

PRESENTED BY

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MATERIALS

❖ Materials may be defined as equipments, apparatus and supplies procured, stocked and utilized by an organization. Webster defined the word material as ‘relating to the production and distribution of economics, goods and social relationships of owners and laborers’.

❖ Material means things needed for doing or making something or the substance or substances out of which a thing is or can be made. These are the things needed for smooth functioning of an activity in the organization

MATERIAL MANAGEMENT

❖ It is planning, directing, controlling and coordinating all those activities concerned with material and inventory from the inception to their introduction into the manufacturing processes.

❖ It includes all the activities of store from stage of forecasting of requirements to utilization to the final disposal. Store required by the hospital varies from simple housekeeping materials to sophisticated equipment.

- ❖ It is concerned with providing the drugs, supplies and equipment by the personnel to deliver health care services.
- ❖ It is also viewed as a scientific technique concerned with planning, organizing and controlling the flow of materials from their initial purchase, internal operations to the distribution at service point.
- ❖ According to Judith A, material management is the management and control of medical, surgical, clerical, interdepartmental services and equipment from acquisition on floor to disposition.
- ❖ Housely defined material management as ‘the management and control of goods, services and equipment from acquisition to disposition’.

AIM

- ❖ Right quality of material
- ❖ Right quantity of supplies of materials
- ❖ Right time
- ❖ Right place
- ❖ Right cost.

OBJECTIVES

- ❖ To avoid surplus of material
- ❖ To have appropriate storage and easy to retrieve
- ❖ To ensure distribution to the point of usage whenever required
- ❖ To ensure effective and efficient utilization of available resources
- ❖ To optimizing the use of resources to meet the needs in an efficient manner
- ❖ To obtain correct quality of materials at lowest possible price.

PURPOSES

- ❖ 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.

FUNCTIONS

- ❖ Material planning and programming
- ❖ Purchasing and outsourcing
- ❖ Inventory control
- ❖ Storekeeping and warehousing
- ❖ Standardization and evaluation of all products
- ❖ Transportation and material handling
- ❖ Inspection and quality control
- ❖ Cost reduction through value analysis
- ❖ Disposal of surplus/obsolete material
- ❖ Distribution.

CONCEPT

- ❖ Material planning
- ❖ Purchasing
- ❖ Receiving & warehousing
- ❖ Store keeping
- ❖ Inventory control
- ❖ Value analysis
- ❖ Standardization
- ❖ Production control
- ❖ Transportation
- ❖ Material handling
- ❖ Disposal scarp

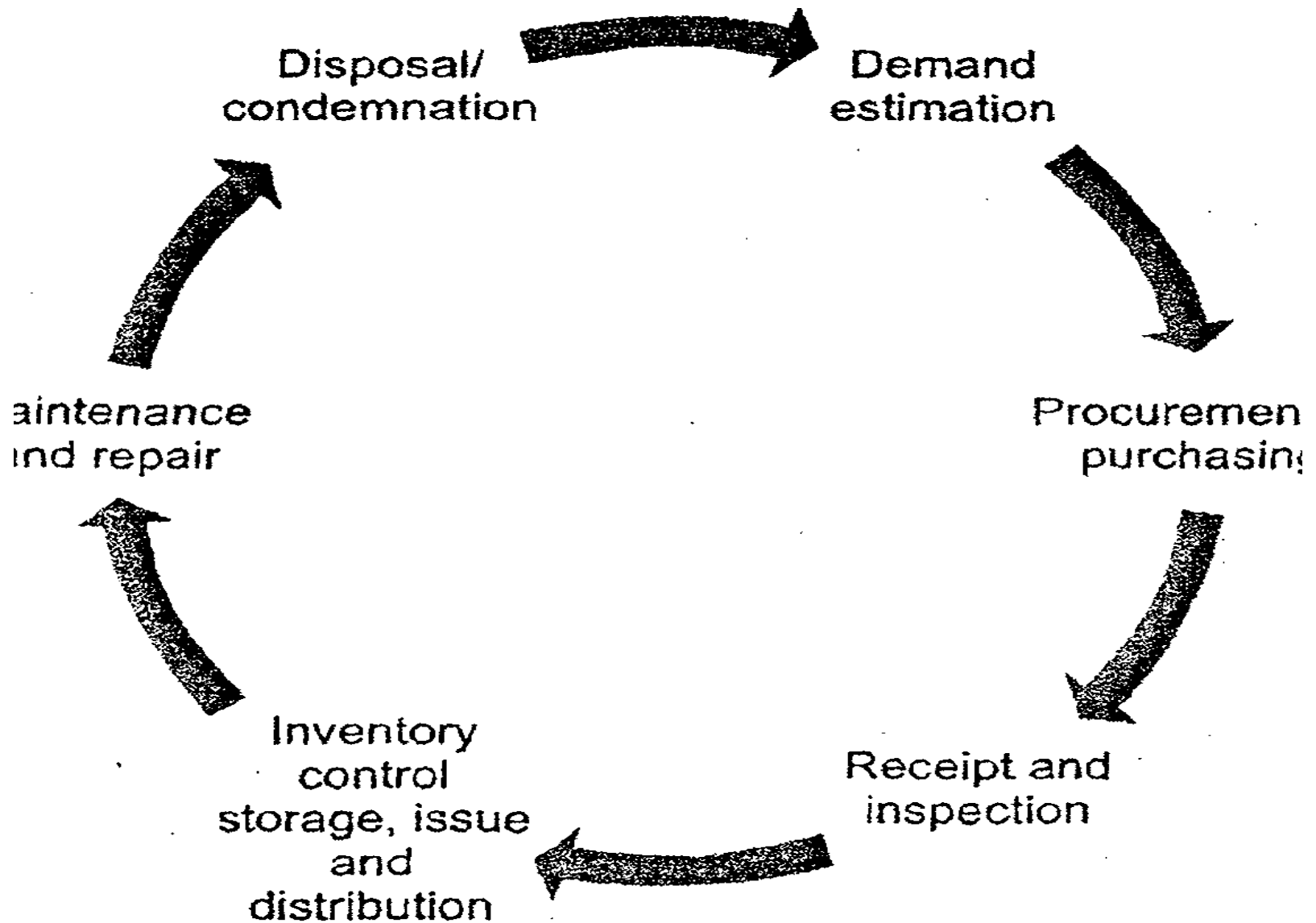
PRINCIPLES

- ❖ Effective Management and Supervision
- ❖ based on sound purchasing methods
- ❖ There should be skillful and hard poised negotiations
- ❖ Effective purchase system
- ❖ It should be simple
- ❖ It must not increase other costs
- ❖ There should be simple inventory control programme

MANAGEMENT TECHNIQUES USED

❖ Right Item	Value analysis, Standardization
❖ Right Quantity	Inventory control
❖ Right Price	Cost/Benefit analysis, Value analysis
❖ Right Source	Vendor research
❖ Right Method	ABC, VED etc. analysis
❖ Right Delivery	Operation research

PLANNING & PROCEDURE



Procurement

It is defined as a process of acquiring supplies through purchases from the manufacturers, their agents like distributors or from private or public suppliers.

Purchasing of medicines starts with the framing of buying policies and ends with receiving, stocking, and payment.

It involves the application of special skills and knowledge from both the professional and legal viewpoints

Method of procurement

- 1. Direct purchase from the manufacturer or their regional centres**
- 2. Direct purchase from wholesalers and stockists**
- 3. Purchase from rack jobbers**
- 4. Purchase through bids**
 - ☐ **Open tenders**
 - ☐ **Restricted tenders**
 - ☐ **Quotation invitation**

5. Purchase through competitive negotiation

6. Purchase through a contract

☐ **Fixed quantity contract**

☐ **Running contract**

☐ **Rate contract**

7. Local purchase

8. In house manufacture in the hospitals

PROCUREMENT

- ❖ Selecting the vendors
- ❖ Get a Quotation Order
- ❖ Arranging upon the purchase price
- ❖ Prepare a purchase order
- ❖ Time and place of delivery
- ❖ Verifying deliveries
- ❖ Settlement and payment of vendors' remuneration claim (Invoice)

MATERIAL SPECIFICATION

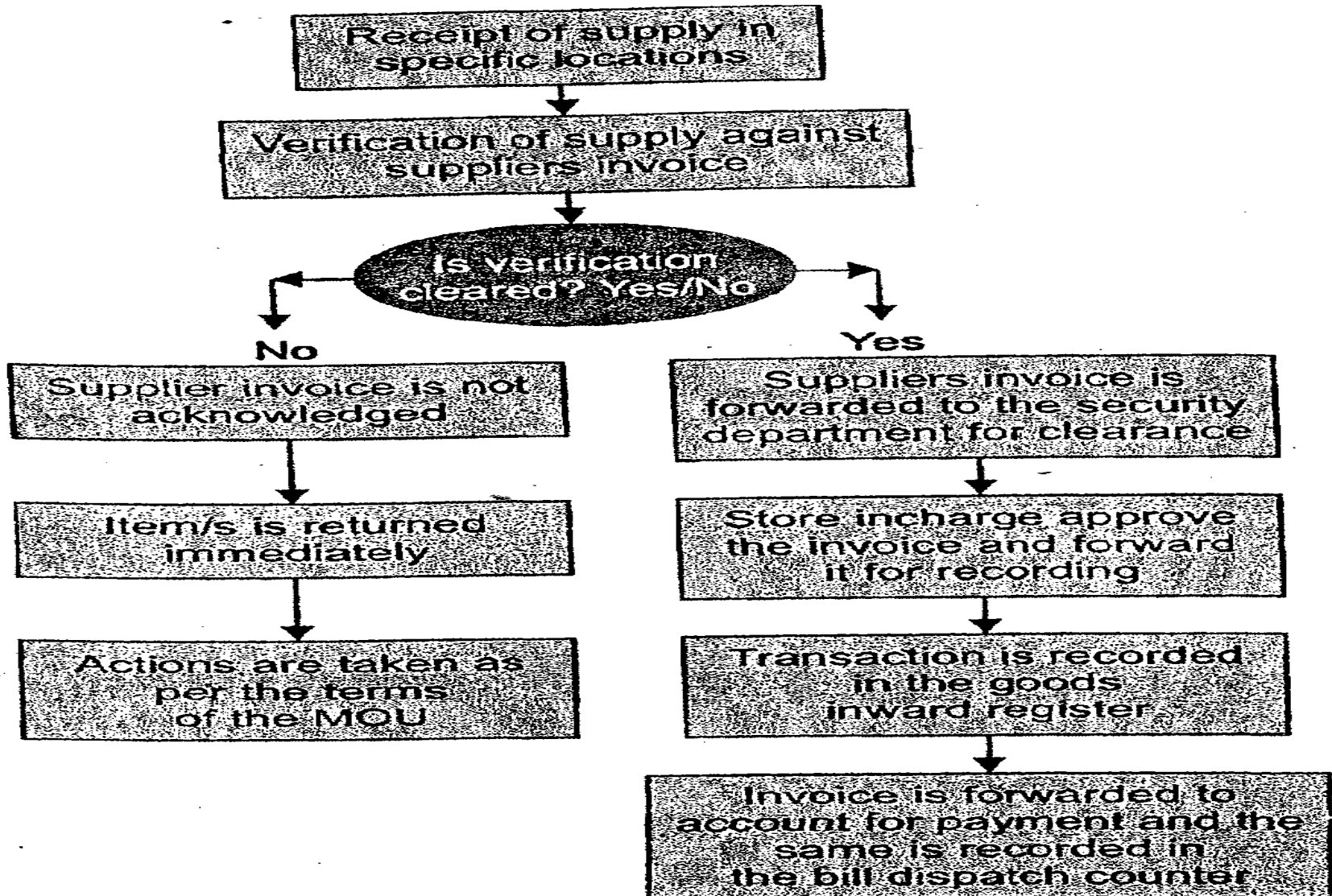
Specifications are used by the Consumer to describe what it intends to purchase. They are used by vendors to prepare bids to supply the items or services requested. During the evaluation of bids, the specifications are used to determine each bidder's compliance with the requirements and ultimately to select the contracted vendor. For this reason specifications must be as generic as possible and express the University's minimum needs, without any unjustified bias toward a specific brand. After an item has been delivered or a service performed, the written specification—to which the vendor bid—is the key legal document in settling any dispute concerning the quality of the product or service received.

❖ Classification of material

❖ Facilitation of work

❖ Lessen the purchase procedure

RECEIPT AND INSPECTION



**<Name of
Hospital/Clinic/Homecare/Nursing
Home>**

<Business Address>
<Business Contact No.>
<Web Site/URL>

LOGO

<Business Slogan, if any>

INVOICE

Patient Name Address Contact No. Gender Age	
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Date
Number
Due Date

SR#	DESCRIPTION	MU	QTY	PRICE	AMOUNT
					-
					-
					-
					-
					-
					-
					-
					-
					-
					-
					-
Terms and Conditions:				Sub-total	-
				Tax Rate	
				Tax	-
				Discount/s	-
				Insurance Claim	-
				Total Amount Due	-

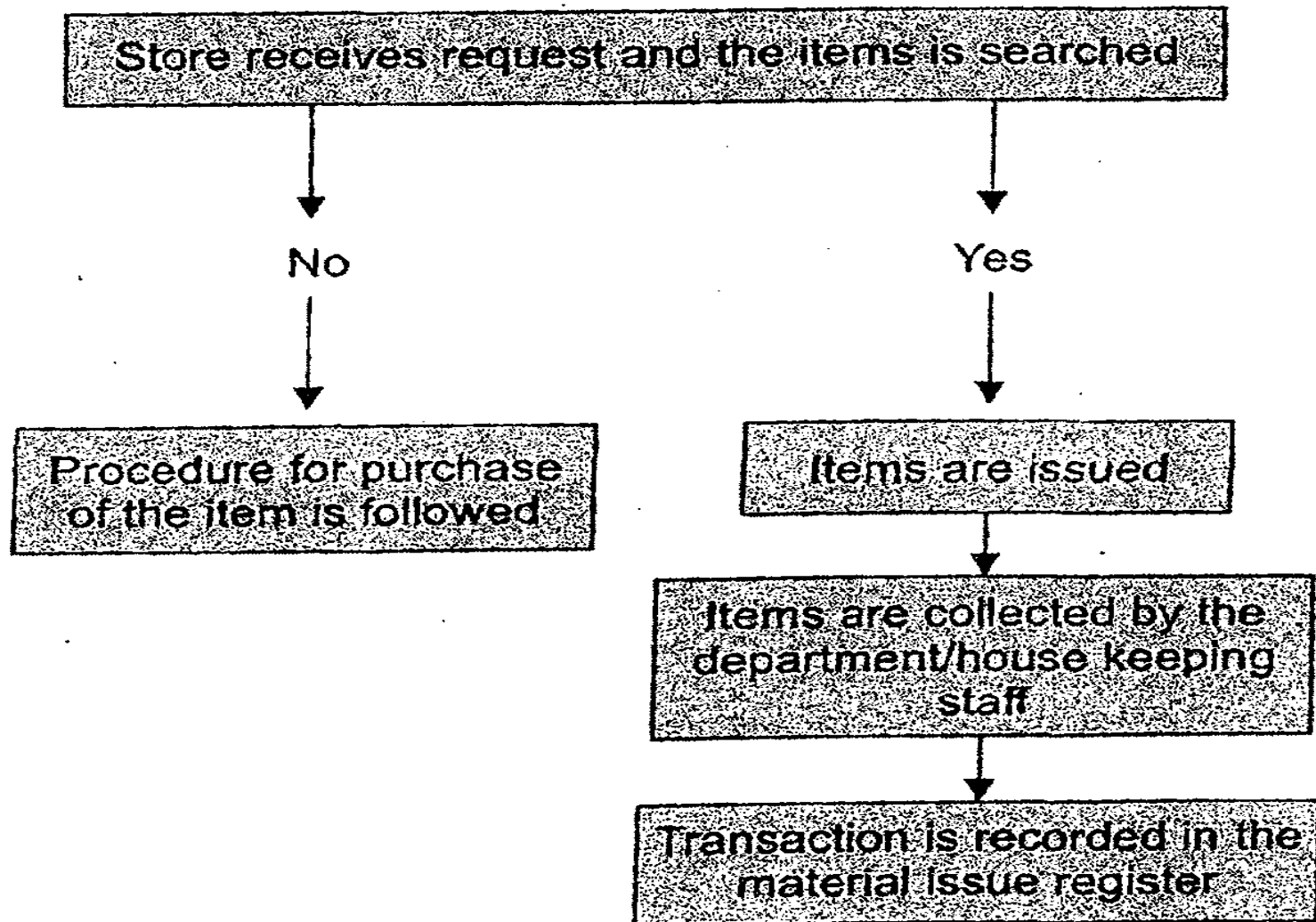
<State total amount due in words>

Signature

<Prepared by>

<Designation>

INVENTORY CONTROL OR STORAGE, ISSUE AND DISTRIBUTION



ACCOUNTING AND INFORMATION SYSTEM

DISPOSAL AND CONDEMNATION

Procedure for condemnation

- ❖ A condemnation committee comprising of three or more members is constituted
- ❖ The committee members go into details through inventory records The committee will declare the items condemned and make recommendation for further disposal of items.
- ❖ The condemned items are to be destroyed.
- ❖ The items particularly medicines which are toxic and cannot be disposed of by burial or as per the relevant laid down rules under the subject of waste disposal.

The effective measures are taken for disposal

- ❖ A list of surplus material is circulated among the hospital staff/user units requesting them to pay special attention for mobilizing such items and giving priority to this category of items.

- ❖ The surplus materials are transferred to other hospitals where these may be required.

- ❖ The surplus materials are offered to the manufacturer/ suppliers for buy back.

❖ In case of materials other than drugs like equipments, instruments any such articles are treated as salvage or scrap, whatever the case may be, action is taken accordingly:

❖ a. The materials may be sold by inviting tender.

❖ b. Open auctions of items through authorized auctioneers

❖ **Some more procedures**

- ☐ Identification of need
- ☐ Establishment of standards and specification, character, quality with full description
- ☐ Preparation of requisition or indents in the predesigned
- ☐ Selection of the right source that is supplier
- ☐ Determine right price, availability and delivery time
- ☐ Placement of purchase order
- ☐ Follow up
- ☐ Arranging of receipt, inspection, rejection replacement for defective pieces.
- ☐ Verification of invoices
- ☐ Payment of bills
- ☐ Maintenance of record.

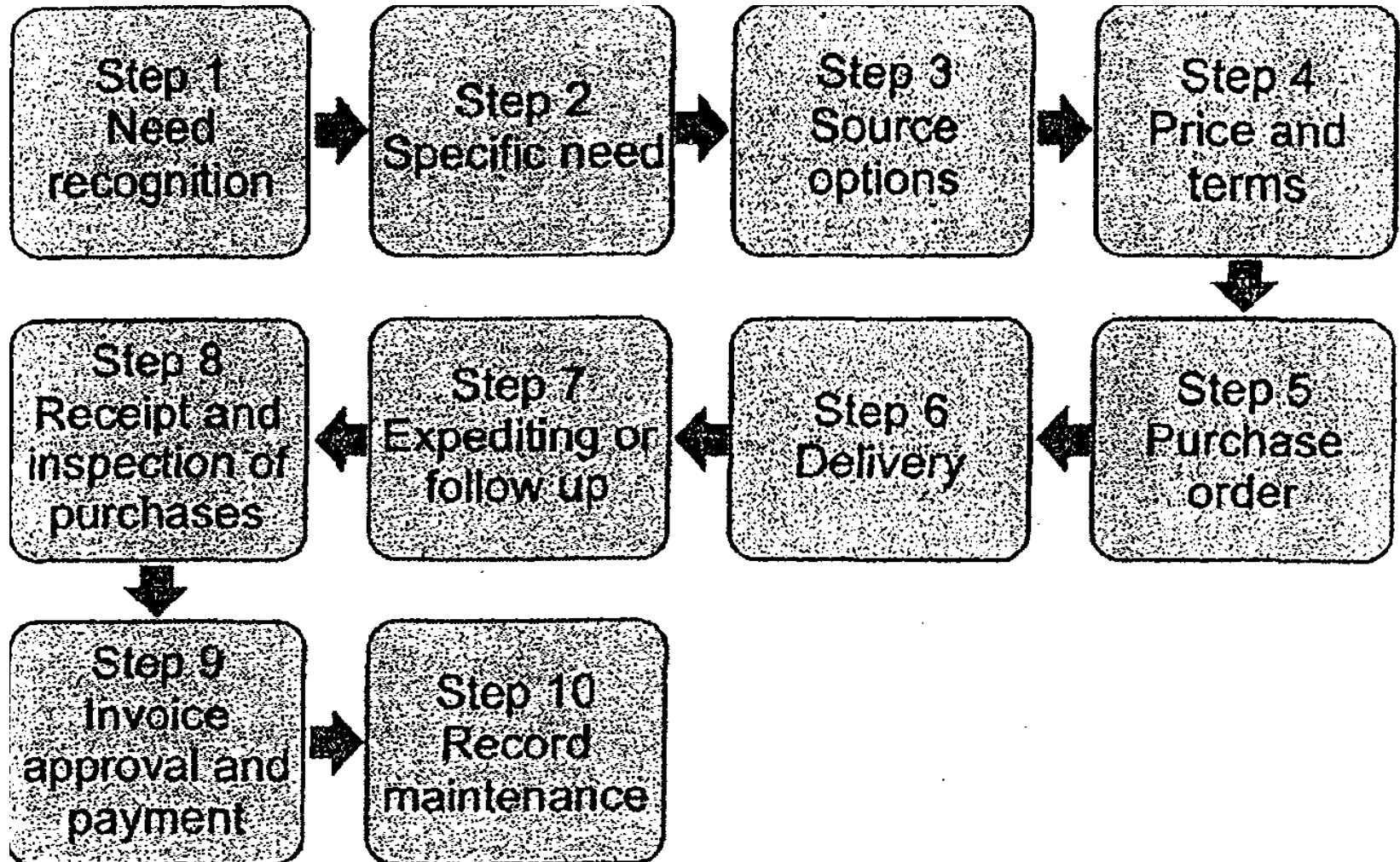
PROCUREMENT

- ❖ Procurement is the sourcing and purchasing of goods and services for business use. It is the acquisition of goods or commodities by a company, organization, institution, or a person. This simply means the purchase of goods from suppliers at the lowest possible cost.
- ❖ It is also defined as the process of obtaining goods and services from preparation and processing of a requisition through to receipt and approval of the invoice for payment.
- ❖ According to Defense Acquisition University, It is the act of buying goods and services for the government.

OBJECTIVES

- ❖ Acquire needed supplies
- ❖ Obtain high quality supplies
- ❖ Assure prompt and dependable delivery
- ❖ Distribute the procurement workload
- ❖ Optimize inventory management

PROCUREMENT PROCESS



FLOW OF PROCUREMENT DECISION

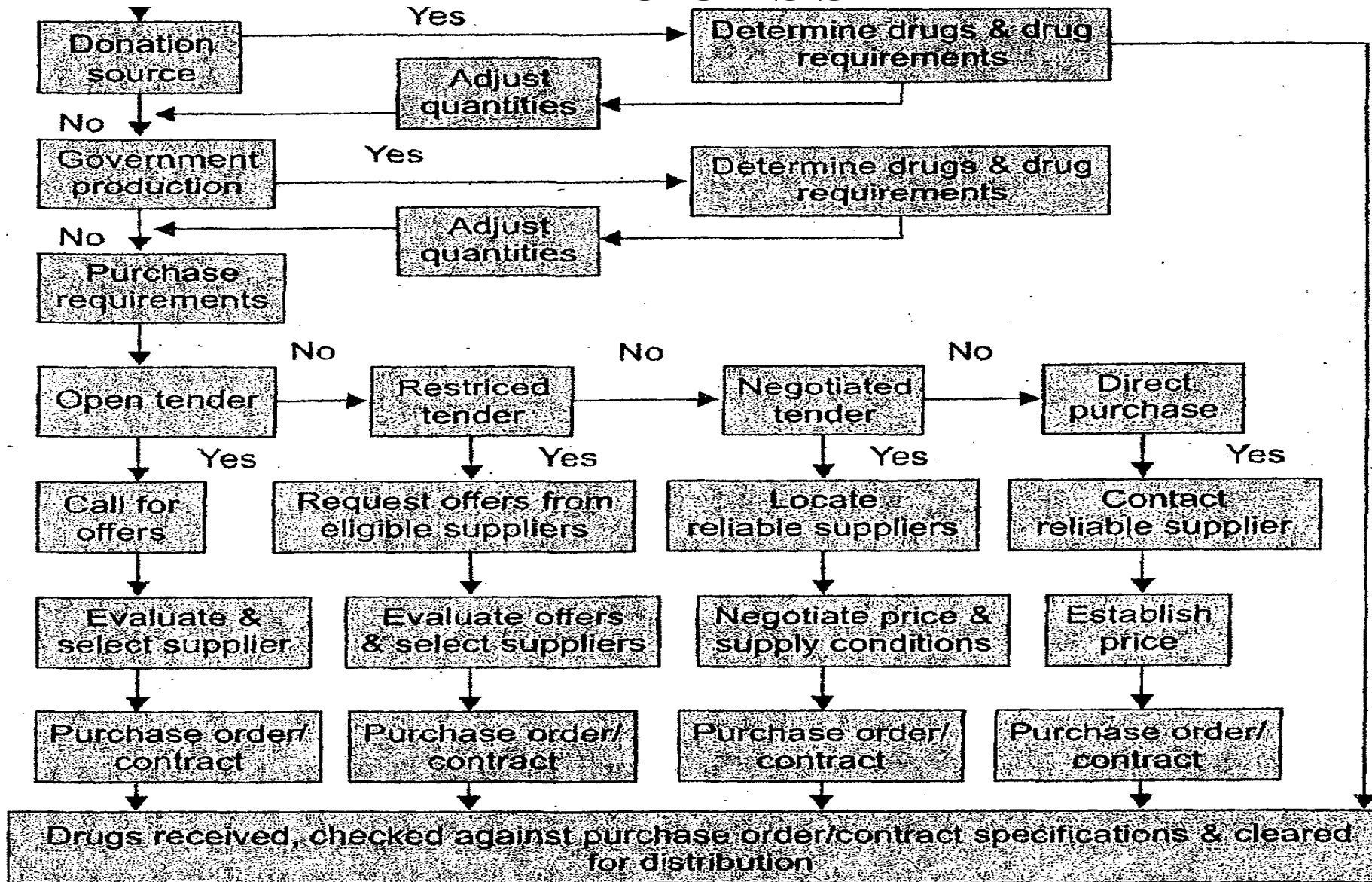
- ❖ Need assessment
- ❖ Finding the budget
- ❖ Prioritization of purchase of equipment,
machinery etc
- ❖ Standards and specification development
- ❖ Placing of indent by the head of department
- ❖ Consideration of indent

- ❖ Choose procurement method
- ❖ Receipt of tenders
- ❖ Opening of tenders
- ❖ Evaluation of tenders
- ❖ Placement of orders
- ❖ Follow up of orders
- ❖ Receipt and inspection of material
- ❖ Invoice approval and payment.

Procurement methods

- ❖ The Open tender method
- ❖ The limited restricted tender method
- ❖ Negotiated tender
- ❖ Direct procurement
- ❖ Rate contract
- ❖ Spot purchase

PROCUREMENT DECISION PROCESS



PURCHASING

❖ Purchasing means to buy various materials by paying money or its equivalent from suppliers / vendors

STEPS

- ❖ Purchase/requisition
- ❖ Supplier selection:
- ❖ Purchase order
- ❖ Fulfillment
- ❖ Order receipt
- ❖ Supplier invoice/payment

Points to remember while purchasing

- ❖ Proper specification
- ❖ Invite quotations from reputed suppliers
- ❖ Comparison of offers based on basic price, freight & insurance, taxes and levies
- ❖ Quantity & payment discounts
- ❖ Payment terms
- ❖ Delivery period, guarantee
- ❖ Vendor reputation
- ❖ Short listing for better negotiation terms
- ❖ Seek order acknowledgement.

Points to Remember while Purchasing Equipment

- ❖ Latest technology
- ❖ Availability of maintenance & 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

WHAT IS INVENTORY ?

- ❖ Inventory is defined as the blocked working capital of an organization in the form of materials. As this is the blocked working capital of organization, ideally it should be zero. But we are maintaining Inventory.
- ❖ a complete list of items such as property, goods in stock.
- ❖ Inventory is ‘anything that is bought and held prior to use.

IMPORTANCE

- ❖ Provides and maintains good customers service
- ❖ Enables smooth flow of materials
- ❖ Provides protection against the uncertainty of demand and supply
- ❖ Ensures a reasonable utilization of equipment and effort
- ❖ Possibility of discount

INVENTORY CONTROL

- ❖ Inventory control is the process by which inventory is measured and regulated according to predetermined norms such as economic lot size for order, safety stock, minimum level, maximum level, order level etc.
- ❖ Inventory control is about product availability and balancing the costs of ownership with the costs of procuring, which includes purchasing, receiving and paying (Dave Kaczmarek)
- ❖ Inventory control is the technique of maintaining the size of the inventory at some desired level keeping in view the best economic interest of an organization

OBJECTIVES

- ❖ To supply the materials in time
- ❖ To give maximum clients service
- ❖ To reduce or minimize investment in inventories
- ❖ To minimize idle time
- ❖ To avoid shortage of stock
- ❖ To minimize the losses
- ❖ To meet unforeseen future demand
- ❖ To average out demand fluctuations
- ❖ To balance various inventory costs

IMPORTANCE OF INVENTORY CONTROL

- ❖ To provide maximum supply service, consistent with maximum efficiency & optimum investment
- ❖ To provide cushion between forecasted & actual demand for a material
- ❖ To have optimum level of inventory: not too large, not small.
- ❖ To eliminate duplication in ordering
- ❖ To take care of fluctuations in demand and lead time
- ❖ To take care of increasing price tendency of commodities or rebate in bulk buying

- ❖ To increase transportation efficiently
- ❖ To minimize the inventory costs
- ❖ To minimizing waiting time
- ❖ To provide a check against the loss of material
- ❖ To better utilization of stocks available
- ❖ To facilitate cost accounting activities
- ❖ To locate and disposes inactive and obsolete store items.

MAJOR ACTIVITIES OF INVENTORY CONTROL

- ❖ Planning
- ❖ Procurement
- ❖ Receiving and inspection
- ❖ Storing and issuing the inventories
- ❖ Recording the receipt and issuing of inventories
- ❖ Physical verification
- ❖ Follow up functions
- ❖ Material standardization and substitution.

Setting up of various stock levels

❖ *Minimum Level*

❖ *Maximum Level*

❖ *Reorder Level*

❖ *Reserve Stock*

Minimum Level

- ❖ Minimum level is the minimum stock to be maintained for smooth production
- ❖ $\text{Minimum level} = \text{Reorder level} - \text{Average usage per period} \times \text{average time to obtain delivery}$

Maximum Level

❖ It is the level of stock, beyond which the stock is not maintained

❖ $\text{Maximum level} = \text{Reordering level} - \text{Expected minimum consumption in units during the least time to obtain delivery} + \text{Reorder quantity}$

Reorder Level

- ❖ It is the stock level at which an order should be placed
- ❖ Reorder level = Maximum reorder period X maximum usage
- ❖ Average stock level = Maximum level + Minimum level

❖ *Reserve Stock*

Excess usage requirement during normal lead time

Basic principles of inventory control

❖ *Safety Stock (SS)*

❖ *Lead Time (LT)*

❖ *Average Inventory: INVAVG*

❖ *Reorder Point*

❖ *Safety Stock (SS)*

$$SS = [WCS - AWU]LT$$

❖ *Lead Time (LT)*

- a) Logic
- b) Effective
- c) Attainable
- d) Dependable

❖ *Average Inventory: INVAVG*

$$\text{INVAVG} = \text{SS} + 1/2 \times \text{ROQ}$$

❖ *Reorder Point*

$$\text{ROP} = \text{SS} + (\text{AWU} \times \text{LT})$$

TECHNIQUES OF INVENTORY CONTROL

- ❖ *Items Quality*: Value analysis, standardization, codification
- ❖ *Quantity*: Purchasing balancing of inventories EOQ (**Economic Order Quantity**)
- ❖ *Price*: Cost price value analysis
- ❖ *Source*: Market research, purchasing techniques selection
- ❖ *Delivery*: Procurement technique, Follow up
- ❖ *Methods*: Work study system analysis: ABC Analysis etc
- ❖ *People*: Organization analysis

INVENTORIES CLASSIFICATION

- ❖ ABC Analysis (Always Better Control)
- ❖ VED Analysis (Vital, Essential, Desirable)
- ❖ FSN Analysis (Fast, Slow moving and Non-moving)
- ❖ SDE Analysis (Scarce, Difficult, Easy)
- ❖ HML Analysis (High, Medium, Low)
- ❖ XYZ Analysis
- ❖ GOLF Analysis
- ❖ SOS Analysis

ABC ANALYSIS

- ❖ Basic supply chain technique
- ❖ “Always Better Control”

ABC analysis. **ABC analysis** is an inventory categorization method which consists in dividing items into three categories (A, B, C): A being the most valuable items, C being the least valuable ones.

Pareto's theory

❖ According to Pareto's theory 10% items consume about 70 % of budget (Group A). The next 20% consume 20 % of financial resources (Group B) and remaining 70 % items account for just 10% of budget (Group C)

Table 60.2: Average pattern of percentage of items and percentage of their respective values

Item	%age of items	%age of rupee value
A	10	70
B	20	20
C	70	10

‘A’Items

- ❖ small in number
- ❖ consume large amount of resources
- ❖ managed by top management.
- ❖ tight control, rigid estimate of requirements, strict & closer watch
- ❖ require low safety stocks.
- ❖ consume major portions of funds.

‘B’ Items

- ❖ moderate control.
- ❖ purchased based on rigid requirements
- ❖ strict watch and control.
- ❖ management is done by middle level managers.

‘C’ Items

- ❖ larger in number
- ❖ consume lesser amount of resources
- ❖ ordinary control measures.
- ❖ purchase is based on usage estimates
- ❖ require high safety stocks.

1.	High consumption value	Has moderate value	Has low consumption value
2.	Very strict control	Moderate control	Loose control
3.	No or very low safety stock	Low safety stocks	High safety stocks
4.	Frequent ordering	Once in three months	Bulk ordering once in 6 months
5.	Maximum follow up & expediting	Periodic follow up	Follow up & expediting in exceptional cases
6.	Weekly control statement	Monthly control reports	Quarterly control reports
7.	Maximum value analysis	Moderate value analysis	Minimum value analysis
8.	Accurate forecasting in material management	Estimation based on past record	Rough estimation
9.	Many sources for each item	Two or more reliable sources	Two reliable sources
10.	Minimization of waste, obsolete and surplus	Quarterly control over surplus and obsolete items	Annual review over surplus and obsolete items
11.	Central purchasing	Combination purchasing	Decentralized purchasing
12.	Maximum effort to reduce lead time	Moderate effort to reduce lead time	Minimum clerical efforts
13.	Handled by top management	Can be handled by middle management	Can be fully delegated

PROCEDURAL STEPS

- ❖ Collect all the data of inventory and prepare a list of all the items of stores indicating the unit price of each item and annual consumption
- ❖ Calculate their annual usage in Rs. (Annual consumption in units x unit costs in Rs. = annual consumption value).
- ❖ Arrange all these items in the descending order of total value of annual consumption of each item in rupees
- ❖ Mention the item numbers against their annual consumption
- ❖ Calculate cumulative annual consumption value
- ❖ Calculate cumulative annual consumption value percentage
- ❖ Categorize items as per the consumption value (cost) percentage.

Advantages

- ❖ Investment in inventory can be maintained
- ❖ Easy to control the wastage of costly items
- ❖ Helps in maintaining safety to the total cost
- ❖ Easy to maintain stock and turnover rate
- ❖ Helps to exercise selective control
- ❖ Rationalizes the number of orders, number of items & reduce the inventory
- ❖ Shows visible results in a short span of time
- ❖ manager is able to control the inventories specially controlling 'A' items.
- ❖ Helps in reducing clerical cost.

Disadvantages

- ❖ Proper standardization and codification of inventory items is required
- ❖ Considers only the money value not the importance of items for functioning
- ❖ Periodic reviews becomes difficult if only ABC analysis is recalled

VED ANALYSIS

- ❖ Vital, Essential and Desirable

- ❖ materials are classified based on criticality

- ❖ ‘V’ is for vital items without which a hospital cannot function

- ❖ ‘E’ for essential items without which an institution can function but may affect the quality of the services

- ❖ ‘D’ stands for desirable items, unavailability of which will not interfere with functioning because they can be easily purchased as and when required

Advantages

- ❖ useful for monitoring and control of stores and spares inventory by classifying them into 3 categories viz., Vital, Essential and Desirable.
- ❖ Determine the criticality of an item and its effect on production and other services.
- ❖ It is specially used for classification of spare parts/items.
- ❖ It is useful in controlling and maintaining the stock of various types.

COMBINATION OF ABC AND VED
ANALYSIS

					ITEM	COST
V E D						
A	AV	AE	AD	Category 1	10	70%
B	BV	BE	BD	Category 2	20	20%
C	CV	CE	CD	Category 3	70	10%

V Items

E Items

D Items

‘A’ Items

Constant control

Moderate stocks

Nil stocks

Regular follow up

‘B’ Items

Moderate stocks

Moderate stocks

Low stocks

‘C’ Items

High stocks

Moderate stocks

Very low stocks

FSN ANALYSIS

- ❖ 'Fast moving, Slow moving, and Non-moving'
- ❖ based on the consumption pattern of the items
- ❖ **Method**

Date of receipt or last date of issue whichever is later, is taken to determine the number of months which has lapsed since the last transaction. The items are usually grouped in periods of 12 months. Non-moving items must be periodically reviewed to prevent expiry.

Analysis

- ❖ For analysis, the issuing of items in past two or three years are considered
- ❖ If there is no issuing of item during that period, it is labeled 'N' item
- ❖ Then up to certain limit say 10-15 issues in that period, the item is 'S' Item
- ❖ The items exceeding such limits of numbers of issues during that period is 'F' Item

Advantages

- ❖ Helps to avoid investment in non-moving or slow items
- ❖ Facilitates timely control
- ❖ Useful in controlling obsolescence.

SDE ANALYSIS

- ❖ Scarce, difficult, easy to obtain

- ❖ 'S' stands for 'scarce' items, those which are difficult to obtain and generally require source development, generally imported, and those which are in short supply, managed by top level management.

- ❖ 'D' stands for 'difficult' items which are available indigenously but are difficult items to procure.

- ❖ 'E' stands for 'Easy' items which are easy to acquire and which are readily available in the local markets.

Advantages

- ❖ Vital to the lead time analysis
- ❖ Useful in the context of scarcity of supply
- ❖ To determine the method of buying and to fix up the responsibilities of buyers.

HML ANALYSIS

- ❖ High, medium, low
- ❖ The basic criterion of HML classification is the unit value of the item

Advantages

- ❖ Used to keep control over consumption at departmental level
- ❖ For deciding the frequency of physical verification.

XYZ ANALYSIS

- ❖ based on the value of the inventory stored
- ❖ X items are those whose inventory values are high
- ❖ Y items are those which have moderate inventory stocks
- ❖ Z items are those whose inventory values are low.

Class of item	A	B	C
X	Efforts are made to reduce the stock to the Z category	Efforts are made to convert the stock to the Y category	Steps to be taken to dispose of the surplus stocks
Y	Efforts are made to convert the stock to the Z category	—	Control may be further tightened
Z	—	Stocks levels may be Reviewed twice a year	—

GOLF ANALYSIS

- ❖ Government, Ordinary, Local, Foreign.
- ❖ basis of source of material.

SOS ANALYSIS

❖ ‘S’ stands for Seasonal and OS stands for Off Seasonal items

Type of items	Strategy
Seasonal items(s) which are available only for a limited period	Procure and stock for meeting the needs of the full year
Seasonal items available throughout the year	The quantity required should be compared with the cost savings on account of lower prices, if purchased during season.
Off-seasonal items (OS)	Quantity is determined on different consideration

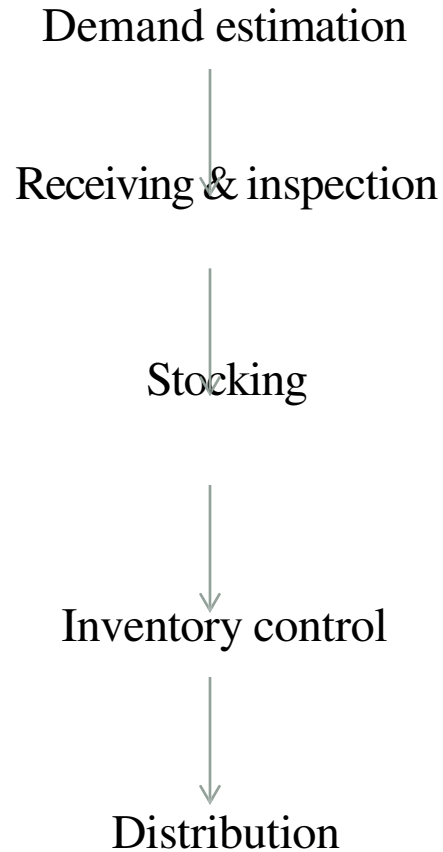
INVENTORY MODEL FOR QUANTITY & INVENTORY REPLENISHMENT

- ❖ **Economic Order Quantity (EOQ)** EOQ is a tool used to determine the volume and frequency of orders required to satisfy a given level of demand while minimizing the cost per order.

$$Q^* = \sqrt{\frac{2 \times \text{Annual Demand} \times \text{cost per order}}{\text{holding cost per unit per year}}}$$

PLANING EQUIPMENTS
AND SUPPLIES FOR
NURSING CARE UNIT AND
HOSPITAL

MATERIAL MANAGEMENT CYCLE



Hospital material medical 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 for patient, furniture
- ☐ Engineering items and many others

Hospital material management side

- ☐ Computer, fax, telephone, stationery items
- ☐ Public address items overhead projector
- ☐ Audiovisual systems

Purchase of supplies and equipment

- ❖ General store
- ❖ Dietary department and
- ❖ Pharmacy department

ROLE OF NURSE MANAGER

- ❖ Ensuring regular and adequate flow of supply
- ❖ Monitoring quality and safety of the materials
- ❖ Indenting, receiving ,storing , checking for all necessary equipment and supply
- ❖ Maintaining of emergency stocks
- ❖ Arranging and assisting in audit

- ❖ Participation in policy making for material management
- ❖ Evaluating the efficacy of the material management system followed in particular nursing unit.
- ❖ Make sure that all the personnel in the ward should be clearly know who may use ward articles and equipments and who assumes responsibility for it.
- ❖ The head nurse must be vigilant and prevent waste or misuse by educating the staff in the economical and appropriate use of all equipments and materials