stock register.

6. Inventory control

It is the process of making sure that the relevant tools and materials are available when they're needed. Stocking an appropriate number and range of stores is necessary to ensure that the items are accessible whenever and wherever they are required. The perfect equilibrium is achieved by scientific inventory management. Is it more cost-effective to keep an item in inventory rather than to buy it on demand? is the most important question to ask.

- **Purposes of inventory control**

  - To offer the best supply service possible while maintaining the highest level of efficiencyand investment.
  - To function as a buffer between anticipated and actual material demand

- **Concepts relevant in control of inventory cost:**

  - **Cyclic system:** This method uses periodic defined intervals to assess the physical stock situation and orders are issued based on the amount of stock on hand and the rate of conception. The period of time to be selected is determined by the lead time for item procurement, critically out costs, the level of control necessary, etc.

  - **Two bin systems:** In this perpetual inventory system, each item's stock is conceptually held in two bins: one larger bin contains enough stock to meet demand between the time an order is delivered and the placement of the following order, and the other bin contains stocks big enough to meet potential demand during the period of replenishment. The ordering interval in cyclic systems is fixed. But each time, the amount order is different. The order quantity is predetermined with the two bin method, however orders are not placed at regular intervals.

- **Lead time:** This is the amount of time needed to get the supply once the demand has been identified, or the typical number of days it takes to receive the material after making an order.

Lead time is composed of:

- **Administrative lead time or bias time:** Time needed to create purchaserequests, gather quotes, create a comparative schedule, create purchase orders, send them to suppliers, wait for the goods to arrive from out of station, check and inspect the materials once they arrive, send the materials to the right stores,and record the receipt before issuing.

- **Delivery lead time or supplier's time:** If supplies are not already on hand, it is time to prepare them and transfer them from the supplier's go down to the buyer's receiving station. The level of inventory increases with longer lead times. In order to reduce the lead time,particularly for things with a high conception value, efforts must be done.

  - **Minimum stock or safety stock or buffer stock:** In order to prevent a stock-out in the event of an unanticipated rise in conception or if the lead time turns out to be longer than usual, this amount of stock should be held in reserve. Furthermore, it is the point at which fresh supplies ought to ordinarily start to flow.

- **Factors to be considered in fixing minimum stock:**

  - **Investment:** Items with high value should have extremely little or no supply. Close follow-up orders, weekly or monthly reviews of stock items or stock positions, close wrap out with suppliers, etc. can all help prevent stock outs. Goods of low value can have a decent minimum supply whereas items of medium value can have a somewhat greater minimum stock (one month conception) (two months conception).
  - **Lead time:** A small minimum stock is possible if the lead time is short.
  - **Cycle time:** When deliveries are staged and large orders were placed, safety stock may be determined based on cycle time (the time between two deliveries), not lead time.
  - **Form of availability:** If the item is not a standard product and it is to be specially manufactured, it is advisable to keep a higher minimum stock.
  - **Imported items:** Higher buffer stock is necessary to provide for import procedures.
  - **Stock-out cost:** Critical products with high stock-out costs must have higher minimum inventories, especially if obtaining them is challenging.
  - **Shell life:** If shell life is short minimum stock to be altered accordingly.
  - **Risk of obsolescence:** In case of items which are liable to modification from time to time the stock should be kept low.
  - **Re order point / level:** The ROP is the predetermined stock level at which a product has to be reordered in order to refill the stock. In order to ensure that the supplies arrive when the stock hits the minimal level, a new recoupment buy requisition is raised at this level. This reorder level equates to the minimum stock need plus the lead time requirement.

ROL = Average consumption per day X lead time + buffer stock

- **Maximum stock:** This is the predetermined upper limit over which the supply of an item should not be permitted to increase normally. It is equal to the minimum stock level plus the total amount of supplies that have ever been received. For managing investment, the maximum level is employed.

- **Turnover of inventory:**

- **Inventory turnover:** This is a qualitative indicator of how frequently the entire value of inventory is issued and replaced. By dividing the rupee value of closing stock by the entire yearly rupee valueof supplies supplied, the turnover rate is determined. The optimal rotation rate is 12 times year, however 8 to 10 times annually is more reasonable.
- **Physical inventory:** This is the predetermined threshold that shouldn't be exceeded by an item's supply during normal company operations. The entire number of supplies received at any particular time plus the minimum stock level equalit. Investments are handled at the highest degree possible.

IV. INVENTORY CONTROL METHODS

According to the control purpose, many strategies are frequently employed. The concepts of selective inventory management acknowledge that it is impractical to manage and control every item in inventory holdings uniformly and yet achieve the two main goals mentioned before.

1. **Economic order quantity:** When the cost of ordering an item's yearly demand and the cost of maintaininginventory are equal, or when the sum of the two costs is lowest, that quantity is considered to be the optimal one. It aims to achieve a balance between the price of purchases and the price of maintaining inventory.

   Ordering costs cover all additional expenses related to getting quotes, placing an order, following up, and hiring staff for receipt inspection and payment. The average cost per order is calculated by dividing the total ordering costs over a given time period by the quantity of orders for a given items.

   Inventory carrying cost is the sum of the opportunity cost of retaining the inventory as well as the costs associated with its physical storage. Included are the interest- on-investment payments that were forfeited due to exorbitant storage, obsolescence, insurance, and administrative fees. Economic order quantity is to identify the ideal amount that should be ordered inorder to achieve the lowest ordering expenses as well as holding costs.

EOQ = Average Monthly Consumption X Lead Time [in months] + Buffer Stock – Stock on hand

Fixing the order quantity using Economic order quantity is dependent on a number of factors, including availability of the cast, storage space, variance in consumption patterns, possibility of obsolescence, lead time for delivery, government requirements, ease of use due to less labour, andseasonal availability.

2. **ABC Analysis:** Using the ABC Analysis, all inventory items are categorized by examining their yearly usage time costs. In the ABC Analysis, every item supplied throughout the year is spelled out, its unit cost is multiplied by the quantity eaten to get its consumption value, and the products are then ordered according to their yearly consumption value. Following that, it will be communicated that 5–10% of the total number of goods account for 70–80% of the expenditures associated with material consumption, followed by 10–20% of yearly consumption costs , and the balance 70-80% of the number of items account for 5 – 10 % of annualconsumption expenditure

Limitations of the ABC Analysis:

- Standardization and codification are required for the ABC Analysis to be fully effective.
- It makes no mention of profitability or criticality. An item's importance is determined by its value for consumption rather than by critical evaluation. A high criticality item with a low consumption value may therefore be overlooked as a result of this categorization.
- The ABC Analysis should be revised on a regular basis to account for changes in pricesand consumption

3. **Vital Essential or Desirable:** Items may be classified as VED based on their criticality, stock out costs and inconveniences caused to the work of the hospital because of their absence.

V category items require a large safety stock, where as **D** items require a small safety stock. The management of spare parts is significantly impacted by VED classification. While the demand for raw materials is directly and unquestionably determined by the market, the need for replacement parts is instead determined by the efficiency of the plant and machinery.

4. **Fast moving, slow moving, non moving [FSN ANALYSIS]:** Fast moving items are used at a rapid rate, things that have been moved at least once per year. Slow moving items are used consistently but at a slow rate, objects that have been moved at leastonce every year or two.

To avoid date expiration, obsolescence, and storage damage, non-moving products should befrequently examined. It might stay in the inventory for several months.

Inventory control register

Name of The Material	Code No.	Max Level	Min Level	Re-Order	EOQ/Lot size	Units	Location

Monthly consumption registers

Date	Doc Ref	IN	OUT	Bal	Remark

5. **Issue / Distribution:** Items kept in inventory by the stores may be supplied periodically or as needed to userdepartments through indents.

   Systems of stocks replenishment to wards are of following types

- **Requisition or Drug basket system:** A request is generated and delivered to stores for stock replenishment at predetermined intervals when departmental stock levels get low. Following that, the retailers release things in accordance with the request..
- **Par level or Topping up systems:** Each ward's maximum stock level is defined basedon consumption patterns and replenishment schedules. This departmental inventory is kept in a designated place..
- **Exchange cart systems:** In that there are defined maximum stock levels and predetermined times for stock replenishment, this method is comparable to the par level system. The depleted cart is replaced with the full cart from the retailers at predefined intervals in the user area.

6. **Usage:** All levels of the organization must make every effort to use the materials in order to prevent any kind of waste. Monthly supply usage reports that list the goods consumed by department should beused to monitor consumption. Appropriate material selection, the use of less expensive replacements, and supply uniformity can all help to reduce material costs.

7. **Maintenance:** Equipment, furniture, and fixtures should be well maintained to ensure not only their almost constant availability for use but also their prolonged life and productivity, which reduces the need for replacement parts.

   Time and costs of maintenance can be reduced by consideration of following factors during purchase of the capital asserts.

- **Durability:** Provide for some over-specification in the equipment since it will be handled by many people, making it more durable than what is available for single-person use in a household context.

- **Periodical disinfections:** The products' outside surfaces ought to be washable and ought toallow for disinfection using moist heat, formalin vapour, spirit, or other disinfectants.

- **Repair ability:** Go for items which re more easily repairable.

- **Spare parts availability**: Standardizing products and choosing ones that are readily accessible on the market guarantees quick access to the replacement parts needed for maintenance and repair.

- **Operation and service manuals**: When purchasing sophisticated equipment it is essentialto obtain the operating and service manuals so that repairs can be attended to by the hospital mainaintence department without relying perpetually on the supplier.

- **Service contracts**: By negotiating service agreements for maintenance contracts before buying the equipment, better service conditions may be attainable. Such contracts should include information on service fees, a minimum amount of preventative maintenance over rigidschedules, etc.

- **Stand by units:** Wherever feasible, it is vital to prepare for substitutes to hold things over while the equipment is being repaired since medical operations must continue even when the equipment is broken.

V. PREVENTIVE MAINTENANCE

- Purchase includes spare parts and guarantee.
- Protect the electronic devices with: (in accordance with the rules))
- UPS and voltage stabilizer
- Automatic generator switch
- Requirements for space, air quality, water, power, etc. Consideration must be given
- An accessible maintenance cell must be well-equipped.
- All equipment must be used in accordance with the manual and by trained personnel.
- Keeping track of yearly maintenance agreements (AMC)
- The upkeep cell
- Interactions between the equipment vendors and the maintenance cell.
- Monitoring of maintenance and repair work
- Equipment upkeep
- External agencies
- Internal facility

1. **Disposal/ Condemnation:** Due to supply hoarding, indents are frequently wrongly examined, and unofficial inventoryaccumulates in hospitals and departments. As a result, the nursing supervisors should routinely check the stocks connected to each ward and make arrangements for the return of any surplus stock or equipment. Additionally, each institution needs a committee to assess any used goods that need to be thrown away. Sometimes it is feasible to recycle, reuse, or put an object to another use. Disposables, worn consumables, and broken equipment may still be valuable as scrap if no other use can be found for them.

- **Criteria for condemnation:**

The equipment has become

- Non-functional and beyond repair economically
- Inoperative and outdated
- Practical but dated
- Useful but dangerous
- Useful but no longer necessary

- **Procedure for condemnation**

  - Check the records.
  - Creating an equipment history sheet
  - Maintenance and repair logbook
  - Equipment performance history
  - Submit in the right format to the appropriate authorities.

- **Disposal**

  - Distribute to other units as needed.
  - If the dealer is ready to accept, go back.
  - Market to organizations, junk merchants, etc.
  - Auction
  - Regional devastation

2. **Collusion:** Frauds involving collaboration between buyers and sellers may represent a sizable portion of unnecessary material expenditures. Personnel may violate the interests of the hospital in exchangefor a commission, whether it be in cash or in kind. The seller provides the funding for such payment by tampering with the pricing, inflating the quantity, or making fraudulent payments. In-depth internal auditing and involving two or more departments or people in buy transactions can both stop these scams. Many hospitals have distinct areas for stores and for purchases because of this transaction.

3. **Pilferage:** It's rare to commit theft. The shippers, receivers, store employees, or users may steal items.With extreme caution, hospital theft may be controlled.

VI. MATERIALS MANAGEMENT PLANNING AND PROCUREMENT PROCEDURES

The planning, structuring, and control of the flow of materials from their initial acquisition via internal processes to the service point through distribution is the focus of the scientific approach known as material management. Supplying the equipment, materials, and medications that medical staff members require to provide treatment is the aim of material management in the healthcare system. The provision of materials consumes over 40% of the expenditures in the healthcare system. It is crucial to provide consumers with materials of the proper quality.

Material management integrates all material functions

Materials planning;
Demand estimate
Purchasing
Inventory control
Inbound traffic
Warehousing and stores
Incoming quality control

1. **Material planning:** The "scientific method of identifying the requirements that go into satisfying production demands withinthe economic investment strategies" is known as "material planning."

At all phases and levels of management, it is carried out. Material planning is based on specificreviews and feedback data.

- **Aim of material management planning**

To get:

- The Right quality
- Right quantity of supplies
- At the Right time
- At the Right place
- For the Right cost

- **Purpose of material management planning**

- To gain economy in purchasing
- To satisfy the demand during period of replenishment
- To carry reserve stock to avoid stock out
- To stabilize fluctuations in consumption
- To provide reasonable level of client services

- **Objectives of material management planning**

Primary objectives

- Right price
- High turnover
- Low procurement and storage cost
- Continuity of supply
- Consistency in quality
- Good supplier relations Secondary objectives:
- Development of personnel
- Good information system
- Forecasting
- Inter-departmental harmony
- Product improvement
- Standardization
- Make or buy decision
- New materials and products
- Favorable reciprocal relationships

- **Basic principles of material management Planning**

  Effective management and supervision depends on managerial functions of:

  - Planning
  - Organizing
  - Staffing
  - Directing
  - Controlling
  - Reporting
  - Budgeting
  - Sound purchasing methods
  - Skillful and hard poised negotiations
  - Effective purchase system
  - Should be simple
  - Must not increase other costs
  - Simple inventory control programme

- **Techniques of Material Planning**

  - **Bill of Material technique:**

    BOM is the simplest technique of materials planning.
    Explosion of bill of materials refers to splitting the requirements for the product to be manufactures in to its basic components. E.g. in health care is drugs manufactured in the pharmacy
    This technique is ideally suited to engineering industries.
    The technique is based on demand forecasts.
    Requirement for various materials are listed with their complete specifications

- **Past Consumption Analysis Technique:**

  - In this technique future projection is made on the basis of the past consumption data, which is analyzed taken in to consideration the past and future plans.
  - Statistical tools like mean, median, mode and standard deviation are used in analyzing the past consumption.

Elements of material management planning

2. **Demand estimation:** The hospital uses a lot of different things. 3200 items of surgical instruments, equipment, and appliances were designated by the advisory group for development of surgical instruments, equipment, and appliances in 1963.

- **Identify the needed items:**

  - Need for variety reduction-less number of materials, less will be the problems of planning
  - Lying down proper specification based on ISI or other standards

- **Calculate from the trends in Consumption**

  - Review past the consumption in the past

- **Review with resource constraints**

  - Availability of funds

- **Procurement process planning**

  Problems affecting material planning

  - Corporate/ Government objectives and plans
  - Technology available
  - Market demand
  - Lead time and rejection rates
  - Working capital available
  - Nature of inventory required
  - Capacity and its utilization of the organization
  - Seasonal variations
  - Information and data available
  - Overall material policy

3. **Procurement:** Most organizations have a detailed set of rules and regulations regarding the procedurefor ordering for materials. In the Government systems DGHS play a crucial role in purchasingmaterials of heavy cost.

- **Goals of the procurement system**

  - Purchase necessary goods as cheaply as feasible.
  - Acquire superior supplies
  - Ensure reliable and timely delivery.
  - Distribute the task for procurement to prevent periods of inactivity and overwork.
  - Improve inventory management through methodical purchasing practices

- **Procurement cycle**

  - Review selection
  - Determine needed quantities
  - Reconcile needs and funds
  - Choose procurement method
  - Select suppliers
  - Specify contract terms
  - Monitor order status
  - Receipt and inspection

4. Methods in procurement process and negotiation strategies

Open tender

- Public bidding, resulting in low prices
- Featured in publications
- Duration - 4 weeks
- Before the time and date specified in the tender form, quotations must be deliveredin the precise forms that are sold.
- When it comes to technological equipment, the "two packets or two bins" techniqueis used. Offers come in two distinct packs.
  - Technical bid
  - Financial bid
- The initial technical offer is opened and shortlisted.
- The lowest financial bid from the shortlisted firms is then chosen.
- Late and delayed bids are not accepted. However, if the rate given in the event of delayed tenders is extremely low, it may be accepted.
- Accounts, the indenting department, and the authorized party members are present when the quotations are opened.
- Validity of tenders – generally 90 days

5. Limited or restricted tender

- From a select few vendors(10)
- Lead time is shortened
- superior quality

Negotiated acquisition

- The buyer personally approaches a few potential suppliers.
- Used in long time supply contracts

6. Direct purchasing

Purchased from a single supplier at the price heoffered
Prices might range from expensive
Reserved for emergency purchases, low cost, small quantity, or proprietary items

- **Rate contract:** Businesses are required to provide retailers at predetermined rates for the duration of the contract.
- **Spot buying:** A committee that consists of a representative from each of the departments of stores, accounting,and buying handles it.
- **Purchase at risk:** If the supplier fails, the item is bought from other organizations, and the cost difference is repaid to theinitial provider.

- **Numerous Suppliers**

  - Many sources peritem
  - oppositionalconnection
  - Short-term
  - Minimal openness
  - Negotiated, irregular POs
  - High prices
  - Infrequent, large lots
  - Delivery to receivingdock

- **Few Suppliers Strategy**

  - 1-2 sources per itemPartnership (JIT)
  - Enduring and reliable
  - Visits and audits onthe spot
  - Exclusive contracts
  - Low costs (bigorders)) Small,frequent lots
  - Providing at the pointof Usage

- **Contractual services followed by health institutions**

  - **Static quantity contract:** Suppliers are requested to make an offer to supply a particular number of outlets by a given deadline. Both parties are bound by these contracts.

  - **Running Contract:** These contracts are for the provision of an approximate number of stores at a particular price for a predetermined amount of time.

  - **Rate contract:** most typical contracts in medical facilities, where businesses are required to provide stores at predetermined prices for the duration of the agreement. There is no specific number provided. This technique provides the greatest degree of flexibility when ordering a certain number of items on a regular basis. This reduces the likelihood of degradation or obsolescence of the medical supplies and helps to maintain optimal stocks. It is important to receive, store, and handle the supplies properly to ensure their availability when needed.

- **Steps while purchasing**

  - writing up specifications
  - requesting quotes,
  - comparing bids (based on basic price, freight and insurance charges, taxes and levels, quantity and payment discounts, payment terms, delivery period, guaranty, vendor reputation,)
  - writing up specifications
  - requesting quotes,
  - comparing bids (based on basic price, freight and insurance charges, taxes and levels, quantity and payment discounts, payment terms, delivery period, guaranty, vendor

reputation,)
- Reduce offers
- Struggle for improved conditions,
- Place orders for purchases,
- Carefully outlining all institution requirements,
- Request a ruling
- Thank you and follow-up for the early supply.

- **Procurement of equipments- Points to be noted before purchase of equipment:**

  - Latest technology
  - Availability of maintenance and repair facility, with minimum down time
  - Post warranty repair at reasonable cost
  - Upgradeability
  - Reputed manufacturer
  - Availability of consumables
  - Low operating costs
  - Installation
  - Proper installation as per guidelines

- **Storage**

  - Store must be of adequate space
  - Materials must be stored in an appropriate place in a correct way
  - Group wise and alphabetical arrangement helps in identification and retrieval
  - First-in, first-out principle to be followed
  - Monitor expiry date
  - Follow two bin or double shelf system, to avoid stock outs
  - Reserve bin should contain stock that will cover lead time and a small safety stock.

- **Issue and use:** Can be centralized or decentralized

- **Inventory control:** It is the process of making sure that the relevant tools and materials are available when they're needed. Stocking an appropriate number and range of stores is necessary to ensure that the items are accessible whenever and wherever they are required. The perfect equilibrium is achieved by scientificinventory management.

- **Purposes of inventory control**

  - To offer the best supply service possible while maintaining the highest level of efficiency and investment.
  - To function as a buffer between anticipated and actual material demand

VII. ABC ANALYSIS

1. **Definition:** ABC analysis aids in separating the elements from one another, reveals how highly valued they are, andindicates how much control is necessary for the organisation.

It is a cost-based study of store merchandise. It has been observed that many things use up a very smallamount of resources, and vice versa.

A items- stands for a high cost centre
B items- intermediate cost centre
C items- low cost centre

It is the process of categorizing things using values as a standard.

2. **Objective:** The establishment of item control policy guidelines is the main objective. First, objects are divided into three categories: A things, B things, and C products. Expensive objects, which make up 10% of all products but have a value proportion of around 70%, are to be labeled as A items. The lowest priced items, referred to as C items, will account for 70% of the total number of items yet only represent 10% of the total inventory of goods. Branding is required for the intermediate products, whose item count will be B items.

3. **The ABC method of inventory control:** Additionally known as Pareto analysis. The complete lot of inventory is divided into three groups for ABC analysis based on their yearly worth rather than their individual cost, as follows:

- **Class A:** control must clearly be implemented from the very beginning when assessingthe need, setting the minimum inventories, and lead time.

- **A items**

  - Extensive value analysis
  - Strict estimations
  - Close and strict observation
  - Top management should oversee the handling of the things.
  - centralized storage and purchase

- **Class B:** The objects in this category must adhere to less stringent control measures andare of medium value and do not fall under any of the groups.

- **B items**

  - Moderate restrictions
  - Buying based on strict requirements
  - Reasonably stringent oversight and regulation
  - Middle-level management should be used.

- **Class C:** Low-value but often used products, such as clips and washers, come in many different sorts and variants. It merely requires a straightforward, affordable method of control that allows for some routine to be loosened.

- **C items**

  - Typically, preventative measures
  - Purchased depending on anticipatedusage
  - The storekeeper conducts controls.

- Lower levels of management should be used.
- Delegated (decentralized) purchasing

Another recommended breakdown of ABC classes:

- "A" approximately 10% of items or 66.6% of value
- "B" approximately 20% of items or 23.3% of value
- "C" approximately 70% of items or 10.1% of value

ABC CLASSIFICATION LEVELS

Items	Class A	Class B	Class C
Percentage of items in relation to all items:	10	20	70
Percent of total usage value as annualusage value	70	20	10

Annual value (a) is defined as: A= VQ,
Q is the annual consumption expressed in quantity terms.
V stands for value (cost) per unit.

According to the ABC analysis, 5-10% of all items (called Category A) account for 70% of the annual cost of consumption of , and 10-20% of items (called Category B) account for 20-30%.and cost, With the remaining 70% of products (known as the C category) accounting for around 5–10% of the expenditures. Inventory items are valued (item cost multiplied by amount issued/consumed in period) and the results are prioritised when doing an ABC analysis. Following that, the findings are often divided into three bands. These patterns are known as ABC codes.

Step 1: Determine the yearly consumption of each item by listing down the annual consumption ofinventory per item along with its unit pricing.

Step 2: The aforementioned list should be rewritten in descending order by money value with anadditional column for "cumulative percent value."

Step 3:

- From the prepared list, indicate the serial number of products against which thetotal yearly consumption percentage reaches a figure of around 70%. These arereferred to as class A items, and their quantity is calculated as a percentage of all things..
- Continue working your way down the list, noting the serial number of objects next to which the cumulative percent value is about 90%. Class B consists of these extra elements.
- The remaining elements in the list make up class C items, and they are quantified as a percentage of the overall number of items

Step 4: Draw a curve with the yearly cumulative % usage of quantity phrases on the X-axis and thedollar value on the Y-axis.

4. Control

- **Class A items** are managed and only bought when necessary to save carrying costs. These high value objects are under higher level supervision.

- **Class C items** being of cheap value, may be bought in quantity to meet the needsof the full year. At a lower level, control is applied.

- **Class B items** on the scale of control, fall between A and C.

5. Advantages

- Enables the identification of products that will have a major influence on the cost of the entire inventory.
- It helps in economizing ones effort to achieve greater results.
- It helps to separate those things that need to be prioritized in order to optimize outcomes.
- The benefit of this management technique is that by concentrating on the "A" category items, 70% of outcomes may be obtained with only 5% of the work.
- After identifying the products that fall within the A category, it is feasible to focus more on them inorder to reduce purchasing prices and better regulate consumption.
- Proper use of valuable time of store personnel.
- Simple no confusing formulas are involved

6. Limitation

- It is not practical to compute and perform this analysis when the number of itemsexceeds a few thousand.
- Since class C products are bought in quantity and their inventory builds up, thereare more possibilities that they may deteriorate in storage.
- A lack of control over C might lead to shortages.
- Because ABC emphasizes monetary worth rather than functional relevance of such products, there are shortages of essential items.
- ABC does not account for changes in product pricing over time.
- ABC disregards market circumstances, market accessibility, rivalries, seasonal variations, etc.

VIII. VED ANALYSIS

Each stock item is categorized into vital, necessary, or desired categories according to how crucial it is for delivering healthcare services in the VED Method (vital, essential, and desirable). The essentials are supplied in medium proportions, the desirables in small amounts, and the essentials are stocked in plenty. The availability of vital and necessary materials ensures minimal interruption of the services provided to the public.

1. The VED method of inventory control

In VED analysis, the inventory is classified as per the functional importance under thefollowing three categories:

Vital (V)
Essential (E)
Desirable (D)

- **Items:** that are necessary for therapy, i.e., those whose absence cannot be tolerated the criticalproducts are well-stocked and subject to very stringent monitoring.

- **Essential:** Goods whose absence may be endured for two to three days since identical or substitute itemsare readily accessible. Medium amounts of essential products are kept on hand, and purchasesare made only when rigorous criteria have been met.

- **Desirable:** Items whose absence can last a very long period. Depending on predicted usage, purchases are made from small inventories of desired goods. Depending on the kind and volume of work, the proportion of vital, essential, and wanted products varies from hospital to hospital, but on average, vital products account for 10%, essential products for40%, and desirable products for 50% of the total items available.

2. Purposes

- There are a handful of elements in a manufacturing organization that are absolutely necessary or crucial toproduction.
- They must always be available to enable seamless production, thus their careful management is necessary.
- Essential things come after important items in the hierarchy of priority.
- In terms of functional concerns, which are loosely regulated at the lowest level, desirable elements areof the least relevance.

3. **Matrix of ABC/ VED analysis:** These two categories may be combined, similar to how an ABC and VED matrix may do so. In hospitals, this matrix is more useful. Due to the products' high cost as a category and necessity for applications, the AV categorybecomes the most crucial for inventory control. The highest management has control over these things. The CD category products are both reasonably priced and attractive. The lowest level allows you control over these things.

	V	E	D
A	AV	AE	AD
B	BV	BE	BD
C	CV	CE	CD

4. Control of VED items

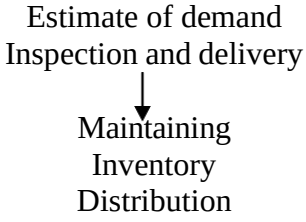
- **Items in Category I:** are the most crucial ones and must be controlled by the administrator personally.
- **Items in Category II:** These should be under the officer in charge of the shops' oversightas

they are of intermediate significance.

- **Items in Category III:** are the least important and can be placed in the care of the storekeeper.
- The management strategy and working environment will be the main determinants ofthe grouping. However, the material management system may benefit from these Straight forward procedures.
- Items with a high level of criticality (V) but modest volume needs should be given the greatest priority (A). Low priority items (D) should be provided to those that are required in big quantities.

5. Planning supplies and equipment for nursing care

Material Management Cycle for Units and Hospital Material Management Cycle



6. Equipment and Supplies for Hospitals: Under material management, supplies and equipment for hospitals are handled. Supplies are things that be consumed or used up, which is why the word "consumable" is used to describe them. The hospital's supplies consist of medications, surgical supplies (disposables, glassware), chemicals, antiseptics, food supplies, stationery, linen supply, etc. The term "equipment" refers to a more durable kind of object that may be divided into fixed and mobile categories. Although it is linked to the walls or floors, fixed equipment is not a part of the building's construction. (sterilizer) Equipment that may be moved includes instruments, furniture, etc.

7. Materials used in hospitals

Hospital material medical side	Hospital material management side
• Perfusion material • Surgical disposables • Instruments • Drugs, medicine, oxygen, linen • Biomedical equipment • Disinfecting items • Computers, telephone and fax • Food and beverage materials • Anesthetic equipment • Electro medical equipment • Glass ware, dental machines • Surgical dressing utensils • Artificial limbs, bandages, cots forpatient, furniture • Engineering items and many others	• Computer, fax, phone, and stationery supplies • Audiovisual equipment; overhead projector; public speech equipment

- **Purchase of supplies and equipment**

  The purchase of equipments and supplies in a hospital is carried out through:

  - General store
  - Dietary department and
  - Pharmacy department

  When planning for the purchase of articles, budgeting is done not only for the actual price ofarticles but also for the additional costs that are involved such as:

  - Transport charges (local delivery reduce the transport charge)
  - Incidental costs
  - Cost of chemicals and other consuable to be used with the equipment(eg; ECG paper for an ECG machine)
  - Operating costs(hiring a technician)
  - Cost of maintenance service; 10-20% of hospital equipment may remain idle if serving is not done periodically.
  - Cost of technology obsolesces: When a better quality appears in market there is tendency to discard the old model.
  - Replacement cost of equipment

- **Selection of article:** When purchasing goods, it must adhere to the rules. The Indian Standards Institution is the government organization created to bring about the standardization of goods in India. Articles will bestamped with ISI marks if they fulfill the requirements outlined by the Indian Standard Institution. The items purchased should be safe for both the patient and the staff. Instruments and equipment thatare broken put patients at risk for injury and even death while being treated.

- **Purchasing article:**

  - The material used for any equipment should be durable, non-corroding, non- toxicand safe for use.
  - Should have standard shapes and dimensions to fit into various situations
  - Reparability and spare part availability of the article
  - Interchangeability of the article
  - All surgical instruments used in a hospital should be sterilisable and they should stand the tests for leakage, hydraulic pressure tests for bursting etc
  - Should have accuracy in measurements
  - Should have ease of operation

- **The central supply service:** Most hospitals have a central area where supplies and equipment are kept and then delivered to the various units. From hospital to hospital, different materials are housed in the central supply room. O Only sterile supplies and ward trays are sold in the central soppy area of some hospitals. Other hospitals keep many kinds of equipment here, including oxygen, suction, ward trays, catheters, and syringes.

- **Linen supply:**

Methods of handling linen supply include:

- Departmentalised system
- Centralised linen supply

- **Services for general utilities at the hospital**

- Electricity provision and installations
- Access to water
- Waste management - liquid and solid disposal
- Environment control, ventilation, refrigeration, and air conditioning
- Supply of medicinal gases, compressed air, hot water, vacuum suction, and gas plants
- Transportation
- Laundry Communication
- Fire danger
- Repairs facility.

8. Equipment necessary for a 50-bed district hospital (WHO)

- **Service offering**

- Optional clinical services include oral surgery, orthopaedic surgery, otolaryngology, neurology, and psychiatry.
- Clinical services that are optional but not required include oral surgery, orthopedic surgery, otolaryngology, neurology, and psychiatry.
  Optional clinical support services: pathology, rehabilitation, including physiotherapy.
- Essential clinical support services: anesthesia, radiography, and clinical laboratory

9. Important medical supplies

- Diagnostic imaging equipment –It includes x-ray and ultrasound equipment. X-ray machines may be stationary in one location or portable.
- Laboratory equipment-
  - Microscope
  - Blood counter
  - Analytical balance
  - Calorimeter
  - Centrifuge
  - Water bath
  - Incubator/oven
- Refrigerator
- Instillation and purification apparatus

10. Electrical medical equipment

- Portable electrocardiograph
- Defibrillator(external)
- Portable anaesthetic unit
- Respirator- it should be applicable for prolonged administration during post operative care.
- Dental chair unit- a complete unit should be available to carry out standard dental operations.
- Suction pump- one portable and one other suction pump are required.
- Operating theatre lamp- one main lamp with at least 8 shadows lamp and anauxiliary of 4 lamp units.
- Delivery table-it should be standard and mainly operated.
- Diathermy unit- a standard coagulating unit which is operated by hand or foot switch, with variable poor control.

11. Other equipment

- Autoclave – for general sterilization
- Small sterilizers- for specific services.eg. Stabiliser
- Cold chain and other preventive medical equipment
- Ambulance

12. Small, inexpensive equipment and instruments

- Equipment and instruments, such as BP apparatus, oxygen manifolds, stethoscope, diagnostic sets and spotlights.

IX. RESOURCES AND TECHNOLOGIES PLANNING FOR EMERGENCIES AND DISASTER

1. **Introduction:** Personal protection equipment (PPE), decontamination equipment, and training are only a few of the resources, equipment, and supplies needed for emergency preparation planning. Preparedness should involve working with neighborhood hospitals, local/state publichealth authorities, and local emergency planning committees to identify the supplies, machinery, and other resources each healthcare facility needs to respond to a crisis. Stockpiling within the facility is not a need for basic emergency supply planning. Federal agencies have been persuaded to use current supply channels rather than facility-level stockpiles to support hospitals in an emergency. This decision was made by a taskforce that included members from the Association for Healthcare Resource & Materials Management (AHRMM), the Advanced Medical Technology Association (AdvaMed), the Health Industry Distributors Association (HIDA), and other significant organizations. Hospital and industry associations agree that relying on current supply channels for emergency preparation is preferable than facility-level stockpiling since the medical supply chain is capable of giving emergency responders the equipment they need in the event of a crisis.

2. **Purchased products and services:** There are several items that are typically accessible and used at healthcare institutions that may also be used in disaster preparedness/safety planning. Other specialized products are mostly utilized for emergency preparedness, such as Level C equipment like powered respirators. The emergency preparation products file maintained by the Safety Institute includes a list of goods and apparatus that could be taken into account while creating an emergency supply inventory. This file may not contain all the goods and contractual suppliers that should be taken into consideration and is just meant to be used as an example.

3. **Products and equipment for emergency preparedness:** Healthcare institutions often buy many of the equipment and materials required for security and disaster preparation from a range of suppliers. Some of these commonplace goods could also be earmarked for a supply inventory for emergencies. Additionally, disaster preparedness calls for specific tools and materials. There are several businesses that sell extensive emergency preparedness and safety equipment, some of which have catalogs that may be found online.

4. **Product categories:** The following table offers a few sample categories and subcategories of search phrases that might be helpful in identifying particular medical supplies, tools, and training services foremergency preparedness.

5. **Guidelines for managing materials in emergency situations:**

- **Supplies and equipment:**

  - Additional supplies will be received through runners from buying staff.
  - The Purchasing Director shall order outside supplies, which shall be delivered to the hospital viathe loading dock.
  - Be in charge of moving storeroom supplies and bringing more supplies from other locations, aswell as putting up additional beds in the hospital as needed.
  - Be ready to assist in moving victims from the ambulance to Triage.

- **Materials management - purchasing**

  - After reporting to the command center, the department head or designee will call in their ownpeople as needed.
  - Be ready to provide the necessary materials to all departments.
  - In order to provide runners or volunteers to transport supplies, the director will assign anassistant.
  - Maintain a current list of vendors who can provide extra materials fast.
  - Update the Kardex in the storeroom.

- **Valuables and clothing:** The treatment areas and the storage have large paper or plastic bags accessible forthe clothing and valuables of patients.

- **Housekeeping and Laundry**

  - After reporting to the command center, the department head or designee will call intheir own people as needed.
  - Ensure that all circulation areas and corridors are free of cleaning carts, equipment, and otheritems.

- **Operating Room, CSR, PAR, Anesthesia, & OP**

  - Check area for supplies and equipment.
  - Keep a short list of supplies on hand, and be ready to swiftly handle more sterile supplies.
  - Inform anesthesiologists to make sure there are enough supplies of anesthetic and medication available.

- **Hospital Unit - Supervisor will**

  - Get ready for growth by telling maintenance how many more beds you'll need and where to put them.
  - Send Purchasing, CSR, laundry, and dietary any more items that are required.
    - Will provide wheelchairs.

- **Laboratory:** Make plans to purchase extra blood, equipment, and supplies from local agencies.

- **Pharmacy**

  - Present yourself to the Command Center, then stay in your department.
  - Maintain a list of drug vendors who can offer urgently needed supplies.
  - Have a minimal amount of emergency medications on hand at all times.
  - The pharmacy should stay open and have a runner to deliver the necessary medications to the locations.

    .

- **Respiratory therapy**

  - Ensure that the respiratory therapy department has a sufficient supply of bubblers, cannulas, masks, and flow meters.
  - Have extra respirators and equipment on hand in case you need them.
  - Ensure that all resuscitation tools are clearly labelled and in good workingorder.

X. INVENTORY CONTROL, CONDEMNATION AND DISPOSAL.

Definition Of inventory control: Inventory is the list of movable goods Supplies needed for equipment maintenance or productmanufacturing. A unique item with an identifying number, nomenclature, and specification is called an inventory.

Following are the types of inventory:

Raw materials
Components
Work in progress
Finished goods

The inventory is basically of two types:

1. **Official inventory:** The supplies that are present in the main stores and are being tracked buthave not yet been distributed to the user units.

Items for medicine and surgery:

- Dressings
- Linens
- X-ray equipment
- Materials for the lab
- Items for housekeeping
- Every processed sterile product

2. **Unofficial inventory:** The user units, including the dispensary, CSSD, laundry, wards, OPD,cast rooms, etc., have received the materials. These items are not taken into account by the hospital administration when anticipating or estimating demand, hence it is referred to asunofficial inventory for hospitals.

Functions of inventory control:

- To maintain sufficient supply to prevent stock-outs
- To order enough items per order in order to lower order costs
- Stocking just enough to reduce the expense of keeping inventory on hand
- To restrict the amount of expensive materials and perishable goods with judicious choice
- To place the proper number of orders at the appropriate time by taking advantage of seasonal and cyclical variations in material availability.
- To offer safety stock in case demand or consumption fluctuates during the lead period.
- To maintain the ideal amount of inventory holding in order to reduce the overall cost of inventory.

Concepts relevant in controlling inventory costs:

The following concepts are relevant in controlling the inventory costs:

- **Periodic/cyclic systems**: these systems entail periodic/fixed interval reviews of stock status and order placement based on available stock and rate of consumption. Thus,while the ordering interval is fixed, the quantity that must be ordered changes everytime.

- **Two bin systems:** This system divides the stock of each item into two bins, one large bin holding enough stock to cover demand during the time between the arrival of an order quantity and the placement of the subsequent order, and the other bin holding enough stock to cover potential demandduring the period of replenishment. When the first bin is empty, a replenishment order is placed, andthe stock in the second bin is used up until the material is received that was ordered.

- **Lead time:** Once the demand has been identified, this is the time frame needed to get the supply. As a result, it represents the typical time between putting an imprint and getting

the material. Administrative or buyer's lead time (i.e., time needed to raise purchase requests, acquire quotes, raise purchase orders, and send orders to suppliers, etc.) and delivery or supplier's leading time (i.e. Time required for manufacture, packing and forwarding, shipment, delays in transit)

- **Minimum/safety/ buffer stock:** This is the quantity of inventory that has to be maintained on hand toprevent a stock-out in the event that demand grows unexpectedly or the lead time turns out to be greater than projected. It is also the level at which a fresh supply should typically arrive; if not, emergency measures should be made to speed up delivery and refill the stock.

  Safety stock = maximum daily consumption-average daily consumption x total leadtime

- **Maximum order level:** The number of resources that can be stocked up to this point; after that, the item cannot be in the inventory. If the inventory is kept beyond this point, the hospital will suffer losses dueto the expiration of supplies beyond their shelf lives, loss of capital from having funds tied up in the inventory,and unneeded usage of goods to use up the stock.

- **Re-order level:** From the perspective of inventory control, this is the value that is crucial. This is thetime when we need to put a purchase order to replace the supply. The equation (minimum order level+ buffer stock) yields it.

- **Costs**

  - **Ordering costs:** This represents the price of bringing an item into the business. The ordering process begins with raising a requisition, placing an order, following up, receiving and inspecting the shipment during transit, accepting it, and placing it in stores.

  - **Carrying costs:** his is the price of keeping an item in stock until it is distributed or sold. Following are the elements:

    - Interest on incurred capital expenses.
    - Cost of waste, damages, and obsolescence.
    - Taxes, rent, insurance, and depreciation
    - Inventory maintenance expenses, such as special handling, stock taking, etc.
    - Store overhead expenditures, including energy, dust-proofing, and direct labor.

  - **Shortage costs:** These are the costs associated with shortages that are experienced both directly and indirectly, such as intangible costs from the loss of goodwill,lost opportunities, or production hold costs.
  - **Total inventory cost:** The carrying expenses and ordering charges make up the overall cost of the inventory.
  - **Lead time:** The period of time between making an order and the time the same things are received, stocked, and available for usage.

3. Average inventory

Average inventory is defined in two cases:

- **Average inventory at constant usage rate:**

$$\text{Average inventory} = \frac{\text{opening stock} + \text{closing stock}}{2}$$

- **Average inventory at variable usage rate:**

  - **Simple average method:**

$$\text{Average inventory} = \frac{\text{opening stock} + \text{closing stock}}{2}$$

  - **Six monthly average method:**

$$\text{Average inventory} = \frac{\text{opening stock} + \text{stock after 6 months} + \text{closing stock}}{2}$$

  - **Quarterly average method:**

$$\text{Average inventory} = \frac{\text{sum of 4\_ - quarterly stock} + \text{closing stock}}{5}$$

  - **Monthly average method:**

$$\text{Average inventory} = \frac{\text{sum of 12\_ - quarterly stock} + \text{closing stock}}{13}$$

4. Selective inventory control:

- **Definition:** Selective inventory control involves categorizing and grouping items in order toapply the appropriate level of control depending on their costs and functional value.

- **Objective:** Inventory control's main goal is to reduce the overall cost of stock. It calls for thefollowing.

  - Planning and controlling inventory operations, such as requirement forecasting
  - Fixing the number of purchases
  - Supply and storage

- **Selective inventory control is required:**

  - Many different goods make up inventory, some of which may be expensive and others may not.
  - Every item requires a particular form of management, some tight and others loose, depending on whether stocks are needed in huge or little numbers.

- **Methods of selective inventory control:**

  Following are the popular methods of selective inventory control:

  - ABC analysis
  - VED analysis

5. **Condemnation & Disposal:** Materials that have exceeded their shelf life, have degraded to the point that they are no longer acceptable for use, have become out-of-date or are prohibited by law are taken into consideration for condemnation or disposal.

   Criteria for condemnation:

   The equipment has become:

   - Non-functional & beyond economical repair
   - Non-functional & obsolete
   - Functional, but obsolete
   - Functional, but hazardous
   - Functional, but no longer required

6. **Procedure for condemnation:** When dealing with materials, notably medicines and non-drug products, the followingmethod is typically followed:

   The responsible authority appoints a condemnation committee with three or more members, with the following mandate:

- Describe in depth the causes of this situation's occurrence.
- The individuals accountable for the shortcomings in the areas of material procurement, storage, and distribution.
- To recommend actions to be done for the objects' disposal.
- The committee members thoroughly examine inventory data from the point of demand estimation to the distribution level of commodities in order to determine the causes of any surplus or underused items..
- The committee will censure the objects and offer suggestions for their future disposal.
- The condemned articles must be removed from the inventory registries in order to be destroyed, and before ultimate disposal, a write-off sanction from the appropriate authorities must be acquired.
- Particularly hazardous objects, such as medications, that cannot be buried or disposed of in accordance with the established regulations for trash disposal.

The following are the practical steps that are done to dispose of surplus things before theybecome useless:

- In order to mobilize these things and give priority to this category of items, a list of surplus material is distributed to the hospital personnel and user units.
- The extra supplies are given to other hospitals in case they are needed..
- The manufacturer/suppliers are presented with the surplus materials for purchase..

- Materials other than pharmaceuticals, including as equipment and instruments, are handled as salvage or junk, as appropriate, and appropriate action is taken.

  - The materials may be sold by inviting tender.
  - Public auctions of goods conducted by licensed auctioneers.

7. Methods to evaluate the effectiveness of materialmanagement

- **Supply performance review**: In terms of material availability, material quality, and stock outs, this reflects how well material management satisfies the needs of the hospital and various departments. It is necessary to establish clear performance standards in advance. At the very least once each year, actual results should be compared to standards.

- **Supply price comparison:** Price variance for the same product may be caused by a hospital's larger buy volume, its distance from the supplier, its negotiating position, or its status or reputation. It is feasible to determine purchasers that have paid a high price, an average price, or a low price for comparable things by comparing supply prices among hospitals.

- **Management audit:** The stores-purchase division might establish goals for itself in termsof suggested material management, procedures, a course of action, and the people in charge of it. These goals may have to do with managing materials, buying, receiving, storing, and issuing items.

- **Material- cost-per- patient-day formula**: The MCPPD formula involves estimating a ratio of material costs to hospital costs by dividing total material costs per day by total hospital patient costs per day. Because the elements that raise the cost per patient also increase the patient per cost, a similar formula may be used to compare hospitals of different sizes, locations, and patient ages. The MCPPD formula is perhaps the most impartial and trustworthy way to gauge how well material management strategies are working.

- **Product evaluation committee and role of the nurse manager:**A product evaluation committee is a multi disciplinary group in the hospital responsible for evaluating and selecting new products for use. Members usually include representatives from material management, nursing, medicine, biomedical engineering and education. Departments that use high values of equipment such as surgery, IV therapy, cardiac catheterization, laboratories, and central supplies, should have representatives as well. This diversity of membership provides the necessary perspectives that pull together the technology and tools of the trade with the human care giving provided in hospitals.

  To ensure appropriate levels of nursing input in to product evaluation process, another alternative is to have a nurse assume the role of products nurse specialist. This products nurse specialist is responsible for coordinating all evaluation, education, and problem resolution with products in the clinical setting. She works closely with the hospital product evaluation committee. Whatever strategies are undertaken, it is essential to link the use and purchase of health care technology with the nursing practitioners providing the patient care.

- **Hospital policy and the nurse manager:** Nurse Managers as one of the interested constituencies in the hospital capital acquisition process should become educated about what capital expenditure is and, specifically how the hospital undertakes this process. When making capital requests, nursemanagers need to thoroughly analyze and justify the necessity for expenditure.

  They should provide detailed explanations of,

  - Benefits of the purchase
  - Cost of the implementation or change
  - Long term effects of the project.

8. **Nurses's role in material management:** Nursing units are frequently referred to as wards. This suggests that the nurse in charge of the ward is really in charge of the ward's upkeep and day-to-day patient care operations. As a result, the nurse in charge and the rest of the nursing staff areresponsible for material management. The following is a list of the nursing duties associated with material management.

- Ensuring a regular and sufficient flow of the tools, materials, medications, and solutions that are required
- Maintaining the efficacy and security of all substances utilized, including medicines and solutions. Safety is improved by issuing goods on a "first in, first out" basis and regularly monitoring medicine expiration dates.
- Receiving, storing, inspecting, and promptly refilling all essential tools, materials, medications, and solutions.
- Keeping emergency and buffer stockpiles in place.
- Scheduling preventative maintenance as required.
- Keeping track of the stock and inventory of all goods and supplies.
- Arranging for and assisting with a material audit
- Setting up the condemnation of items in line with the organization's established regulations and keeping a dead stock registry.
- Participating in the creation of material management policy, item
- Participating in subcommittees for tenders and procurement.
- Periodically educating nursing staff on material management procedures.
- Evaluating the efficacy of the material management system followed in particular nursing unit

9. **Conclusion:** Material management is an important management tool that will be very helpful in obtaining the right quality and quantity of supplies at the right time. Having good inventory control and adopting sound condemnation and disposal methods will increase the organization's efficiency and also create a healthy working environment for any type of organization, including private, public, small, large, and household businesses.

   The nurse manager plays a crucial role in the hospital, combining clinical knowledge with business and financial acumen to make smart choices on resource allocation and inventory management. Since nursing has such a central coordinative

function for patientcare in hospitals, it is appropriate for nurse managers to promote high quality patient carethrough the provision of safe , effective equipment and technology.

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XI. EQUIPMENT AND SUPPLIES OF NURSING EDUCATIONAL INSTITUTIONS INTRODUCTION

Any educational institution must have operating equipment and enough resources to operate efficiently. Equipment that is inadequate and inefficient adds to the workload and wastes time. Physical facilities like classrooms, labs, libraries, and offices are essential components of every educational institution, and it would be challenging to operate on a good educational foundationwithout them.

1. Meaning of equipment

Things used in equipping or furnishing.

Equipment includes more permanent articles and may be classified

Fixed
Movable

Fixed equipment: Sterilizers, syringes, and other types of fixed equipment are mounted to the building'swalls or floor but are not a part of the building's structural design.

2. Definition of supplies: Supplies are expenditure items or those articles, which are used up and must be recordedperiodically.eg: sterile goods stationery items.

3. Psysical facilities in the school and college of nursing

- **Overall requirements:** Physical facilities including classrooms, laboratories, libraries, and offices are important requirements of every educational institution, and it is challenging to carry out a program with a solid educational foundation without them. The amount of space required varies on the staff and student enrollment, but the minimum ideal for a nursing school or college with 50 or less studentsis shown below.

For 50 students or less, there should be

- 2 classrooms [with movable partitions if no assembly half is available.
- 1 multi- purpose laboratory [demonstration room and nutrition laboratory]
- 1 science laboratory
- 1 office for senior tutor or head of school, if it a separate post
- 2 offices for other staff
- 1 office for clerk- cum- typist
- 1 library
- 1 large storeroom
- waiting hall or room for visitors
- sanitary facilities

- **Classrooms**

  - **Number:** There should be enough classrooms to allow for the scheduling of sessions in accordance witheducational principles and at times that are convenient for both the tutor and the pupils. Unlessthere is a different arrangement for big meetings, one class room should be adequate to accommodate the whole student population. This goal may also be achieved by using movablewalls to divide a large area into two or even three smaller rooms. The barriers should extend from the floor to the ceiling to reduce noise and other distractions.

  - **Size:** The number of students in the class will determine its size, but they should be able tosit comfortably. the total number of pupils accepted to the biggest class. Each classroom needs to be visually pleasant, well-lit, well-ventilated, and equipped with heating or cooling. Doors and any other openings should be covered with wire netting.

  - **Furnishings and equipment:** Each student should have their own chair and desk, or a chair-cum-desk, as well as enough space to sit and write, so that group discussions may be held in that setting.

    There should be moveable blackboards in addition to permanent blackboards in every room, or at least one in every two. There should also be access to bulletin boards and other display options. A wash basin with flowing water or alternative acceptable hand washing facilities should be available. In hot weather, it should be able to shade the windows, and there should be a practical way to dim a space for a movie screening.

4. **Laboratories:** For demonstrations and practical lessons, three primary types of laboratories are needed: a science laboratory, a nutrition laboratory, and a nursing arts laboratory.

- **Science laboratory:** The arrangements established by the school for the teaching of science topics will determine how mucha science laboratory is required and used. All of these subjects—anatomy and physiology, physics, chemistry, and microbiology—require lab space, and it is probably more practical to have this at the school. A school may,

however, make arrangements to use the labs at the hospital, medical school, or local scientific college provided the agreement is good, practical, and long-term; in this instance, building a science lab inside the school is not required**.**

The science laboratory should be fitted with benches and seats, cupboards, running water and either piped gas or cylinder, and should have microscope, balance and weight and such other equipment and supplies as are required for the subjects being taught.

- **Nutrition laboratory:** The nutrition laboratory must contain resources for teaching the fundamentals of nutrition and forculinary demonstrations for healthy and disabled people alike. Work tables [with stainless steel, marble chip, or heat-resistant surfaces], electric or gas or an indigenous form of cooking stove, sinks and running water, dietetic scales, culinary utensils, shelves, and cupboards for storage should all be included in the furniture and equipment**.**

Provided a separate room is not available, the nutrition laboratory may be combined with the nursing arts laboratory if the space is large enough and the schedule can be set up such that thetwo are not scheduled at the same time.

- **Nursing Arts laboratory:** Equipment should be chosen bearing in mind not just The nursing laboratory or demonstration room is mostly a workspace for the students, while it is occasionally utilized by teaching staff to demonstrate some of the procedures used in nursing. When not being used for official lessons, it should always be open to students so they may practice and become familiar with nursing techniques and equipment according to their unique needs. It ought to have plenty of storage space, shelves, sinks with running water, workbenches or tables, and moveable seats. There should be enough storage space and safeguards against heat, moisture, insects, and vermin for perishable items. Access to tools and supplies must be simple.

Equipment should be chosen bearing in mind not just the cost but also the utility, durability, and compatibility with what is typically used in the community and hospitals. The multiple educational programs should share pricey types of equipment where more than one nursing program is being run.

- **MCH Laboratory:** All the equipment should be equipped with the maternal and child health nursing, all thespecimens, all the instruments should be sufficient

- **Community Health Nursing Laboratory:** Community lab should equip with sufficient models, bags, all the necessary articlesfor practicing the students.

5. **Office:** The teaching staff will carry out the duties that are expected of them, occupying offices that will allow continuous work and guarantee privacy for conferences and staff meetings. Each tutor should ideally have their own office, but until that is available, there should at least be one office for the senior tutor and one office that the other tutors may use. For each tutor, a separate workstation should be made available.

The furniture and the equipment in each office should include the following quantityconsistent with the number of staff:

- desk and chair [with additional chair for visitors]
- steel cup board with lock
- filing cabinet
- book case
- Stationary rack, filing trays, table lamp, stapling and punching machine and otherdesk equipment.
- Bulletin board and pegboard.
- waste paper basket
- Room heater and / or cooler is required.

Additional equipment which may be used jointly or supplied for each each staff members

- Graphdex Type of Board
- Telephone

In addition to the equipment supplied for teaching staff, the following additional equipment should be provided for the office of the clerk

- Type writer and typing – table
- Duplicating machine

6. **Library:** A good library adds incalculable value to a curriculum, and a teacher does her students thegreatest favor by introducing them to it early in the course. It not only opens the door to knowledge but also encourages critical thought and fosters independence in information seeking and gaining. A current, diversified collection of books and other library resources also inspires and helps the staff to do research and study for their own advancement and the benefitof the students.

The medical and surgical nursing staff may have access to a joint library at certain institutions, but more often than not, the nursing school will have its own library. However, this shouldn't stop students and employees from visiting the hospital, medical school, or public library, and wherever these resources are available, their location and rules should be made clear.

- **Accommodation and equipment:** The library should be placed as easily as feasible, in a lovely setting. Depending on how many people it serves, the size should be large enough to accommodate the right book arrangement and around half the maximum number of pupils typically accepted to a class. If there is room, it is recommended to have a reading room attached so that students may study quietly. It is important to have sufficient natural and artificial lighting as well as enough ventilation

.

The furniture and equipment should include:

- Comfortable chairs, and tables of a convenient height
- Metal books shelves or cup boards with glass doors
- Boxes for pamphlets
- Catalogue cabinets
- Bulletin boards
- Book display racks
- Steel book support
- Magazine display racks, preferable with space for back members
- Transparent magazine covers
- Stationery items such as index cards, borrowers cards, table and register

- **Organization of library:** To obtain the maximum benefits from the library facilities, 4 conditions are necessary:

  - there should be one person responsible for it
  - there should be committee advise on it
  - there should be policies to regulates its use
  - there should be a budget

- **Librarian:** A nursing school that employs a full- or part-time librarian would surely profit from their services because managing a library takes specialized knowledge and abilities. When an intriguing staff person takes the task, it is feasible to run a small library pretty efficiently even in the absence of such a provision. She could receive early advice from the librarian and support from the library committee.

- **Library committee:** The membership of the library committee should include the librarian as secretary, and a tutor, nursing sister, a student and any other members of the staff.

  The functions of the library committee are:

  - preparing the initial budget estimate , and reviewing them periodically
  - selection of new books
  - selection of magazines
  - formulation of the policies regarding the use of the library
  - studying and reporting on statistical data on the extent to which the library is being used
  - encouraging the use of the library

  The choice of books to be bought is typically made after consulting with or following the advice of the nursing staff. Publishers, catalogs, reviews in journals, and advertising provide information on publications; some of them may be subject to proper college or hospital staff review before being purchased. Additionally, the library committee should be tasked with making arrangements for extract translations as necessary.

- **Policies:** So that the library can run effectively and in a way that is convenient for the majority of peopleutilizing its services, a few policies will need to be developed.

Among the issues when having apolicy is advantageous are

- the hour at which the library will be open
- the person who may use the library facilities
- the kind of books and journals which will be stocked
- the books , which may be borrowed and those , which must be read in the library
- the period for which a book may be borrowed
- the action to be taken when books are not return on time
- the percentage of the bug jets to be spent on subscription to journals
- the journals to be bound

7. **Budget:** When establishing a new library or organizing an existing one, a non-recurring budget will be needed for furniture and equipment as well as for the acquisition of a few carefully chosen volumes that will serve as the library's foundation. The budget needed will vary depending on the requirements of the educational institutions, but it must be sufficient to properly furnish, equip, and maintain the library. A small school might benefit from a library with a minimal initial investment of $5,000 and an annual recurrent budget of $1,000 for the first five years the library is open. Following that, it might be possible to reduce the amount somewhat, but it should be remembered that the library should have a reasonable number of current publications and that outdated editions must occasionally be replaced. The following items would be included in the estimated annual budget: The e purchase of new books, pamphlets, reprints etc…

- subscription of journals
- binding of volumes of journals at the end of the year
- Stationary items etc.

8. **Library holding:** The goals of the curriculum and the requirements of the students will determine the quantity and range of books and other items in the library. Where it is impractical or unwise for students to own their own copies of textbooks, the library's collection will need to grow correspondingly. The following range of publications may be found in the library, some or allof them.

- Dictionaries eg: English, Hindi, and local regional languages, nursing, medical.
- Encyclopedias, directories, charts and maps
- Bibliography of nursing publications and extracts
- Central, state and municipal government report and documents such as five year plans, statistical data and bulletins.
- Nursing textbooks and reference books on all aspects of nursing and related subjects.
- books on physical , biological and social sciences
- Books and materials on allied disciplines such as social work and occupational and physical therapy, and on the work of gram seamarks, auxiliary nurse and other health personnel’s.
- Journals of nursing personal and other allied personals.
- current pamphlets in all related Ares

- monographs, reprint of articles from journals
- daily news papers
- Selected biographical, philosophical and religious books.

9. **Organization of books:** If the knowledge offered is to be understood and easily accessible to people who use it, some organizing of the material in the library is necessary. Nursing-related printed material is diverse,multitudinous, and dispersed.

- **Accession:** All of the information about new additions to the library and their ultimate fate is contained in the accession register. This information might be included under the headings "data," "serial number," "author," "title," "publishers," "year," "pages," "sources," "cost," "book number," "when and how destroyed," and "remarks."

- **Classification:** To minimize confusion later, books should be divided into specific categories. Even if the quantity is modest, it is advisable to begin grouping books at the outset. Books should be organized in accordance with the categorization system's requirements.

- **Cataloguing:** For nursing department s dictionary system of cataloguing should be sufficient. For this,each book require 2 cards.

  - One is a subject card, while the other is an author card. A subject card is likely to be more beneficial if the library is tiny and only keeps one card. Although 5X3 index cards can be used, standard catalog cards are available.

  - As shown, catalog cards should include information on the subjects, authors, and titles, as well as the date of publication, publishers, classification, and accessory number.

Subject Card	**Author Card**
Cl . No_____	Cl. no_____
Ac. No _____	Ac no _____
Subject_____	Author _____
Author_____	Title _____
Title_____	Date of issue _____

The card should also include details on the title, volume, and number of the journal, the page reference, and a brief description of the instrument for classifying certain journal articles.

10. **Borrowing:** To keep track of the books borrowed, a card system might be employed. Two cards were needed for each book, and they were placed in a pocket inside the front or back cover. The card should include the borrower's name, the date when the item was borrowed, the author,the title, the classification, and the accession number.

11. **Other physical facilities**

- **Housekeeping room:** The school or college building should be a room for the use of housekeeping.

  The roomshould contain:

  - A sink with running water
  - shelves for storage of cleaning equipment and supplies
  - a table and chair
  - a cupboard for personal belongings
  - facilities for resting for nonresident staff
  - a sanitary annex including bathing facilities and latrine

- **Store room:** The College should have a place to store supplies and equipment. The store room should have sufficient cabinet and shelf space for the correct upkeep of items, be conveniently accessible, andbe weatherproof.

- **Sanitary annex:** Both employees and students should have access to sanitary restrooms that are close to theclassrooms and offices.

- **Other Amenities**

  - **Drinking water:** The college or institution should have the means to supply cold drinking water. If there isn't a drinking fountain or flowing water, a sufficient amount of safe drinking water should be madeavailable in sanitary circumstances.
  - **Refuse disposal:** There should be proper arrangement for the collection and disposal of refuse**.**

12. **Hostel:** The hostel may or may not be located in the same building as the college, if it is separate,it should be within a convenient distance. When new buildings are to be erected or old one isaltered, the head of the college should be consulted at the planning stage, and the facilities provided should be the equaling to those provided entering comparable professionals.

- **Policies**

  - The management of the hostel will be affected by the policies adopted by the school inregards to the following
  - The number of the staff to be resident and weather married quarters are provided
  - Arrangements for students to receive visitors.
  - Mess arrangement for students and staff.

- **Accommodation**

The minimum accommodation, which is required in the hostel, is listed below

- bed room for students
- suits for staff and for the warden
- sitting room
- reading- cum study room
- recreation room
- visitors room
- kitchen room
- store room
- dining hall
- wardens office
- health room
- laundry for use of students
- pantry for use of students
- store room for linen and supplies
- luggage room
- room for housekeeping staff
- cycle and bike shed
- sanitary annex

1. **Student's room:** The accommodation which is provided should permit each student to have privacy if and when she wants. Guidance on the standard size of rooms is usually available from the bodies such as university grants commission in India, but single rooms should not be less than 100 sq:ft , and double rooms 150 sq:f t with a minimum of 75 sq. ft per student in large rooms.

   For reach student there should be comfortable bed, a cupboard with hanging and shelf space, a dressing table with mirror and a table and chair , bed linen should be supplied , and there should be curtain on windows and doors, ceiling fans , windows should covered with netting , or mosquito net should be supplied. There should be a separate accommodation for the students on night duty.

2. **Staff suites:** The accommodation provided for staff may vary according to the grade and marital status. Married quarter should consists of the numbers and variety of rooms commonly provided in the locality to those of comparable ranks , and for staff without families there should be sitting room, , bed room , a bath room facilities and pantry for each or one which can conveniently beshared .

3. **Common rooms:** In the hostel there may be a large sitting room or two or more smaller ones, depends on the number of students, but the combined accommodation should provided for seating.

   There should be a separate room where students may read or study with a minimum distance. It should have table, comfortable chairs.Other room for recreation which contains radio, record player, table tennis, andfacilities for other games.

4. **Pantry:** One each floor in the large hostel, at least in one convenient place in the small hostel, there should be a small pantry for the use of the students which facilities for making tea and hot drinks.

5. **Health room:** There should be a health room on the hostel premises the services to be provided depends up on the condition**.**

6. **Wardens office:** This room should furnish and equipped as same way in the hostel, and there should be a telephone with an extension to each floor for the students and in addition for the public cal box for the use of the students.

7. **Room for housekeeping staff:** There should also be small room where domestic staff who are non-resident may leavethere belongings and there they may rest. It should have all the facilities.

8. **Store rooms:** There should be adequate storage space for linen, domestic supplies. Extra furniture and the student's trunks. Store room should have shelves and cupboards.

9. **Laundary:** There should be facilities for students for washing cloths and drying and ironing of cloths. There should be adequate supply of water, and one iron box for 50 students. There should be laundry facilities for students.

10. **Kitchen primises:** The kitchen premises should include a kitchen, pantry, and store room. The kitchen shouldavoid from noises and smoke. There‟s should be adequate tables and sufficient supply of water for cooking purpose as well as hand washing and cleaning vessels.

11. **Dining hall:** The dining hall should be attractive, well ventilated and well lighted and should be withinconvenient reach of the kitchen. There should be a hand washing facilities to the dining room. Meal time should be utilized for the helping the students develop social graces.

12. **Sanitary annexes:** Sanitary annexes should be provided on each floor either one central place or in travel between groups of rooms and should consists of at least 1 latrine and 1 bath room for every 5 students. In addition hand washing facilities and sufficient water should be provided for the students. Clean safe and cool drinking water should be provided for the students in hygienic container.

13. **Outdoor recreation:** The grounds of the students should be large enough to provide students may relax with a degree of privacy. Sufficient place and facilities for outdoor games such as badminton, tennis, and basketball should either be available within the school or hospital grounds or readily accessible in the community.

13. **Conclusion:** In order to meet educational objectives of the nursing programme, there shouldhave an adequate supplies and equipments [physical facilities]. Number and type of physical facilities will depends up on the size of the student‟s body and the needs of the educational programme.

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