HOSPITAL PHARMACY SERVICES

PROCUREMENT AND STORAGE OF DRUGS IN HOSPITALS

Procurement

- Procurement is defined as the process of acquiring supplies through purchases from manufacturers, their agents such as distributors, or from private/public suppliers.
- Purchasing of medicines starts with framing of buying policies and ends with receiving, stocking, and payment.

Components of a Good Drug Procurement Policy

An efficient and effective drug procurement policy/program includes:

1. An effective and efficient agency to handle procurement, storage, and distribution.
2. Adequate budgetary allocation.
3. Essential Drug List (EDL) or priority drug list with periodic review (additions/deletions).
4. Effective and transparent tender/purchase system.
5. Scientifically designed warehouses with facilities for proper storage.
6. Efficient logistics and Management Information System (MIS).
7. Efficient quality assurance setup.
8. Effective outsourcing services for MIS, transport, communication, and information.

Strategies for Good Procurement

The efficiency of procurement depends on ensuring the **six rights**:

- Right Item
- Right Time
- Right Cost
- Right Source
- Right Quantity
- Right Quality

Key Questions to be Analysed:

- What to order?
- Whom to order from?
- How much to order?
- At what cost?
- What standards to set?
- When to order?

Steps in Procurement

i) Procurement of Cost-Effective Medicines

- Hospitals should maintain an **Essential Drug List** with priority items and specifications.
- Quantities must be scientifically determined to prevent shortages or excess stock.

ii) Indenting of Items and Quantities

- Ensures economical use of the available budget.
- Items are selected based on priority.

Types of Indents:

1. **Annual Indents** – For one year, prepared before the start of the financial/calendar year, based on past consumption and estimated needs.
2. **Supplementary Indents** – For unforeseen items/quantities not included in annual indents.
3. **Emergency Indents** – For urgent and immediate requirements, made at any time.

iii) Selection of Reliable Suppliers

- Suppliers must provide good-quality products.
- Selection involves **pre-qualification analysis** considering:
    - Market standing
    - Acceptance of products by others
    - Licenses and approvals
    - Service reliability
    - Past experience of customers

iv) Ensuring Timely Delivery

- Supply orders must be monitored carefully.
- Delivery should be made to specified centers (central/regional stores).

v) Fixing Lowest Possible Total Cost

- Factors to be considered:
    - Unit cost
    - Visible costs
    - Hidden costs
    - Inventory holding costs
    - Operating costs
    - Capital costs

Methods of Procurement

1. Direct purchase from manufacturer/regional centers

2. Direct purchase from wholesalers/stockists
3. Purchase from rack jobbers
4. Purchase through bids (open, restricted, quotations)
5. Purchase through competitive negotiation
6. Purchase through contracts (fixed quantity, running, rate contracts)
7. Local purchase (emergency purchase)
8. In-house manufacture of medicines in hospitals

1. Direct Purchase from Manufacturers

- Economical and safe method.
- Possible variations in quality/packing.
- At least two suppliers should be contracted for each item to avoid supply failure.

2. Direct Purchase from Wholesalers/Stockists

- In India, ~90% of pharmacy merchandise comes via wholesalers.
- They anticipate demand, provide quick delivery, and offer credit facilities.

3. Purchase from Rack Jobbers

- Special wholesalers dealing in limited items.
- Maintain and display stocks inside pharmacies with profit margins guaranteed.
- Less important in government hospitals.

4. Purchase Through Bids/Tenders

- Formal offers made under specific terms.
- Types:
    - **Open tenders** – Quotations invited locally, regionally, nationally, or internationally.
    - **Restricted tenders** – Suppliers pre-qualified based on GMP, WHO/ISO certification, finances, past supply history.
    - **Quotation invitations** – Simple request for price offers without complex tender procedures.

5. Competitive Negotiation

- Buyer requests quotes from 3–10 suppliers.
- Bargaining is used to finalize price/service terms.

6. Purchase Through Contracts

- Legal agreements with manufacturers/agents.

Types of Contracts:

- **Fixed Quantity Contract** – For a definite quantity in a fixed time.
- **Running Contract** – For estimated/variable quantities over time.
- **Rate Contract** – Supply at fixed rates during contract period.

7. Local Purchase (Emergency Purchase)

- For urgent needs when stocks run out.
- Purchased locally from retailers/wholesalers at market price.
- Limited to 10% of the hospital's budget.
- Must be documented in a **separate LP register**.

8. In-House Manufacture

- Some hospitals (e.g., CMC Vellore) have manufacturing units.
- Selected drugs are prepared to meet hospital needs.

Drug Storage

Definition

- Storing of drugs before distribution/sale is called **warehousing**.
- Proper storage is crucial to maintain **quality, safety, and efficacy**.

Storage Conditions

- Each material requires specific storage.
- Shelf life is strongly influenced by conditions.
- Schedule P of the Drugs and Cosmetics Act, 1945 specifies requirements.

Example – Vaccines:

- Polio vaccine shelf life depends on storage temperature:
  - –20°C → 24 months
  - 0°C → 6 months
  - 4°C → 3 months

Cold Chain Issues:

- Transport/storage problems may reduce potency.
- Example: Measles vaccine stored at 2–8°C lasts 2 years, but at 40°C it loses potency within 24 hours.

Storage Instructions Found on Labels

- Keep in a cold dry place
- Keep in a cool dark place
- Keep in a cool place (do not freeze)
- Store away from sunlight
- Store below 4°C (do not freeze)
- Store at room temperature (20–25°C)

Recommended Storage Conditions (IP, 1996)

1. Cold place
2. Cool place
3. Room temperature
4. Warm place
5. Excessive heat
6. Controlled room temperature (CRT)
7. Freezer

Cold Place

- Refrigerator (2–8°C).
- Vaccines, sera, glandular preparations, insulin, oxytocin.
- Must not be frozen (proteins may denature).

Cool Place

- 8–25°C.
- Antibiotics, hormones, etc.
- Air-conditioned storage with monitoring records signed by pharmacist 3 times/day.
- ~60–70% of drugs are stored here.

Room Temperature

- 15–25°C (varies seasonally in India).

Warm Place

- 30–40°C.

Excessive Heat

- 40°C.

Controlled Room Temperature

- USP: 20–25°C.
- In India: 15–30°C.

Freezer

- –20°C to –10°C.
- Example: Frozen plasma has 60-month shelf life vs liquid plasma 24 months.

Design and Layout of Drug Store

- Neat, tidy premises with sufficient built-up area.
- Proper ceiling/ventilation.
- Cleanable flooring.
- Adequate lighting.
- Pest-proof construction (no gaps).
- Sufficient furniture and shelving.
- Separate area for damaged/expired items.
- Washing/drainage facilities.
- Reference books and safe lockers.
- Complaint register for hospital staff/patients.

Pest Control

- Pests are a major problem in India.
- Termites damage wooden shelves; rats damage medicines.
- Solutions: rat traps, baits, insecticidal sprays.
- Precautions must be taken to avoid contamination during pest control.

Fire Precautions

- Combustible wastes (paper, cartons, boxes) should be separated.
- Waste disposed daily in bins.
- Install fire extinguishers/detectors.
- Handle flammable materials carefully and check electrical wiring regularly.

Drug Stocking

- After purchase, **stocking** is essential.
- Drugs must be arranged for easy dispensing.

Methods of Stocking:

- Alphabetically
- By therapeutic class

Practices:

- Separate solid dosage forms.
- Classify into tablets, capsules, injections, surgical, laboratory items.
- Follow fire regulations for flammable/explosive items.
- Labels must be clearly visible.
- Use **FIFO/LIFO rotation** to avoid expiry wastage.

Expiry Dates

- Expiry = last date drug is safe and effective.
- Oldest stock must be used first.
- Short-life drugs (<1 year) should be kept separately for frequent checking.
- As per D&C Act 1945: expired drugs must be removed and stored separately in marked areas ("Expired drugs – Not for sale").

Controlled Drug Regulations

- Controlled drugs must be stored in **double-lock metal cupboards** fixed to the wall/floor.
- A designated person is responsible for keys.
- Keys must be kept in a safe place, with no unauthorized access.
- Doctors must carry controlled drugs in lockable bags during home visits.

INVENTORY CONTROL

- **Inventory control or stock control** can be broadly defined as *the activity of checking a shop's stock.*
- However, a more focused definition takes into account the more science-based and methodical practice of not only verifying a business's inventory but also focusing on the many related aspects of inventory management (such as forecasting future demand) within an organization to meet the demand placed upon that business economically.

Role of Inventory Management Software

Inventory management software often plays an important role in the modern inventory control system. It provides timely and accurate analytical, optimization, and forecasting techniques for solving complex inventory management problems.

Typical features of this type of software include:

- **Inventory tracking and forecasting tools** that use selectable algorithms and review cycles to identify anomalies and other areas of concern.
- **Inventory optimization.**

- **Purchase and replenishment tools** that include automated and manual replenishment components, inventory calculations, and lot size optimization.
- **Lead time variability management.**
- **Safety stock calculation and forecasting.**
- **Inventory cost management.**
- **Shelf-life and slow-mover logic.**
- **Multiple location support.**
- **Mobile/Moving inventory support.**

Advantages and Disadvantages of Inventory Control Systems

Inventory control systems have advantages and disadvantages depending on what style of system is being used.

1. **Periodic (Physical) Inventory Control System**
    - In this method, an actual physical count and valuation of all inventory on hand is taken at the close of an accounting period.
    - **Advantages**: Periodic inventory is technically more accurate since it considers both counted and valued inventory.
    - **Disadvantages**: It is more time-consuming compared to perpetual.
2. **Perpetual Inventory Control System**
    - In this system, an initial count of the entire inventory is taken, and then all additions and deletions are closely monitored as they occur.
    - **Advantages**: Perpetual systems can lower the cost of carrying inventory compared to periodic systems.
    - **Disadvantages**: Perpetual systems are typically more costly to run than periodic systems and need to be verified from time to time against an actual physical count due to factors like scrap, human error, theft, and other variables.

Inventory Control in Pharmacy

- Inventory control is the process of managing inventory in order to meet customer demand at the lowest possible cost and with a minimum of investment.
- Unlike many factors in pharmacy, inventory is controllable. The pharmacy decides how much to stock.

Inventory Management in Business

- Managing inventory for a small business is a balancing act between supply and demand.
- Several methods of inventory control are used by businesses to gauge the needs of consumers and the company, including:
    - Minimum stock levels.
    - Just-in-Time (JIT).
    - Economic Order Quantity (EOQ).
- Inventory control methods vary across companies and commodities.

- The method that works best for slow-moving items might not work as well for fast-moving items.
- There is no single perfect method for managing inventory.
- A "holy grail" or magic formula for perfect inventory levels does not exist.

ABC Analysis

- The **ABC analysis** provides a mechanism for identifying items that have a significant impact on overall inventory cost, while also providing a mechanism for classifying stock into different categories that require different levels of management and control.
- ABC analysis suggests that inventories of an organization are not of equal value.
- Therefore, inventory is grouped into three categories (A, B, and C) in order of their estimated importance.

Examples of ABC Classes:

- **A items**: 20% of the items account for 70% of the annual consumption value of the items.
- **B items**: 30% of the items account for 25% of the annual consumption value of the items.
- **C items**: 50% of the items account for 5% of the annual consumption value of the items.

Another recommended breakdown:

- **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.
- The main work in this analysis is the classification and identification of different types of inventories to determine the degree of control required for each.
- In many firms, stocks are used at very different rates, so items are classified under categories A, B, and C, on the basis of usage, bulk, value, size, durability, utility, availability, and criticality.
- Items should be controlled with due weightage to these differential characteristics.

VED Analysis

- **VED analysis** is an inventory management technique that classifies inventory based on its functional importance.
- It categorizes stock under three heads: **Vital, Essential, and Desirable.**

Definitions:

- **V – Vital items:**
  Items whose non-availability renders the equipment or the whole production line completely inoperative or unsafe. If these items are not readily available, there is total loss of production.

- **E – Essential items:**
  Items whose non-availability reduces equipment performance but does not render it totally inoperative or unsafe. Non-availability may cause temporary loss of production or disruption of work. Replacement can often be delayed without serious impact, and temporary repairs are sometimes possible.
- **D – Desirable items:**
  Items that are mostly non-functional and do not significantly affect performance. The number of vital spares in a plant is generally very few, while most spares fall under essential or desirable categories.

Combining ABC and VED

- The decision regarding the stock of spares depends not only on how critical the spares are from a functional point of view (VED analysis) but also on their annual consumption cost (ABC analysis).
- Therefore, both ABC and VED analyses should be combined for effective spare parts control.

Economic Order Quantity (EOQ)

- The basic decision in EOQ is to determine the amount of stock to be ordered at a particular time so that the total of ordering and carrying costs is minimized.
- A firm should place optimum orders that are neither too large nor too small.
- EOQ is the level of inventory order that minimizes the total cost associated with inventory.

Assumptions of EOQ Model:

1. A firm has a steady and known demand of **D units** each period for a particular input.
2. The firm consumes the input at a uniform rate.
3. The cost of carrying stocks is a constant amount **C per unit per period.**
4. The cost of ordering inputs is a fixed amount **O per order.** Orders are delivered instantly.

Formula:

$$EOQ = \sqrt{\frac{2DO}{C}}$$

Safety Stock

- To avoid stock-outs, firms maintain safety stock.
- Safety stock is the minimum level of inventory desired for an item, based on expected usage rate and lead time for receiving an order.
- **Benefits:** Reduces chances of stock-outs and associated costs.
- **Drawback:** Increases overall inventory investment.
- The optimum level of safety stock is determined by balancing stock-out costs with carrying costs.
- Factors include:
    - Stock-out costs.
    - Variability of usage rates.
    - Variability of delivery times.

LEAD TIME

Lead time is the **total time interval between placing an order for medicines and receiving them in usable condition**.

In simpler terms, it's the **waiting period** — from when a purchase order is raised until the stock is ready for use in the pharmacy.

Components of Lead Time:

Lead time can be divided into several stages:

Component	Description
1. Order Preparation Time	Time taken to prepare and approve the purchase order.
2. Supplier Processing Time	Time taken by supplier to process the order and dispatch goods.
3. Transportation Time	Time taken for shipment from supplier to pharmacy.
4. Inspection & Receiving Time	Time taken to verify the delivered goods and add them to inventory records.

Example:
If a hospital pharmacy orders drugs on 1st June and receives them on 10th June,
the total **lead time = 9 days**.

Importance of Lead Time:

1. **Inventory Planning:** Helps determine *when to place the next order*.
2. **Prevents Stockouts:** Ensures medicines are available even during delivery delays.
3. **Affects Reorder Point:** The reorder level depends directly on the lead time.
4. **Reduces Emergency Purchases:** Predictable lead time allows better cost control.

◆ **Formula:**

Reorder Level (ROL)=Average Daily Usage×Lead Time

If lead time increases, the reorder level should also increase to avoid stockouts.

◆ **Factors Affecting Lead Time:**

- Supplier reliability and location.
- Mode of transportation (air, road, etc.).
- Availability of stock at supplier's end.
- Administrative delays in order approval.
- Seasonal demand or holidays.

Example in Hospital Pharmacy:

If a hospital uses **100 tablets of metformin per day**, and the average lead time is **10 days**, then reorder level = 100 × 10 = **1000 tablets**.
So, the pharmacist should reorder when stock falls to **1000 tablets**.

SAFETY STOCK

Definition:

Safety stock is the **extra inventory kept on hand as a cushion** against uncertainties in:

- Drug demand (usage rate)
- Delivery time (lead time)

It acts as **insurance** to ensure continuity of patient care when there are fluctuations in demand or supply delays.

Importance of Safety Stock:

1. **Prevents Stockouts:** Protects against unexpected surges in medicine use or supplier delays.
2. **Ensures Patient Safety:** Continuous drug availability is critical in hospitals.
3. **Stabilizes Operations:** Prevents interruptions in dispensing and treatment.
4. **Supports Emergency Situations:** Provides backup for urgent needs (e.g., epidemics or sudden admissions).

Formula (Basic):

Safety Stock=(Maximum Daily Usage×Maximum Lead Time)−(Average Daily Usage×Average Lead Time

Example:

If:

- Maximum daily usage = 150 units
- Average daily usage = 100 units
- Maximum lead time = 12 days
- Average lead time = 8 days

Then,
Safety Stock = (150×12) − (100×8) = **1800 − 800 = 1000 units**

So, 1000 units should be kept as **safety stock**.

Factors Affecting Safety Stock:

Factor	Effect
Variation in demand	High fluctuation in drug usage increases safety stock.
Lead time variability	Longer or unpredictable delivery time requires more safety stock.
Criticality of the drug	Life-saving drugs (e.g., insulin, adrenaline) need higher safety stock.
Supplier performance	Reliable suppliers allow lower safety stock levels.

Balancing Safety Stock:

Too much safety stock → increases **carrying cost** (storage, expiry, wastage).
Too little safety stock → increases **risk of stockout** (treatment delay, emergency purchase).

Thus, pharmacies aim for an **optimal safety stock** that balances cost and service level.

DRUG DISTRIBUTION IN THE HOSPITAL

Drug distribution system refers to the **organized process by which medications are stored, prepared, dispensed, and delivered** to patients in a hospital setting.
The main objective is to ensure **safe, accurate, and timely delivery of medications** to achieve optimal patient outcomes.

Types of Drug Distribution Systems

i) Individual Prescription Method

Definition

In this method, medications are dispensed by the pharmacy **against individual patient prescriptions** written by the physician.

Procedure

1. Physician writes a prescription for the patient.
2. Prescription is sent to the pharmacy.
3. Pharmacist dispenses the required quantity of medication (usually for 24 hours or more).
4. Medicines are labeled with patient details and delivered to the ward or directly to the patient.

Advantages

- Personalized medication supply for each patient.
- Easy to maintain prescription records.
- Good for small hospitals with limited patient load.

Disadvantages

- Time-consuming for pharmacy staff.
- Increased chances of **medication errors** due to multiple handling.
- Higher **drug wastage** if therapy is changed or patient is discharged early.
- No continuous pharmacist supervision at ward level.

ii) Floor Stock Method

Definition

In this method, commonly used medications are **stored in bulk on the ward (floor)** for direct access by nursing staff.

Procedure

1. A list of frequently used medications (approved by Pharmacy & Therapeutics Committee) is kept as floor stock.
2. Nursing staff requisition the required quantity periodically from the pharmacy.
3. Medications are stored in a ward cabinet or medication room.
4. Nurses administer the medicines as per physician orders.

Advantages

- **Quick availability** of medicines in emergencies.
- Saves time as frequent pharmacy trips are avoided.
- Simple and convenient for nursing staff.

Disadvantages

- Higher risk of **medication errors** (wrong drug/wrong patient).
- Improper storage may lead to **drug deterioration**.
- **Poor inventory control** and higher chances of pilferage.
- Lack of pharmacist's direct supervision during administration.

iii) Unit Dose Drug Distribution Method (UDDDS)

Definition

Unit dose system is a **pharmacy-coordinated, structured method** of dispensing and controlling medications in **single-dose packages** for individual patients for a **specific 24-hour period**.

Procedure

1. Physician writes medication order → sent to pharmacy.
2. Pharmacist verifies the order for appropriateness (dose, interactions, duplication).
3. Medications are dispensed in **ready-to-administer single-dose packs**, labeled with:
    - Patient's name
    - Drug name, strength, dose, time of administration
4. Unit doses are delivered to the nursing station once or twice daily.
5. Nurses administer medications directly to the patient at scheduled times.

Advantages

- **Highest level of medication safety** (reduced errors).
- Minimizes **drug wastage** (only 24-hour supply dispensed).
- Allows continuous **pharmacist monitoring** of therapy.
- Better **inventory control** and accountability.
- Improves **patient compliance** and documentation.

Disadvantages

- Requires **more manpower** (pharmacists & technicians).
- Initial cost of setting up UDDDS is high.
- Requires space for packaging and storage.

Controlled Drugs Distribution

- *These drugs should be kept under lock and key.*
- *A separate register should be maintained to record them.*

***Procedure**:*

- *The **Medical Superintendent** is overall responsible for handling of controlled drugs.*
- *The **Chief Pharmacist** procures, stores, and dispenses the drugs.*

Prescription of narcotic drugs under Narcotics and Psychotropic Substances Act, 1985 must include the following information:

a) Patient's full name
b) Address
c) Date
d) Name and strength of drug
e) Quantity of drug
f) Signature of prescriber
g) Dose and route of administration

Additional Guidelines for Controlled Drugs

- *If the required drug is not in stock, the complete controlled drug prescription must be written on hospital prescription blank form by a registered medical practitioner and signed.*
- *Delivery of narcotic drugs from pharmacy to wards should be carried out by a reliable person.*
- *After dispensing, nurses resume responsibility for administration, control, and auditing of the inventory.*
- *If the patient refuses or doctor cancels any dose, the nurse should destroy the drug in the sink and record "Refused by patient" or "Cancelled by doctor."*

DISTRIBUTION OF NARCOTIC AND OTHER CONTROLLED SUBSTANCES

Definition of Narcotics

- The English word **narcotic** is derived from the Greek word *narkotikos*, which means *"numbing" or "deadening."*
- Narcotics are **addictive drugs** that reduce the user's perception of pain and induce **euphoria** (a feeling of exaggerated and unrealistic well-being).

Controlled Substances

- A **controlled substance** is a drug or chemical whose **manufacture, possession, or use is regulated by the government.**
- This includes **illicitly used drugs** as well as **prescription medications.**

The distribution of **narcotic drugs and other controlled substances** in hospitals is strictly regulated because of their **high abuse potential, risk of dependence, and legal implications**. Hospitals must comply with **national laws** (e.g., Narcotic Drugs and Psychotropic Substances Act, 1985 – NDPS Act in India) and institutional policies to ensure **safe storage, dispensing, administration, and record-keeping**.

1. Objectives

- Prevent **misuse, diversion, or theft** of controlled substances.

- Ensure **accurate dispensing** to patients with legitimate medical needs.
- Maintain **complete accountability** through proper documentation.
- Comply with **legal and regulatory requirements**.

2. Storage and Security

- Narcotics and controlled drugs are stored in a **locked cupboard/cabinet** located in a **secure area** (e.g., pharmacy or ward drug room).
- Access is restricted to **authorized personnel only** (pharmacist, nurse in charge).
- Cabinets are often **double-locked** with keys held by responsible staff.
- Periodic inspection is done by the **hospital pharmacist** and **drug control authorities**.

3. Requisition and Supply

a) Requisition

- Requisition is made by the **ward/department in charge** using a **controlled drug requisition form**.
- The form must be signed by:
  - The **prescribing physician**
  - The **nurse in charge** of the ward
- Quantity requisitioned must match **actual patient needs**.

b) Supply

- Pharmacist verifies requisition against:
  - Stock available
  - Authorized signatories
- Issues the exact quantity required.
- Records the issue in a **narcotic register** with:
  - Date, drug name, strength, quantity issued
  - Ward name, signature of recipient

4. Administration to Patients

- Administered only **on written prescription** of a registered medical practitioner.
- Nurse records:
  - Date and time of administration
  - Patient name and hospital number
  - Dose and route
  - Remaining balance of drug
  - Her own signature and a witness signature (if policy requires)

5. Record Keeping

- **Mandatory registers** are maintained in pharmacy and wards.

- Each entry includes:
  - Date, drug name, strength
  - Quantity received, issued, administered
  - Running balance
- Registers are **not to be erased** — corrections are done with countersignature.
- Records are preserved for a **minimum of 2 years** (as per NDPS rules) for inspection by authorities.

6. Inventory Control

- **Daily count** of controlled drugs is performed by ward nurse.
- **Monthly/periodic audit** by pharmacist or hospital committee.
- Any discrepancy must be immediately reported to the **pharmacy head** and hospital administration.

7. Disposal of Expired or Unused Narcotics

- Expired, damaged, or unused narcotics are returned to pharmacy.
- Destruction is done as per regulatory guidelines in presence of:
  - Pharmacist
  - Medical officer
  - Authorized committee member
- Proper documentation is maintained.

8. Legal and Ethical Considerations

- Comply with **NDPS Act** (India) or equivalent national laws.
- Follow **hospital policies** and **good pharmacy practice**.
- Breach of rules can result in **legal action** and cancellation of license.

Procedure for Dispensing Controlled Substances for In-Patients

1. Doctor's order for administration.
2. Ordering of ward stock from pharmacy.
3. Narcotics delivery to the ward.
4. Handling of narcotics and controlled drugs in wards by nurse.
5. Charges for narcotics applied to the patient's account.

Telephone Orders and Verbal Orders

Telephone Order

- A doctor may order a controlled drug by telephone if necessary.
- The nurse will write the order in the order sheet, stating that it is a **telephone order**, and will write the doctor's name and her own initials.

- The controlled drugs must then be signed by the doctor with his **signature or initials within 24 hours.**

Verbal Order

- A verbal order may be given by a doctor in **extreme emergencies**, where the time does not permit waiting for a written order.
- The nurse must write the order on the doctor's order sheet, sign it, and ensure that the doctor signs within **24 hours.**

Ordering Non-Ward Substances from Pharmacy

- Drugs that are **not stocked in the nursing station** may be ordered from the pharmacy only with a **written prescription.**
- The amount of drug sent to the nursing unit is limited to the amount covered in the prescription signed by the doctor.
- If more is required, a new signed prescription must be obtained.

The prescription must include the following details:

1. Date.
2. Details of the patient.
3. Patient's hospital number.
4. Amount of drug ordered.
5. Strength.
6. Name of the prescriber and their signature.

Procedure for Dispensing Controlled Substances for Out-Patients

Prescribing Controlled Drugs in Out-Patient Department

Dispensing from the out-patient pharmacy must include:

1. Date.
2. Details of patient.
3. Patient's hospital number.
4. Amount of drug ordered.
5. Strength.
6. Name of the prescriber and their signature.

Dispensing Controlled Drugs for House Use when Pharmacy is Closed

- Occasionally, patients require drugs for use at home when they are discharged from the hospital or released from the emergency ward during hours when the pharmacy is closed.
- In such cases, a prescription signed by a **registered medical practitioner authorized to prescribe narcotics and other controlled substances** is required.

THE CENTRAL STERILE SERVICES DEPARTMENT (CSSD)

The Central Sterile Services Department (CSSD), also known as the Sterile Processing Department (SPD) or the Central Supply Department (CSD), is an integrated unit in hospitals and other healthcare facilities. This department is responsible for performing sterilization and other essential procedures on medical devices, instruments, equipment, and consumables.

Each CSSD unit is equipped with specialized systems and devices to carry out specific sterilization functions, ensuring that articles are safe and ready for immediate use in patient care.

The Central Sterile Supply Department of a hospital is defined as a centralized unit that provides professional supplies and equipment to all specialized departments.

The departments served by CSSD include:

- Nursing departments
- Clinicians
- Specialized laboratories such as the cardiac catheterization lab
- Operating rooms

Disposable, single-use items such as syringes, tubes, urine collection sets, intravenous (I.V.) administration sets, needles, gloves, and blood bags are dispensed through the Central Sterile Supply Room.

The CSSD is generally organized into three distinct zones:

1. **Unclean and Washing Area**
2. **Assembly and Packing Area**
3. **Sterilization Area**

OBJECTIVES OF CSSD

The main objectives of the Central Sterile Services Department are:

- To provide inventoried supplies and equipment to all customer areas within the hospital.
- To supply sterile linen packs, basins, instruments, and other sterile items as required.
- To maintain accurate records on the effectiveness of cleaning, disinfecting, and sterilizing processes.
- To monitor and implement controls necessary to prevent cross-infection, in compliance with infection control policies.
- To establish and uphold sterile processing and distribution standards.

FUNCTIONS OF CSSR

The Central Sterile Supply Room (CSSR) performs **dual functions**:

1. **Nursing Responsibility** – Cleaning, packaging, and distribution of medical equipment and supplies.
2. **Pharmacist's Responsibility** – Manufacturing sterile fluids and ensuring their availability for use.

PHARMACIST'S ROLE IN CSSR

Pharmacists have important responsibilities in the CSSR, including:

- Preparation of bulk solutions and transportation of these solutions in tanks to the CSSR for bottling and sterilization.
- Preparation of dry chemical mixtures which, when dissolved in specified volumes of distilled water, yield the desired product. These are then packed and sterilized by CSSR staff.
- Preparation and packaging of solutions for sterilization under CSSR supervision.

DEPARTMENTS WITHIN CSSR

Sterile processing departments are typically divided into **four major areas**, each with specific functions:

1. **Decontamination**
   - Decontaminating used surgical instruments and medical devices.
   - Operating and maintaining special decontamination equipment, such as automatic washers.
   - Inspecting decontaminated items to ensure complete cleanliness.
2. **Assembly**
   - Organizing cleaned items.
   - Packaging instruments into trays and sets according to hospital requirements.
3. **Sterilization and Storage**
   - Sterilizing assembled trays of instruments.
   - Precisely operating and monitoring sterilization equipment, such as autoclaves.
   - Maintaining detailed records of all items that have been cleaned, sterilized, and stored.
4. **Distribution**
   - Stocking crash carts and organizing sterile medical supplies.
   - Preventing sterile supplies from becoming outdated and maintaining event-related sterility.
   - Delivering sterile supplies where needed and collecting used items for reprocessing.

STERILIZATION EQUIPMENT

- Hot air oven
- Autoclave

STRUCTURAL UNIT OF CSSR

The structural unit of the CSSR comprises two distinct zones separated by central barriers:

- **Collection Window** – For receiving used and contaminated items.
- **Supply Window** – For issuing sterilized supplies.

ADVANTAGES OF CSSR

- Centralized sterilization ensures uniform standards.
- Reduces duplication of sterilization equipment in different departments.
- Helps maintain strict infection control measures.
- Facilitates efficient inventory control and cost management.
- Ensures better training and supervision of staff.

QUALIFICATIONS AND RESPONSIBILITIES OF HOSPITAL PHARMACIST IN CSSR

The hospital pharmacist plays a key role in managing the CSSR. Their responsibilities include:

- Interviewing sales representatives and promoters to evaluate medical supplies.
- Meeting and discussing procedures or specific problems with medical staff.
- Managing purchases, receiving, and storing of supplies.
- Handling inventory, charging, and accounting procedures.
- Teaching and training various groups of healthcare workers.
- Practicing principles of standardization in sterile supply processes.
- Manufacturing sterile and non-sterile preparations in small lots, depending on hospital requirements.