

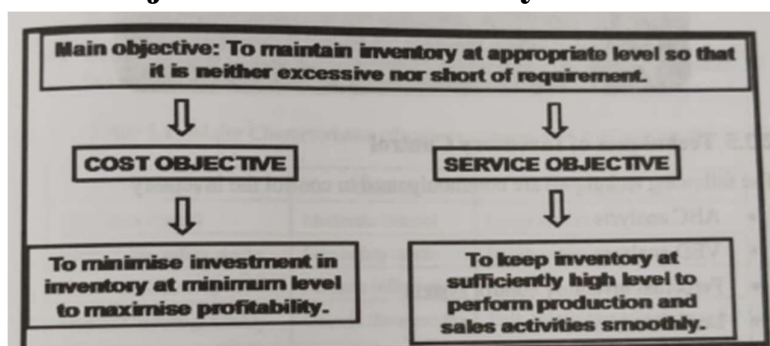
INVENTORY CONTROL

- ✓ In community pharmacies, pharmacists procure medicines from licensed authorized wholesalers or distributors and stock them adequately and dispense.
- ✓ The whole activity looks very simple and straightforward.
- ✓ Procurement of medicines from the suppliers depends upon
 - the sales/demand of a particular medicine
 - the decision of the pharmacist/person in charge of ordering, discounts received from the manufacturer and wholesaler.
- ✓ Procurement involves the selection of medicines, assessing the quantity required, assessing the availability of sufficient funds, selecting the suppliers, obtaining the best deals and services, placing the orders, verifying the stocks ordered and actual stocks received, taking them into the stocks, making the payments to the suppliers.
- ✓ Thus, credit and inventory control requires knowledge and skill in assessing the market demand, period of discount, distance between the wholesaler and retailer, supply policies of wholesaler, buying capacity, and transport facilities.
- ✓ Thus, inventory control is an art and science.
- ✓ An effective procurement process ensures the availability of all the medicines in the right quantities at reasonable prices at all the times.
- ✓ This will ensure better cash rotation, excellent customer service, and improved professional relationship with the suppliers, fair returns on investments, and future growth of the business.
- ✓ Thus, it is very important to understand the art of inventory control of medicines in the pharmacy in order to avoid "out of stock" and "over stock" situations.
- ✓ These situations will result in loss of costumers and future business.
- ✓ An effective inventory control practices helps the pharmacist to avoid these embarrassing situations.

Defination

- Inventory control is defined as "the supervision of procurement, storage and accessibility of items in order to ensure an adequate supply of medicines in right time"
- or
- Inventory control is also defined as the itemized list of medicines procured in the right quantity, right quality, at right time in the right price from the right suppliers.

Objectives of Inventory Control



The objectives of inventory control are:

To ensure uninterrupted production:	To maintain sufficient inventory so as to avoid out of stock situation which leads to customer dissatisfaction loss of revenue and increase in cost investment.
To avoid overstocking:	Only the required quantities of medicines will be stocked in the stores and there is no need to keep in excess, which will lead to blockage of money.
To facilitate economical purchasing:	With proper control of inventories the medicines can be advanced by inviting the tenders/quotations.
To optimize manpower utilization:	During stock period the number of workers can be reduced whereas in boom periods the man power can be increased, thus money can be saved.
To reduce wastage and obsolescence:	With proper planning wastage and surplus can be reduced.
To prevent theft and pilferage:	Having control over the inventories the theft of small but costly items can be checked.

Functions of Inventory Control

- 1. Efficient utilization of resources**
Ensures proper use of men, machines, and materials.
- 2. Systematic assessment of material requirements**
Helps in accurate forecasting and planning of material needs.
- 3. Control of wastage and theft**
Reduces losses due to spoilage, damage, or pilferage.
- 4. Quick response to customer demand**
- 5. Procurement at lowest cost and right time**
Enables supply of finished goods at short notice when demand arises.
- 6. Maintaining minimum stock levels**
Prevents overstocking and helps stabilize market prices.
- 7. Maintenance of accurate records**
Proper stock records help in assessing inventory position and decision-making.

Methods of Inventory Control

The following techniques are commonly used to control the inventory-

1. ABC analysis
2. VED analysis
3. Economic order quantity (EOQ) method
4. Lead time method
5. Safety stock method
6. Minimum and maximum stock levels
7. Bin Card system
8. Perpetual inventory control system
9. Physical Inventory
10. Open to buy budget system
11. HML classification
12. FSN classification
13. SDE classification

ABC analysis (Always Better Control)

- ABC stands for Always Better Control
- ABC analysis is based on the principle that: “All inventory items are not of equal importance.”
- ABC analysis is a selective inventory control technique based on the annual consumption value of items. highlighting the need for continuous and focused control on important inventory items.
- It helps in identifying the items that require strict managerial control and those that require simple control, thereby ensuring economical and efficient inventory management.
- A small percentage of items accounts for a major share of inventory investment, while a large number of items account for a minor share of total value.
- Annual inventory value is calculated as: Annual usage × Unit cost
- It is a simple, effective, and widely used inventory control technique that helps in prioritizing inventory items based on their value.
- By applying different levels of control to different categories, it ensures better utilization of capital, reduced losses, and improved efficiency, especially in hospital pharmacy and industrial inventory management.

Need for ABC Analysis

- To ensure better control of high-value items
- To avoid over-investment of capital
- To minimize storage and carrying costs
- To prevent pilferage, theft, and losses
- To improve decision-making for reordering

Classification of Items under ABC Analysis

According to ABC analysis, inventory items are classified into three categories based on their value and importance:

Group A Items	Group B Items	Group C Items
a. Constitute 10–20% of total inventory items b. Account for 50–75% of total inventory value c. Includes high-cost and critical items d. Require maximum managerial attention	a. Constitute 20–30% of total inventory items b. Represent about 20–30% of total inventory value c. Include moderately priced items	a. Constitute 60–70% of total inventory items b. Account for only 5–10% of total inventory value c. Include low-cost and non-critical items
ABC Analysis in Community Pharmacy		
A category medicines: High-cost medicines (e.g., anticancer drugs, biologicals), Consume nearly	B category medicines: Moderately priced	C category medicines: Low-cost, fast-moving items, Consume only 5% of

75% of the budget, Require strict control to prevent pilferage and expiry losses	drugs, Consume around 20% of the budget	the total budget, Can be purchased in bulk.
Control Characteristics		
a. Very strict control b. Frequent ordering (weekly or continuous review) c. No or very low safety stock d. Close supervision and follow-up e. Accurate record keeping	a. Moderate control b. Periodic review c. Low safety stock d. Ordering once in 2–3 months e. Routine supervision	a. Loose control b. High safety stock c. Bulk ordering d. Follow-up only in exceptional cases e. Ordering once in six months or annually

Advantages of ABC Analysis

1. Ensures effective control over costly items
2. Helps in optimum utilization of financial resources
3. Reduces inventory carrying and storage costs

4. Facilitates scientific and systematic inventory control
5. Improves efficiency of inventory planning and purchasing
6. Helps management focus on critical items

Disadvantages of ABC Analysis

1. B and C category items may get neglected
2. Risk of overstocking or pilferage in C category items

3. Does not consider criticality of items
4. Requires accurate and updated cost data
5. Not suitable when usage pattern fluctuates frequently

VED (Vital–Essential–Desirable) Analysis

- VED analysis is an inventory control technique based on the criticality or importance of items, rather than their cost.
- The basic principle of VED analysis is: “The importance of an item is more significant than its cost.”
- This method focuses on how essential an item is for operations or for saving life, especially when non-availability may lead to serious consequences.
- An item may be low-cost but life-saving, and hence must always be available in stock.
- VED analysis is a crucial inventory control tool that ensures availability of critical items based on their importance rather than cost.
- In healthcare settings, it plays a vital role in saving lives by preventing stock-outs of essential medicines.
- VED analysis is widely used in:
 - Healthcare and hospital pharmacy

- Automobile and engineering industries
- Maintenance and spare parts management

Classification under VED Analysis

Based on usage and importance, items are classified into three categories:

Vital (V) Items	Essential (E) Items	Desirable (D) Items
a. Most critical and life-saving items b. Non-availability may cause: a. Loss of life (healthcare) b. Complete stoppage of production for several days (industry) c. Must always be available in stock	a. Necessary for effective functioning b. Short-term non-availability may: a. Worsen the condition b. Interrupt production for a few hours	a. Useful but not critical b. Non-availability does not seriously affect performance or patient outcome
Characteristics		
a. No stock-out permitted b. High safety stock c. Strict control and continuous monitoring d. Emergency procurement if required	a. Moderate safety stock b. Periodic review c. Controlled inventory management	a. Low priority b. Minimal control c. Can tolerate stock-outs for a limited period
Examples in Healthcare:		
1) Atropine injection (pesticide poisoning) 2) Adrenaline injection 3) Insulin 4) Anti-snake venom	1) Proton pump inhibitors (Omeprazole, Pantoprazole) for acid peptic disease 2) Antibiotics for common infections 3) Antihypertensive drugs	1) B-complex vitamins 2) Multivitamin supplements 3) Tonics and nutritional supplements

Healthcare Example of VED Analysis

- In the healthcare sector, medicines are classified based on their therapeutic importance and ability to save life, irrespective of cost.
- Atropine injection, Used in organophosphate (pesticide) poisoning, Cost is very low (₹3–5), yet it is life-saving, Hence, it is classified as a Vital drug

Industrial Example of VED Analysis

In pharmaceutical products:

- Disprin tablets – High demand → Vital

- Anacin tablets – Moderate demand → Essential
- APC tablets – Low demand → Desirable

Advantages of VED Analysis

1. Ensures continuous availability of critical items
2. Prevents life-threatening situations due to stock-outs
3. Improves patient care and safety
4. Helps in priority-based inventory management
5. Simple and easy to implement

Limitations of VED Analysis

1. Does not consider cost of items
2. May result in high inventory investment
3. Subjective classification
4. Requires expert judgement
5. Not suitable when budget constraints are strict

Combination of ABC and VED Analysis: This combined approach ensures cost control along with criticality control.

For effective inventory control, ABC and VED analyses are often combined, it provides a comprehensive and efficient inventory management system.

AV items → Highest priority / BV items → Medium priority / CV items → Lowest priority

Economic Order Quantity (EOQ) Method

- Economic Order Quantity (EOQ) is one of the most widely used inventory control techniques in pharmacy practice.
- EOQ is defined as the quantity of inventory that minimizes the total cost, which includes ordering (procurement) cost and carrying (holding) cost, without affecting demand and supply.
- It helps in determining the optimum quantity of a medicine that should be ordered at one time so that the total inventory cost is minimized.
- When the demand for a product is uniform throughout the year, placing many small orders increases ordering cost, whereas placing large orders increases carrying cost.
- EOQ balances these two costs and identifies the most economical order size.
- The EOQ method is a simple and effective inventory control tool that helps pharmacists and inventory managers maintain optimal stock levels at minimum cost.
- Despite certain limitations, EOQ remains a valuable model when demand is stable and cost data is reliable.

EOQ Formula

$$EOQ = \sqrt{\frac{2 \times PC \times Q}{CC}}$$

Where:

- PC = Procuring (ordering) cost per order
- Q = Quantity of product in no of units or annual usage (units)
- CC = Carrying cost per unit per year

Another commonly used formula to determine EOQ is:

$$EOQ = \sqrt{\frac{2 \times (\text{Annual usage in units}) \times (\text{Order cost})}{\text{Annual carrying cost per unit}}}$$

Costs Involved in EOQ: EOQ is based on two major costs:

1) **Procuring (Ordering) Cost:** Procuring cost includes all expenses involved in placing and receiving an order, such as:

- | | |
|--|--|
| a. Communication expenses | e. Follow-up and expediting purchase orders |
| b. Receiving quotations | f. Receiving and inspection of goods |
| c. Advertising or media costs | g. Marking, stocking, and record maintenance |
| d. Preparation and processing of purchase orders | h. Processing supplier invoices. |

✓ Procuring cost decreases as order quantity increases, because fewer orders are placed.

2. **Carrying (Holding) Cost:** Carrying cost includes expenses incurred while storing inventory, such as:

- | | |
|-----------------------------------|--|
| a. Storage and warehousing costs | d. Deterioration, damage, and obsolescence |
| b. Insurance charges | e. Record keeping and handling costs |
| c. Interest on capital investment | f. Taxes and security costs |

✓ Carrying cost increases as order quantity increases, because more inventory is held for longer periods.

✓ Carrying cost reduces when order size decreases, but frequent ordering increases procurement cost.

The EOQ model provides a level of inventory at which the total cost is minimum.

Total Inventory Cost = Procurement Cost + Carrying Cost

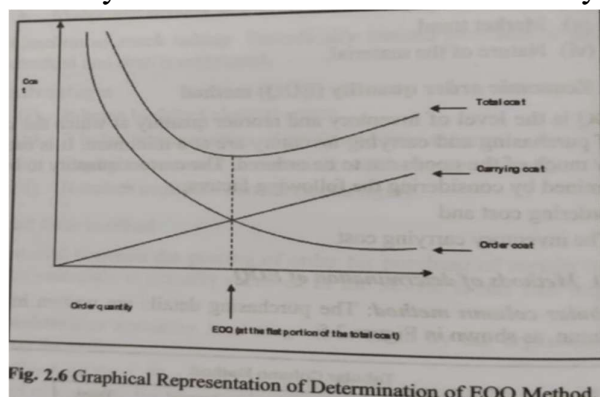


Fig. 2.6 Graphical Representation of Determination of EOQ Method.

Graphical representation of EOQ method

Applications of EOQ

1. EOQ helps in calculating the most economical order size.
2. It shows how inventory levels should change with an increase in sales.
3. If sales increase by 20%, inventory increases approximately by the square root of 20.
4. Useful for planning purchasing schedules in pharmacy stores and hospitals.

Advantages of EOQ

- a. Minimizes total inventory cost
- b. Balances ordering and holding costs
- c. Prevents stock-outs
- d. Helps maintain optimal inventory levels
- e. Provides a systematic approach to inventory management.

Limitations of EOQ

- a. Assumes constant demand and stable consumption pattern
- b. Assumes prices remain constant
- c. Assumes unlimited storage space
- d. Ordering and carrying costs may not be accurately measurable
- e. Not suitable for irregular or seasonal demand
- f. Does not consider quantity discounts
- g. Not time-phased (assumes immediate replenishment)
- h. EOQ may not match minimum supplier order quantities
- i. Requires accurate and updated stock records
- j. Less effective when multiple items must be ordered simultaneously

Lead time

Lead time is the total time taken from ordering the materials to receiving them into inventory.

or

Lead time is defined as the time interval between placing an order with the supplier and the actual receipt of the ordered stock in the pharmacy or store.

- It plays a crucial role in determining order quantity, re-order level, and safety stock.
- Lead time is a critical factor in inventory control. Understanding its components ordering time, delivery time, and receiving time helps pharmacists plan purchases effectively.
- Proper consideration of lead time ensures uninterrupted medicine availability, optimal stock levels, and efficient pharmacy operations.
- Components of Lead Time: Lead time is the sum of three major components:
 - **Lead Time = Ordering Time + Delivery Time + Receiving Time**

1. Ordering Time: Ordering time is the time taken to place an order after identifying the need for stock replenishment.

Factors affecting ordering time:

1. Selection of supplier
2. Assessment of product demand
3. Negotiation of supply terms

4. Availability of discounts and credit facilities

5. Approval procedures

2. Delivery Time: Delivery time is the time taken by the supplier from receipt of the order to dispatch and transport of goods.

Activities involved:

1. Order processing
2. Separation and picking of items
3. Billing and documentation
4. Packing
5. Selection of transport method

Factors affecting delivery time:

1. Non-availability of ordered stock
2. Inadequate clerical staff
3. Distance from supplier
4. Transportation delays

3. Receiving Time: Receiving time is the time taken by the pharmacy to receive the dispatched stocks.

Factors affecting receiving time:

1. Efficiency of transport system
2. Location of pharmacy (urban vs rural)
3. Road and infrastructure facilities
4. Handling and unloading procedures

Pharmacies located in rural or remote areas usually experience longer receiving time.

Safety Stock / Buffer Stock

Safety stock refers to the extra quantity of inventory kept as a buffer to meet unexpected increases in demand or delays in supply. It acts as a protective cushion to ensure uninterrupted operations and customer service.

or

Safety stock is the minimum additional quantity of materials maintained to prevent stock-out due to unforeseen fluctuations in demand or supply.

- Safety stock plays a vital role in inventory management by acting as a buffer against uncertainty.
- Maintaining an optimum level of safety stock helps organizations balance between avoiding stock-outs and minimizing carrying costs, leading to efficient and economical inventory control.

Importance of Safety Stock

1. Acts as a buffer against uncertainty
2. Prevents stock-out situations
3. Ensures continuous production and service
4. Helps maintain customer satisfaction

Need for Safety Stock

1. Sudden increase in material usage
2. Inaccurate demand forecasting
3. Delay in delivery by suppliers
4. Variation in lead time

Effects of Stock-Out:

1. Production disruption
2. Loss of customers
3. Failure to compete with other firms
4. Inability to fulfill customer needs

5. Loss of goodwill and revenue

Optimal Level of Safety Stock

• **Low safety stock**

- Frequent stock-outs
- High opportunity cost
- Production interruptions

• **High safety stock**

- Increased carrying and storage costs
- Capital blockage
- Risk of obsolescence and expiry

Hence, optimum safety stock level must be maintained.

Advantages of Safety Stock

1. Prevents zero-stock situations
2. Compensates for forecasting errors
3. Ensures uninterrupted supply
4. Improves customer service
5. Reduces emergency purchasing

Disadvantages of Safety Stock

1. Increases storage and carrying costs
2. Blocks working capital
3. Does not account for extreme or unusual delivery delays
4. Requires periodic review of reorder level
5. Risk of wastage or expiry

Re-Order Quantity Level (Re-Order Point)

- The re-order quantity level, also called the re-order point, is the inventory level at which a fresh order for materials should be placed. It ensures that new stock arrives before the existing stock is exhausted, thereby preventing stock-out situations.

or

- Re-order level is the level of inventory at which a new purchase order is initiated to replenish stock.
- The re-order quantity level is a critical element of inventory control that helps determine the right time to place an order.
- By considering lead time, usage rate, and safety stock, organizations can maintain continuous availability of materials while avoiding overstocking and unnecessary costs.

Concept of Re-Order Level

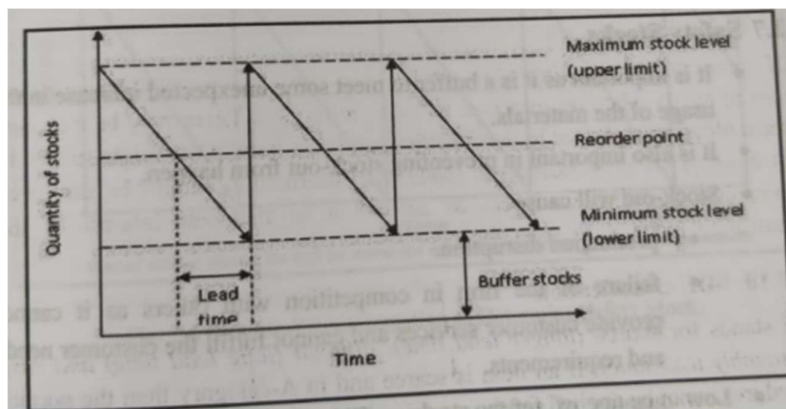
- Re-order point is generally determined based on: Rate of usage of materials, Lead time and Safety stock
- It is assumed that when the inventory reaches the re-order level, the available stock is just sufficient to meet demand during the lead time.

Factors Determining Re-Order Level

1. Delivery time stock: Inventory required to meet demand during the lead time.
2. Safety stock: Minimum inventory maintained to protect against: Sudden increase in demand and Delay in supply

Formula for Re-Order Level

Re-order level = (Maximum daily / weekly / monthly usage × Lead time) + Safety stock



Graphical Representation

- Maximum stock level – Upper limit of inventory
- Re-order point – Level at which new order is placed
- Minimum stock level – Lower limit of inventory
- Buffer / safety stock – Extra stock to prevent stock-out

As stock decreases with time, once it reaches the re-order point, a new order is placed so that stock does not fall below the minimum level.

Minimum Stock Level

- The minimum stock level is the quantity that must be maintained at all times.
- If inventory falls below this level: Customer demand cannot be met
- Factors affecting minimum stock level:
 1. Lead time: Time taken to process and receive the order.
 2. Rate of consumption: Average usage of material.
 3. Nature of materials
 - Regular-use items → Minimum stock required
 - Special-order items → Minimum stock may not be required

Maximum Stock Level

- The maximum stock level is the upper limit of inventory beyond which stock should not be held.
- Problems of exceeding maximum level:
 - a. Overstocking
 - b. Increased material cost
 - c. Blockage of working capital
 - d. Need for more storage space
 - e. Higher risk of wastage, expiry, and obsolescence

Importance of Re-Order Level

- Prevents stock-out situations
- Ensures uninterrupted production or service
- Helps maintain optimum inventory levels
- Reduces emergency purchasing
- Improves inventory planning

Bin Card System

- Bin Card System is a method of inventory control in which a separate card is maintained for each item, showing the details of receipts, issues, and balance of stock on a day-to-day basis.
- The Bin Card System is one of the simplest and most reliable methods of inventory control.
- The bin card is usually kept near or attached to the storage bin or shelf containing the product, allowing easy and quick access to stock information.
- The Bin Card System is a basic yet effective inventory control method that provides real-time information on stock levels.
- When maintained properly and updated daily, it helps pharmacists ensure efficient stock management, FIFO compliance, and reduced wastage, making it an essential tool in pharmacy inventory management.

Contents of a Bin Card: A bin card contains the following information:

<u>Bin Card</u>							
Material Code: Material Description: Location: Unit of Measurement:				Maximum Level: Minimum Level: Reorder Level:			
Date	Doc No.	Received from/Issued to	Receipt	Issue	Balance	Verification with SL Date & Verified by	

- 1) Name of the product
- 2) Manufacturer's name
- 3) Batch number
- 4) Date of supply
- 5) Expiry date
- 6) Unit price
- 7) Quantity received
- 8) Quantity issued / sold daily
- 9) Balance stock after each transaction
- 10) Signature of the person making the entry

Working of Bin Card System

1. A separate bin card is prepared for every product.
2. Whenever stock is received, the quantity is entered in the bin card.
3. When stock is issued or sold, the quantity is deducted and the balance is updated.
4. Entries are made on a daily basis.
5. The updated balance shows the current stock position at any time.
6. Older stock is issued first by following the First-In-First-Out (FIFO) principle.

Advantages of Bin Card System

1. Simple and easy to maintain
2. Provides accurate and up-to-date stock information
3. Helps in preventing stock-outs and over-stocking

- | | |
|--|---|
| 4. Facilitates FIFO method, reducing expiry losses | 6. Useful for physical stock verification |
| 5. Assists in timely re-ordering | 7. Reduces chances of pilferage and error |

Limitations of Bin Card System

1. Requires regular and careful updating
2. Time-consuming when the number of items is large
3. Does not show the monetary value of stock
4. Chances of error if entries are not made immediately
5. Needs supervision to maintain accuracy

Perpetual Inventory Control Method

- Perpetual inventory control is a system of inventory management in which the stock balance of each item is continuously updated and can be obtained on any day from stock records.

Or

- It is defined as a system in which the quantity and value of inventory items can be known at any time from stock records without waiting for a physical stock-taking at the end of a period.
- In this method, every receipt, issue, purchase, and consumption of materials is recorded immediately in inventory records, thereby providing a continuous (perpetual) record of stock position
 - The Perpetual Inventory Control Method is one of the most effective and accurate systems of inventory control.
 - The Perpetual Inventory Control Method is a reliable and systematic approach that provides continuous information about inventory levels.
 - With regular updating and computer support, it ensures accurate stock control, reduced losses, and efficient management, making it highly suitable for hospital pharmacies and industrial inventory systems.

Features of Perpetual Inventory Control

1. Continuous recording: All purchases, issues, and returns are recorded as and when they occur.
2. Running balance maintained: Inventory cards or computer systems show a running balance of both quantity and cost.
3. Regular physical verification: Items are physically counted on a daily, weekly, or monthly basis, ensuring that each item is verified at least once.
4. Detection of discrepancies: Differences due to human error, pilferage, leakage, breakage, or loss are easily identified.
5. Immediate corrective action: Records are adjusted promptly when discrepancies are detected.

6. Use of computers: Computerized inventory systems simplify record-keeping and provide real-time stock information.

Procedure of Perpetual Inventory Control

1. Recording of all receipts and issues in bin cards / stock cards
2. Maintenance of stores ledger
3. Continuous update of stock balances
4. Periodic physical stock verification
5. Comparison of physical stock with recorded stock
6. Adjustment of discrepancies

Advantages of Perpetual Inventory Control

1. Provides accurate and up-to-date stock information
2. Helps in avoiding stock-outs and over-stocking
3. Facilitates better planning and timely reordering
4. Detects pilferage, theft, and wastage
5. Eliminates the need for year-end stock taking
6. Supports efficient budget and purchase control
7. Improves accounting accuracy

Disadvantages of Perpetual Inventory Control

1. Requires skilled manpower
2. Involves higher administrative cost
3. Continuous record-keeping can be time-consuming
4. Errors may occur if entries are not updated properly
5. Needs effective supervision and discipline

Physical Inventory

- Physical inventory refers to the actual physical verification and counting of stock available in the store or pharmacy at regular intervals such as weekly, monthly, or quarterly. It involves comparing the physically available stock with the recorded stock to ensure accuracy.

or

- Physical inventory is the method of inventory control in which the actual stock is physically counted at regular intervals to determine the correct stock position.
- By regularly verifying stocks, pharmacists can prevent pilferage, spoilage, and expiry losses, thereby ensuring efficient and economical inventory management.

Procedure of Physical Inventory

1. Physical verification of stock: All medicines and materials are physically counted.
2. Identification of stock categories: During verification, the following are identified:
 - Non-moving items
 - Stocks nearing expiry
 - Slow-moving items
 - Dead stock
3. Recording of stock position: The counted stock is recorded in separate inventory sheets or stock registers.
4. Comparison with records: Physical stock is compared with book records.

5. Corrective action: Discrepancies due to pilferage, spoilage, breakage, or errors are corrected.

Importance of Physical Inventory

1. Helps in identifying non-moving and dead stock
2. Enables replacement or return of slow-moving stock to suppliers
3. Prevents expiry-related losses
4. Detects pilferage and spoilage
5. Ensures accuracy of inventory records
6. Improves stock planning and purchasing decisions

Advantages of Physical Inventory

1. Simple and easy to understand
2. Accurate method of stock verification
3. Helps in controlling theft and wastage
4. Reduces financial losses due to expiry
5. Improves coordination between supplier and retailer
6. Provides actual stock position

Limitations of Physical Inventory

1. Time-consuming process
2. May interrupt routine pharmacy operations
3. Not suitable for large inventories if done frequently
4. Errors may occur during manual counting

Open-to-Buy (OTB) Budget System

- Open-to-Buy budget system is a method of inventory control in which a fixed amount is allocated for purchasing stock during a specific period, and purchases are made only within the remaining available budget.
- The system is based on the principle that: Purchases should be made only after considering available budget, existing stock, and expected sales.
- The Open-to-Buy (OTB) Budget System is an inventory control and financial planning method commonly used in hospital pharmacies.
- It helps in controlling purchases by ensuring that inventory is bought within the limits of an approved budget.
- The Open-to-Buy Budget System is an effective inventory control tool that balances financial control with stock availability.
- By linking purchasing decisions to a predefined budget, it helps hospital pharmacies minimize over-stocking and stock-outs, ensuring efficient and economical inventory management.

Procedure of Open-to-Buy Budget System

1. Budget preparation: During hospital budget preparation, a stipulated amount is allocated as the pharmacy budget based on the previous year's sales and consumption data.

2. Allocation of pharmacy budget: The total pharmacy budget is divided into monthly or quarterly limits.
3. Ordering of stock: Based on sales requirements and consumption trends, the pharmacy manager places orders.
4. Debit of purchases: The value of purchased medicines is debited from the allocated budget.
5. Monitoring of balance: The remaining open-to-buy amount is continuously monitored.
6. Control of purchases: Purchases are restricted once the budget limit is reached.

Advantages of Open-to-Buy Budget System

- | | |
|---|--|
| 1. Prevents over-stocking | 5. Avoids unwanted stock accumulation |
| 2. Reduces stock-out situations | |
| 3. Ensures optimum utilization of funds | 6. Improves coordination between sales and purchases |
| 4. Helps in purchase planning and control | 7. Facilitates budget monitoring and accountability |

Limitations of Open-to-Buy Budget System

1. Depends heavily on accurate sales forecasting
2. Not suitable during sudden emergencies
3. Requires continuous monitoring
4. May restrict purchase of unexpectedly required items
5. Ineffective if previous data is inaccurate

HML Classification

- HML classification is an inventory control technique based on the unit price of items. HML stands for: H – High, M – Medium, L – Low
- Items with higher unit cost require stricter control than items with lower unit cost.
- This method is similar to ABC analysis, but instead of annual consumption value, it is based only on the unit value (cost per item).
- By applying stricter control to high-value items and simpler control to low-value items, it helps organizations minimize losses and manage inventory efficiently, especially in pharmacy and hospital settings.
- Basis of HML Classification
 - Items are listed in decreasing order of unit value
 - Management fixes price limits to divide items into three categories:
 - High-value items
 - Medium-value items
 - Low-value items

Categories under HML Classification

High (H) Items	Medium (M) Items	Low (L) Items
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• Items with very high unit price • Require strict control and close supervision • Loss or wastage causes heavy financial loss	• Items with moderate unit price • Require moderate level of control	• Items with low unit price • Require minimum control • Can be stocked in larger quantities
Examples		
• Anticancer drugs • Biologicals • Specialized injectables	• Branded antibiotics • Cardiac medicines	• Paracetamol tablets • Multivitamins • Common syrups

Importance of HML Classification

1. Helps in cost-based inventory control
2. Assists in deciding level of supervision
3. Reduces financial loss due to wastage or pilferage
4. Improves purchase planning

Advantages of HML Classification

1. Simple and easy to implement
2. Focuses on unit cost control
3. Helps in preventing loss of high-cost items
4. Useful for stores and pharmacy management
5. Can be combined with other methods

Limitations of HML Classification

1. Does not consider usage rate or consumption
2. Ignores criticality of items
3. High-cost items with low usage may be overemphasized
4. Price fluctuations may affect classification

FSN Classification

- FSN classification is an inventory control technique based on the rate of consumption or movement of items. It is particularly useful in controlling obsolescence, expiry, and dead stock.
- FSN stands for: F – Fast moving, S – Slow moving, N – Non-moving
- The system is based on the principle that:
Items differ in the frequency of use and speed of movement, and control measures should be applied accordingly.
- FSN classification is a practical and effective inventory control method that focuses on the movement of items.
- By identifying fast, slow, and non-moving items, organizations can prevent obsolescence, reduce expiry losses, and improve inventory efficiency, especially in pharmacy and hospital settings.

Categories under FSN Classification

Fast Moving (F) Items	Slow Moving (S) Items	Non-Moving (N) Items
• Items that are issued or sold frequently • High consumption rate • Regular demand	• Items with low rate of consumption • Issued occasionally • Demand is irregular	• Items not issued for a long period • No demand during a specified time
Characteristics		
• Require continuous replenishment • Need close monitoring • Stock-outs must be avoided	• Require periodic review • Risk of expiry if overstocked • Ordering should be cautious	• High risk of obsolescence and expiry • Should be identified for disposal or return • No fresh purchase required
Examples		
• Common analgesics • Antibiotics for routine infections • Paracetamol tablets	• Specialized medicines • Seasonal drugs	• Outdated formulations • Drugs replaced by newer therapies • Obsolete equipment parts

Importance of FSN Classification

- Helps in identifying non-moving and dead stock
- Prevents obsolescence due to change in technology
- Reduces expiry-related losses
- Assists in inventory rationalization
- Improves space utilization

Advantages of FSN Classification

1. Simple and easy to apply
2. Effective in controlling dead stock
3. Helps in inventory optimization
4. Improves decision-making
5. Reduces wastage and storage costs

Limitations of FSN Classification

1. Does not consider cost or criticality
2. Requires regular updating
3. Seasonal demand may affect classification
4. Depends on accurate consumption data

SDE Classification

- SDE stands for: S – Scarce, D – Difficult, E – Easy
- The system is based on the principle that:
Items with longer or uncertain lead times require greater control, irrespective of their cost.
- SDE classification is an inventory control technique based on the availability of items and their lead time.
- It helps inventory managers decide the degree of control required depending on how easily an item can be procured.
- When combined with ABC analysis, it enables inventory managers to apply appropriate control measures, ensuring uninterrupted supply and efficient inventory management.

Categories under SDE Classification

Scarce (S) Items	Difficult (D) Items	Easy (E) Items
- Scarce items are those which have a very long and uncertain lead time. - Reasons for scarcity: - Imported items - Not easily available in the local market - Very difficult or time-consuming to manufacture	Difficult items are those with a long but predictable lead time.	Easy items are those with a short and reasonably predictable lead time.
Characteristics		
- Difficult to procure - Limited suppliers - High risk of stock-out - Require advance planning and higher safety stock	- Limited manufacturers - Require advance ordering - Moderate availability - Need careful monitoring	- Easily available in the market - Multiple suppliers - Minimal procurement risk - Simple ordering process
Examples		
- Imported vaccines - Specialized oncology drugs - Rare antidotes	- Specialized formulations - Low-demand but important medicines	- Common analgesics - Multivitamins - Basic consumables

Importance of SDE Classification

- Helps in procurement planning
- Prevents stock-outs of critical items
- Assists in deciding safety stock levels
- Useful for emergency preparedness
- Improves supply chain efficiency

Relationship between SDE and ABC Classification

- Scarce + A-category items → Normal stocking procedures cannot be followed & Require special procurement strategies and close monitoring
- Easy + A-category items → Need strict control due to high cost, but procurement is simpler
- Easy + C-category items → Require minimal attention and simple control

Advantages of SDE Classification

- Focuses on availability and lead time
- Helps in advance procurement planning
- Reduces emergency purchases
- Improves continuity of supply
- Simple and practical approach

Limitations of SDE Classification

- Does not consider cost of items
- Subjective classification
- Requires frequent review due to market changes
- Not suitable when lead time fluctuates widely