

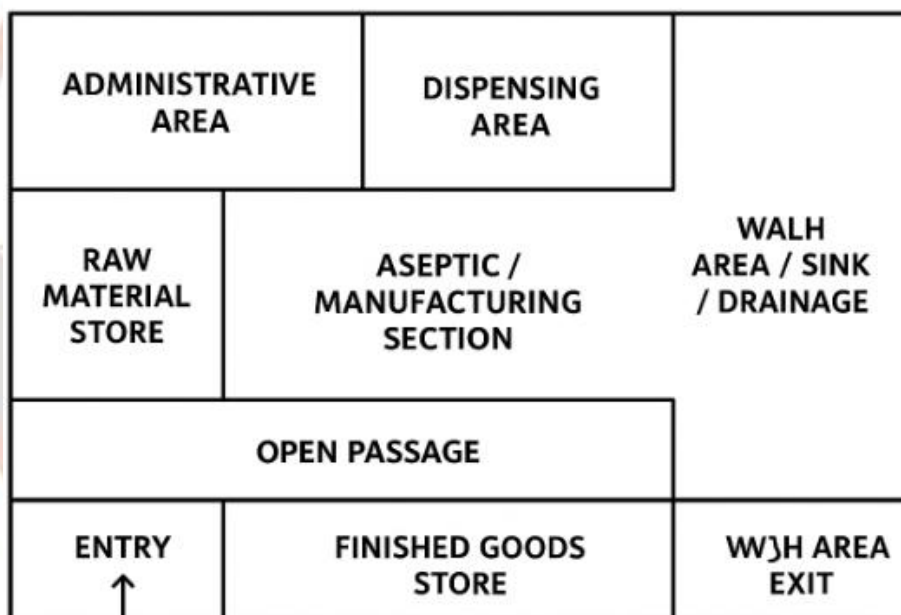
## Hospital Pharmacy – Organization and Management

### Contents

- I. Hospital Pharmacy – Organization and Management
- II. Organizational Structure – Staff, Infrastructure & Workload Statistics
- III. Management of Materials and Finance
- IV. Roles & Responsibilities of the Hospital Pharmacist

## HOSPITAL PHARMACY

### LAYOUT OF A HOSPITAL PHARMACY



### Definition of Hospital Pharmacy

Hospital Pharmacy is the department of a hospital that deals with the procurement, storage, compounding, dispensing, manufacturing, testing, packaging, and distribution of drugs. It is also concerned with the education and research related to pharmaceutical services. A hospital pharmacy is controlled and supervised by a professionally competent and qualified pharmacist.

### Functions of Hospital Pharmacy

The functions of the hospital pharmacy include the following:

1. **Procurement and Purchasing**
  - To provide detailed specifications for the purchase of drugs, chemicals, biologicals, and other pharmaceutical supplies.
2. **Storage and Maintenance**
  - To ensure proper and systematic storage of all drugs and pharmaceuticals under appropriate environmental conditions.
3. **Manufacturing and Distribution**
  - To manufacture and distribute medicaments such as transfusion fluids, parenteral products, tablets, capsules, ointments, and stock mixtures as required within the hospital.
4. **Dispensing and Sterilization**
  - To dispense and sterilize parenteral preparations manufactured within the hospital premises.
5. **Prescription Handling**
  - To dispense drugs according to the prescriptions issued by the medical staff of the hospital.
6. **Labeling and Filling**
  - To fill and label all drug containers from which medicines are to be administered.
7. **Inventory Management**
  - To manage stores which include purchasing, maintaining proper storage conditions, and keeping accurate records.
8. **Drug Information**
  - To establish and maintain a “Drug Information Centre” for providing updated information to healthcare professionals.
9. **Research and Teaching**
  - To cooperate in teaching and research programs conducted by the hospital.
10. **Waste and Expiry Management**
  - To discard expired drugs and remove containers with missing or damaged labels.

### **Objectives of Hospital Pharmacy**

1. To ensure the **availability of the right medication** at the right time, in the right dose, and at the minimum possible cost.
2. To **professionalize the functioning** of pharmaceutical services in the hospital.
3. To act as a **counseling and advisory department** for medical staff, nurses, and patients regarding drug use.
4. To serve as a **data bank for drug utilization** and consumption statistics.
5. To actively **participate in research projects** conducted in the hospital.
6. To implement the **decisions of the Pharmacy and Therapeutics Committee**.
7. To coordinate and cooperate with other departments of the hospital.
8. To plan, organize, and implement pharmacy policy and procedures in accordance with the overall hospital policies.

### **Location and Layout of Hospital Pharmacy**

- The hospital pharmacy should be located within the hospital premises so that both patients and staff can easily access it.
- In a multi-storeyed hospital building, the pharmacy—particularly the dispensing unit—should preferably be located on the ground floor for easy movement of patients and materials.
- The layout should be designed in such a way that there is a **smooth and continuous flow** of personnel and materials to avoid congestion and confusion.

### **Sections Commonly Included in the Layout**

- **Aseptic Area**
- **Manufacturing Section**
- **Raw Material Store**
- **Finished Product Store**
- **Administrative Section**
- **Dispensing Counter**
- **Open Space / Passage**

### **General Layout Types**

1. **General Layout for Out-Patient Department**
  - Includes the dispensing area, waiting space, and storage for commonly used drugs.
2. **General Layout for In-Patient Department**
  - Includes separate space for ward stock, narcotics storage, and preparation areas.
3. **General Layout for Material Storage**
  - Includes systematic arrangement for bulk drugs, glassware, chemicals, and disposables.

### **Floor Space Requirements**

- The **minimum required area** for a hospital pharmacy is **250 sq. ft.**, regardless of hospital size.
- For a **100-bedded hospital**, the requirement is **10 sq. ft. per bed**.
- For a **200-bedded hospital**, the requirement is **6 sq. ft. per bed**.
- The floors should be **smooth, washable, and acid-resistant**.
- In manufacturing areas, **drainage** should be provided and the **walls should be smooth** and painted in **light colors**.
- **Wooden cabinets** should be laminated to prevent damage.
- **Fluorescent lamps** should be installed above the prescription counter for good lighting.
- Counters for **Bunsen burners** should also be available for compounding purposes.

### **Furniture and Equipment Requirements**

1. Prescription case and dispensing counters.
2. Drug stock cabinets with proper shelves and drawers.

3. Sectional drawer cabinets with cupboard bases.
4. Worktables and counters for routine dispensing activities.
5. Sink with drain board for cleaning utensils.
6. Cabinets for storing mortars, pestles, and other compounding tools.
7. Cabinets for glassware such as flasks, funnels, and beakers.
8. Refrigerator of suitable capacity for storing thermolabile drugs.
9. Narcotics safe with individually locked drawers.
10. Office desk with telephone connection and file cabinets.
11. Dispensing windows for both nurses and outpatients.

## Personnel Requirements

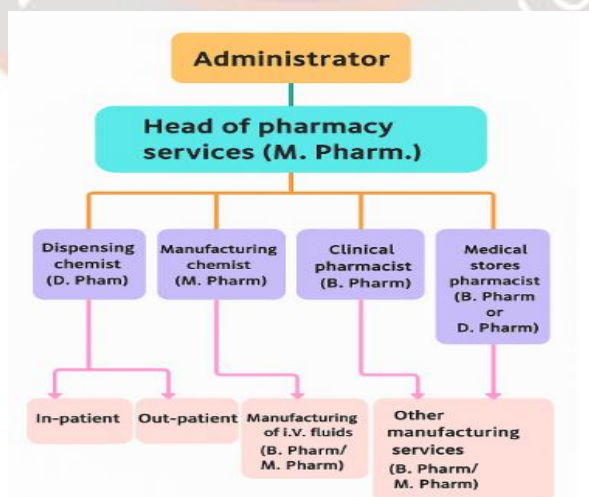
- There are **no standard rules** regarding personnel requirements for inpatient pharmacies.
- The number of pharmacists required is generally determined based on:
  - The **workload**, and
  - The **number of beds** available in the hospital.

### Typical Personnel Requirement by Bed Strength

Bed Strength	Number of Pharmacists Required
Up to 50 beds	3
Up to 100 beds	5
Up to 200 beds	8
Up to 300 beds	10
Up to 500 beds	15

- Pharmacists must have adequate qualifications and experience.
- If drug manufacturing is involved, adequate **technicians, assistants, and peons** are also required.

## ORGANIZATIONAL STRUCTURE OF THE HOSPITAL PHARMACY DEPARTMENT





At the **top level**, there is the **Hospital Administrator**, who oversees all hospital departments including pharmacy services.

Beneath the administrator is the **Head of Pharmacy Services** or **Chief Pharmacist**, who manages the entire pharmacy department. This person is a professionally qualified pharmacist responsible for supervising all pharmacy operations and coordinating with other hospital departments.

The chart is divided into several **functional divisions**, each handling a specific aspect of pharmacy services:

- The Head should be a **postgraduate in pharmacy (M.Pharm)**, preferably specialized in **Pharmaceutics, Pharmacology, or Hospital Pharmacy**.
- Acts as the **coordinator** between pharmacy and non-pharmacy staff.
- Reports directly to the **hospital administrator** and interacts regularly with other medical departments.

### **Requirements and Abilities of a Hospital Pharmacist**

1. **Technical Ability**
  - Should have a sound knowledge of drug formulation, compounding, and dispensing.
2. **Manufacturing Skills**
  - Should be able to develop and supervise the manufacturing section efficiently.
3. **Administrative Ability**
  - Should plan, organize, and control all pharmacy operations effectively.
4. **Inventory Control Ability**
  - Should manage drug stocks, prevent shortages, and control wastage.
5. **Research and Teaching Skills**
  - Should be capable of conducting and participating in research projects and teaching programs.
6. **Knowledge Requirements**
  - Must have thorough knowledge of basic sciences, pharmacology, toxicology, routes of administration, and drug stability.
  - Should provide accurate information about proper handling, preservation, and administration of drugs.

### **Administrative and Supervisory Responsibilities**

- The hospital pharmacist should plan, organize, and control various functions of the pharmacy.
- Prepare daily **work schedules** for the staff.
- Frame **policies and procedures** to ensure smooth workflow.
- Maintain **legal and administrative records** properly.
- If patients are charged for drugs, he must develop an appropriate **charging policy**.

- The **Chief Pharmacist** is responsible for interviewing, selecting, and evaluating pharmacy staff.

### **Inventory and Communication Duties**

- The pharmacist must exercise control over inventories of drugs stored in nursing stations, supply rooms, and clinical units.
- Must communicate effectively with suppliers to ensure timely delivery of quality drugs.
- Should routinely check the **quality, expiry, and integrity** of all drugs and supplies.

### **Research and Development Role**

- Should maintain information about the latest **pharmaceutical journals and research developments**.
- Must advise medical staff about **new methods of preservation, preparation**, and ways to improve the **taste, appearance, and efficacy** of drugs.
- Should possess a clear understanding of **scientific research methods** to correctly evaluate research data.

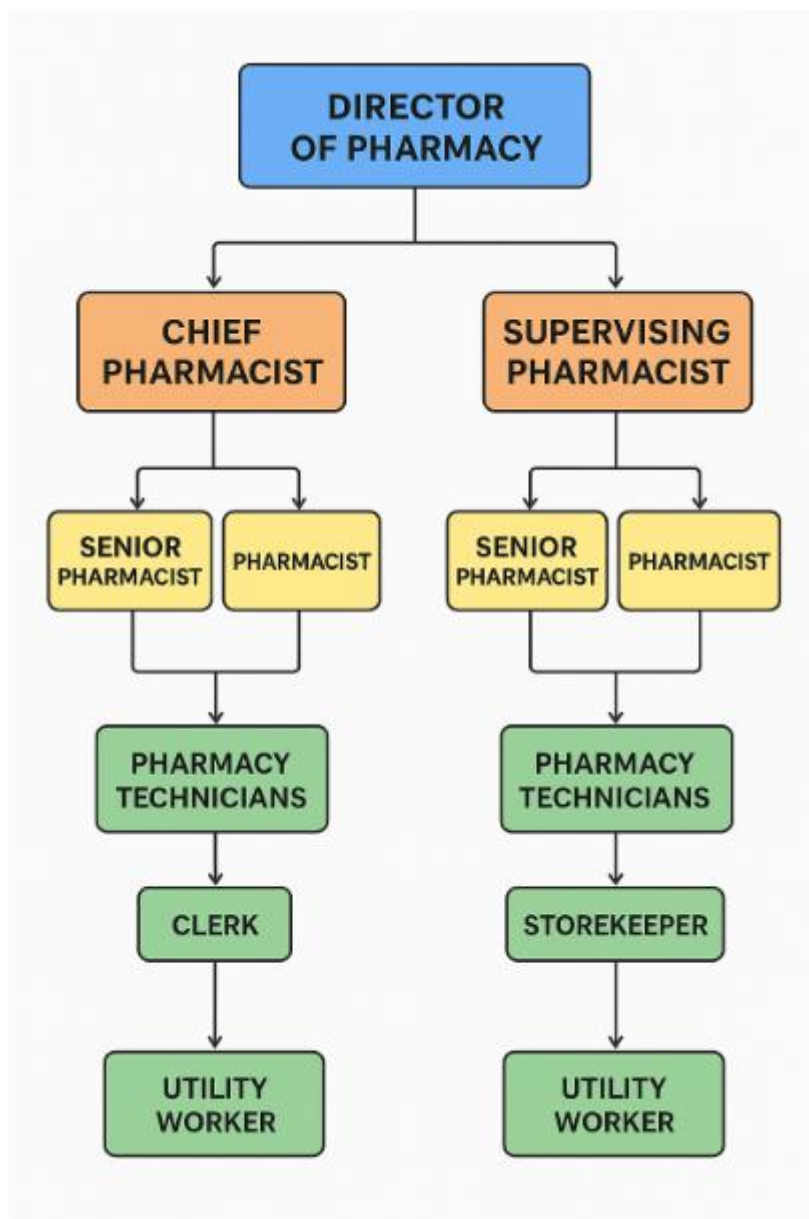
### **Teaching and Training Responsibilities**

- The pharmacy staff can serve as **trainers for nursing staff**.
- Pharmacists should prepare suitable **teaching materials** for nurses, covering topics such as:
  - Proper storage of drugs
  - Correct methods of administration
  - Dosage forms and calculations
  - Percentage and conversion calculations

### **Manufacturing Function in Hospitals**

- Manufacturing within a hospital requires strict **control over supply, quality, equipment, and raw material costs**.
- The hospital pharmacist must organize the manufacturing function with proper **cost analysis** to maintain economy and efficiency.
- Maintaining **high-quality standards** is essential since large quantities of drugs are required for patient treatment.

### **STAFF**



### *Director of Pharmacy*

- The pharmacy department must be managed by a **professionally competent, legally qualified pharmacist**.
- **Qualifications:**
  - Experienced and knowledgeable in hospital pharmacy practice and management.
  - Preferably holds an **advanced management degree** (MBA, MHA, MS) or completed an administrative specialty residency.

### **Responsibilities:**

1. Establish the **mission, vision, goals, and scope of pharmacy services**.

2. Align goals with:
  - Patient needs
  - Hospital or health system requirements
  - Latest trends in healthcare and hospital pharmacy practice
3. Develop, implement, evaluate, and update **departmental plans and activities**.
4. Collaborate with hospital leadership to develop **policies and procedures for safe and effective medication use**.
5. Mobilize and manage **human and financial resources** for optimal pharmacy services.

### *Pharmacists and Support Personnel*

- Employ **adequate, legally qualified, competent pharmacists** to meet patient care needs.
- Temporary or contract pharmacists must meet **same standards as full-time staff**.
- Employ **adequate support personnel** (pharmacy technicians, clerical staff) for efficient operations.
- Each support position must have a **written job description with defined competencies**.
- Support staff must receive **proper training and supervision**.
- **Professional development programs** for staff are recommended.

### *Pharmacy Technicians*

- Complete an **ASHP-accredited pharmacy technician training program**.
- Certified by the **Pharmacy Technician Certification Board**.
- Comply with all **legal requirements**.
- Advanced roles require **additional training and task-specific competencies**.

### *Chief Pharmacist*

- Supervises pharmacy activities in **large general or specialty hospitals**.
- Performs additional related functions as required.

### **Specific Duties:**

1. Implement pharmacy policies and procedures in alignment with hospital and DOH policies.
2. Train and supervise all pharmacy employees.
3. Review and approve duty schedules.
4. Provide drug information to physicians, nurses, and health personnel.
5. Serve as member and secretary of the **Pharmacy and Therapeutics Committee (PTC)**.
6. Evaluate reports on **Adverse Drug Reactions (ADR)** and Infection Control Programs.

### *Supervising Pharmacist*

- Supervises pharmacy activities in **smaller hospitals** or assists in larger ones.

### **Specific Duties:**



1. Assume Chief Pharmacist duties during absence.
2. Supervise record-keeping.
3. Supervise receiving, checking, and storage of drugs and medical supplies.
4. Verify duty schedules.
5. Assist in planning research and educational programs.

### ***Senior Pharmacist***

- Works under general supervision and oversees **small groups of pharmacy staff**.

#### **Specific Duties:**

1. Assist in supervising pharmacy service activities.
2. Implement pharmacy policies according to hospital and DOH guidelines.
3. Supervise Drug Information Center maintenance.
4. Supervise bottling and labeling of compounded stocks.
5. Participate in the **Quality Assurance Program (QAP)**.

### ***Pharmacist***

- Works under general supervision to **fill and dispense drugs** as prescribed.

#### **Specific Duties:**

1. Fill prescriptions accurately.
2. Label all issued drug containers.
3. Check drug manufacture and expiration dates.
4. Participate in medical rounds for medication history.
5. Notify physicians of drug interactions, incompatibilities, or duplicates.

### ***Clerk***

- Handles **documentation and administrative tasks**.

#### **Specific Duties:**

1. Typing, filing, and safekeeping of pharmacy documents.
2. Manage paperwork related to pharmacy operations.
3. Prepare statistical reports on consumption and stock balances.
4. Participate in the QAP.
5. Attend relevant development programs.

### ***Storekeeper***

- Manages **bulk drug storage and distribution**.

### Specific Duties:

1. Receive, check, and record drugs in bulk storage.
2. Record stock releases to active storage.
3. Transfer or withdraw drugs from bulk to active storage.
4. Conduct regular physical inventory checks.
5. Attend seminars and staff development programs.
6. Participate in the QAP.

### Utility Worker

- Assists with **housekeeping and logistics**.

### Specific Duties:

1. Maintain cleanliness and sanitation of pharmacy and storage areas.
2. Maintain pharmacy facilities.
3. Assist in administrative tasks.
4. Help storekeeper with transferring drugs.
5. Participate in the QAP.

## WORKLOAD STATISTICS

### Definition

- A pharmacist's workload can be viewed in terms of work characteristics and professional responsibilities.
- It represents the total function performed by the pharmacy staff in their assigned areas of work within the hospital pharmacy.
- On a monthly basis, the total workload for each section of the pharmacy is collected and included in the departmental report.
- The head of the pharmacy department is responsible for reviewing, approving, and sending these workload statistics to the hospital administration.

### POLICY FOR DETERMINING WORKLOAD STATISTICS

1. Determine the **standard time** required for every activity performed in the pharmacy.
2. Identify and list **all activities involved in the drug distribution process**, and record them in the **workload data reporting sheets**.
3. The collection of workload data should be performed at the **beginning of each month**.
4. The final compiled report must be submitted to the **Head of the Pharmacy Department**.
5. The total workload for each section is to be collected and included in the department report, which is then forwarded to the hospital administration.

6. These reports are used for making **adjustments in work shifts or duty schedules** based on comparative monthly statistics.

## **PROCEDURE TO DETERMINE WORKLOAD STATISTICS**

### **Step 1: Computer-Generated Reports**

Activate and obtain the following reports from the pharmacy computer system:

- Number of **unit doses processed**.
- Number of **bulk doses processed**.

### **Step 2: Log Sheet Collection**

Collect the following log sheets located in the inpatient pharmacy areas:

- **Nursing Unit Inspection Guide**
- **TPN (Total Parenteral Nutrition) Record Sheet**, indicating the number of unit bags prepared.

### **Step 3: Extemporaneous Compounding Records**

- Count the number of medications prepared and recorded in the **Extemporaneous Compounding Log Binder** for the specified time frame.

### **Step 4: Outpatient Pharmacy Workload**

Report the following:

- Number of **single-item prescriptions** processed per month.
- Number of **multiple-item prescriptions** processed per month.

### **Step 5: Total Workload Calculation**

Indicate the total workload for the following activities:

- Unit dose and bulk item preparation.
- TPN (Total Parenteral Nutrition) bags prepared.
- Extemporaneous compounded bulk items.
- CPR box checking and crash cart inspection.
- Floor stock inspection.
- Floor stock narcotic temporary sheet recording.
- Time spent in pharmacy interventions conducted in nursing units.
- Time spent on answering telephone calls related to drug inquiries.
- Time spent on issuing, returning, and inspecting narcotic drugs.
- Time spent inspecting drugs for expiration dates.

- Time devoted to conducting pharmacy in-service programs and lectures.
- Time spent on patient counseling and providing information.
- Outpatient pharmacy workload management.

#### **Step 6: Compilation and Submission**

- Record the total workload statistics from all areas within the pharmacy department in a single **Workload Data Reporting Sheet**.
- Submit the completed **Monthly Workload Data Reporting Sheet** to the Head of the Pharmacy Department.
- The compiled workload statistics should be **announced and presented** to the **Pharmacy and Therapeutics (P&T) Committee**.
- The **Head of the Pharmacy Department** is responsible for reviewing, approving, and forwarding the finalized statistics to the hospital administration.

#### **FORMS REQUIRED FOR WORKLOAD STATISTICS**

The following forms and records are essential for maintaining and analyzing workload data:

1. **Workload Data Reporting Sheet** – for recording total monthly workload statistics.
2. **Nursing Unit Inspection Guide** – for documenting inspection activities in nursing units.
3. **TPN Record Sheet** – for tracking Total Parenteral Nutrition (TPN) bag preparation.
4. **Extemporaneous Compounding Log Binder** – for recording details of compounded medications prepared during the reporting period.

#### **INFRASTRUCTURAL REQUIREMENTS OF A HOSPITAL PHARMACY**

1. The hospital pharmacy should be located on the **ground floor or the first floor** of the hospital building for easy accessibility to patients and hospital staff.
2. It must have **sufficient seating space** for patients waiting to collect their medicines.
3. A **waiting room** should be provided for outpatients. This room should include:
  - **Educative posters** on health, hygiene, and disease prevention.
  - **Reading materials or literature** for patient awareness and health education.
4. The pharmacy should have **suitable space** for the routine manufacturing of bulk preparations such as:
  - Stock solutions
  - Bulk powders
  - Ointments and similar products
5. A separate **office for the Chief Pharmacist** should be provided for administrative work and supervision.
6. A **packaging and labeling area** should be designated for labeling and preparing drugs for distribution.
7. A **cold storage area** should be available for storing temperature-sensitive items such as vaccines, insulin, and biologicals.



8. A **research wing** should be included for conducting studies, drug evaluations, and formulation research.
9. A **pharmacy storeroom** must be provided for keeping stock materials and supplies.
10. A **library** should be established within the pharmacy for reference materials, pharmaceutical journals, and educational resources for the staff.
11. A **radioisotope storage and dispensing area** should be provided, designed according to safety and radiation protection standards, for handling and dispensing radioactive substances used in diagnostics and therapy.

## **MATERIAL MANAGEMENT**

### **Definition:**

Material management deals with **planning, organizing, and controlling the flow of materials** from their initial purchase, through internal operations, to the service point via distribution.

### **Aims of Material Management:**

- Ensure the **right quality** of supplies.
- Procure materials at the **right time**.
- Deliver materials at the **right place**.
- Maintain materials at the **right cost**.

### **Purpose of Material Management:**

1. Achieve **economy in purchasing**.
2. Meet **demands during replenishment periods**.
3. Maintain **reserve stock** to avoid stockouts.
4. Stabilize **fluctuations in consumption**.
5. Provide a **reasonable level of client services**.

### **Four Basic Needs:**

1. Adequate materials on hand when needed.
2. Purchase at **lowest possible prices** without compromising quality.
3. **Minimize inventory investment**.
4. Operate **efficiently**.

### **Goals of Material Management:**

1. **Optimum materials acquisition**.
2. **Optimal inventory turnover rate**.
3. Maintain **good vendor relationships**.
4. Control **material costs**.
5. Ensure **effective issue and distribution**.
6. **Eliminate losses and pilferage**.

### **Economy in Material Management:**

- Contain costs.
- Instill efficiency in all activities.

### **Basic Principles of Material Management:**

1. **Effective management & supervision**, including:
  - Planning
  - Organizing
  - Directing
  - Controlling
  - Reporting
  - Budgeting
2. **Sound purchasing methods.**
3. **Skillful negotiations.**
4. **Effective purchase system.**
5. Keep systems **simple.**
6. Avoid **increasing other costs.**
7. Maintain a **simple inventory control program.**

### **Objectives of Material Management:**

#### **Primary Objectives:**

- Achieve **right price** and **high turnover.**
- Keep **procurement and storage costs low.**
- Ensure **continuity of supply.**
- Maintain **consistency in quality.**
- Develop **good supplier relationships.**
- Focus on **personnel development.**
- Maintain a **good information system.**

#### **Secondary Objectives:**

- Forecasting demand.
- Promote **inter-departmental harmony.**
- Improve products.
- Standardization of materials.
- Make-or-buy decisions for new materials and products.
- Maintain **favorable reciprocal relations.**

### **Material Management Process:**

1. Demand forecasting and planning
2. Purchasing

3. Receipt inspection and storage
4. Inventory control
5. Issue and distribution
6. Disposal and condemnation
7. Minimizing losses and pilferage

### Forecasting and Estimating Demand:

- **Forecasting** estimates demand based on past data and future expectations.

#### Methods:

1. **Last Period Demand (Naïve Forecasting):**
  - Assumes the next period's demand equals the last period's.
  - Example: If 600 pairs of boots sold in February, forecast for March = 600 pairs.
2. **Arithmetic Average / Moving Average:**
  - 3-Month Moving Average =  $(M_1 + M_2 + M_3) \div 3$
  - Uses average demand from preceding months to forecast future demand.
  - Reduces the effect of random variations.

### Standardization of Demand:

- **Definition:** Grouping items of similar specifications or use to simplify selection.
- **Benefits:**
  - Avoids inventory duplication.
  - Reduces variety.
  - Ensures economical purchase cost.
  - Promotes efficient material usage.

### Procurement:

- **Definition:** Process of acquiring supplies.
- **Objectives:**
  - Acquire needed supplies **inexpensively**.
  - Obtain **high-quality supplies**.
  - Ensure **prompt, reliable delivery**.
  - **Distribute procurement workload** efficiently.
  - **Optimize inventory management**.

### Methods of Procurement:

1. **Centralized Procurement:**
  - All purchases are made centrally.
  - **Advantages:**
    - Lower purchasing cost
    - Quantity discounts

- Lower inventory cost
  - Better management control
2. **Decentralized Procurement:**
- Departments purchase according to their needs.

### **Purchasing Procedure:**

1. Draw up specifications.
2. Invite quotations.
3. Prepare comparative statements.
4. Shortlist suppliers.
5. Issue purchase orders.

### **Points to Consider Before Purchasing Equipment:**

- Latest technology
- Repair facility and maintenance
- Upgradability
- Low operating cost
- Ease of installation

## **ROLES AND RESPONSIBILITIES OF HOSPITAL PHARMACIST**

Hospital pharmacists play a crucial role in ensuring **safe, effective, and rational drug therapy** for patients. Their responsibilities are divided into **Indoor Pharmacists** (for in-patients) and **Outdoor Pharmacists** (for out-patients).

### **Indoor Pharmacists**

#### **a) Central Dispensing Area**

1. Ensure that all drugs are stored and dispensed correctly.
2. Check the accuracy of the dosages prepared before dispensing.
3. Maintain proper records of drug receipts, issues, and usage.
4. Prepare and verify patient bills for medicines supplied.
5. Coordinate overall pharmaceutical needs of the patient.

#### **b) Patient Care Areas**

1. Maintain close liaison with nurses and other healthcare professionals.
2. Review the drug administration charts to ensure correct dosage, frequency, and route.
3. Provide instruction, guidance, and assistance to junior pharmacists and trainees.

#### **c) Direct Patient Areas**

1. Identify drugs brought into the hospital by the patient to avoid duplication or interactions.



2. Obtain complete medication history from the patient.
3. Assist in the selection of appropriate drug products based on therapeutic needs.
4. Monitor the patient's total drug therapy for safety, effectiveness, and drug interactions.
5. Counsel patients regarding their medications (dosage, side effects, precautions).

#### **d) General Responsibilities**

1. Ensure that all drugs are handled, stored, and dispensed properly.
2. Participate in cardio-pulmonary resuscitation (CPR) and other emergency care situations.
3. Provide education and training for pharmacists, interns, and pharmacy staff to enhance professional standards.

#### **Outdoor Pharmacists**

##### **a) Central Dispensing Area**

1. Ensure that all drugs are stored and dispensed correctly.
2. Check the accuracy of dosages prepared before dispensing.
3. Maintain proper records of all transactions.
4. Prepare bills for patients promptly and accurately.
5. Keep the pharmacy premises neat, clean, and organized.

##### **b) Patient Care Areas**

1. Periodically inspect the medication storage and dispensing areas.
2. Identify and verify drugs brought into the hospital by patients.
3. Monitor and supervise proper drug use by patients.
4. Counsel patients about proper drug administration and precautions to be followed.

##### **c) General Responsibilities**

1. Ensure that all drugs are handled properly and safely.
2. Participate in cardio-pulmonary emergencies when required.
3. Provide education and training for pharmacists and support staff.
4. Coordinate the overall pharmaceutical needs of the outdoor services to maintain uninterrupted drug supply and patient satisfaction.

## **References**

1. *Hospital Pharmacy* by William E. Hassan
2. *A Textbook of Hospital Pharmacy* by S.H. Merchant & Dr. J.S. Qadry, Revised by R.K. Goyal & R.K. Parikh
3. **ASHP Guidelines: Minimum Standard for Pharmacies in Hospitals**

**\*American Society of Health-System Pharmacy (ASHP).**