

### **A. DRUG DISTRIBUTION SYSTEM IN A HOSPITAL**

- The drug distribution is defined as the physical transfer of drugs from storage area in the hospital to the patient's bedside.
- The overall drug distribution and utilization process in the hospital involves an infinite number of procedures, personnel, departments, equipments and storage facilities.
- It is based upon prescription practice of the physician, requisitioning by nursing station followed by transfers from stores for dispensing at pharmacy, prepackaging, labeling and final distribution from pharmacist stores through inpatients and out-patients window.
- The hospital pharmacy department to establish Standard Operating Procedures (SOP) for distribution of drugs within hospital and verify at various points to ensure safe distribution of quality drugs to all the patients.

#### **1. DISPENSING OF DRUGS TO INPATIENTS:**

- In-patients are those patients, who require hospitalization i.e get themselves admitted in the hospital, stay there for treatment till they are discharged. Medication is administered to patient only upon the written orders from the physician.
- The medication prescription originates in the patient's clinical records and is transmitted to the pharmacy by following ways
  - a) Prescription order is written in a separate form by physician.
  - b) Carbon copy of the prescription order is sent to the pharmacist.
  - c) Prescription order is copied by hospital personnel assigned to the nursing station [1].

#### **2. TYPES OF DRUG DISTRIBUTION SYSTEMS:**

- They are four systems in general use for dispensing drugs for inpatients. They may be classified as follows;
  - i. Individual prescription order system.
  - ii. Complete floor stock system
    - a) Charge floor stock drugs
      - Envelope method

b) Non-charge floor stock drugs

- Drug basket method
- Mobile dispensing unit

iii. Combination of individual & floor stock system

iv. Unit dose dispensing system

a) Centralized unit-dose dispensing (CUDD)

b) De-centralized unit dose dispensing (DUDD) [2]

**i. Individual prescription order system:**

- It is a type of prescription system where the physician writes the prescription for individual patient who obtains the drug prescribed from any medical store or hospital dispensary by paying own charges.
- This system is mainly used in small or private hospitals because of its economic consideration and reduced manpower requirements.

**Advantages:**

- All medication orders are directly reviewed by pharmacists.
- It provides the interaction of pharmacist-doctor, nurse and the patient.
- It provides clear control of inventory.

**Disadvantages:**

- There may be possible delay in obtaining the required medications for administration to the patient.
- Increase in the cost to the patient.

**ii. Complete floor stock system**

- Drugs are stored at the nursing station and are administered by a nurse according to the chart order of the physician. This system is most often used in private hospitals in India.
- The drugs are stored in the pharmacy stores, supplied to the wards/rooms on order and kept under the supervision of registered nurse at nursing station.

**Advantages:**

- The drugs are readily available for administration.
- Minimum return of drugs.
- Reduced in-patient prescription orders.
- Reduction in number of pharmacy personnel required.

- Easy and prompt delivery of the required drug.

**Disadvantages:**

- Increase in chance of medication errors.
- Increase in drug inventory.
- Increase chances of drug deterioration due to lack of proper storage facilities and due to unnoticed drug degradation.
- Increased workload on nurses.

**iii. Combination of individual & floor stock system**

- Falling into this category are those hospitals which use the prescription order system as their primary means of dispensing and also utilize a limit floor stock [1].
- This combination system is most commonly used in hospitals today.
- Selection of charge floor stock drugs: The drugs should be placed under the category of 'charge' drugs depending on pharmacy and therapeutic committee (PTC). The committee will be concerned with the availability of therapeutically effective drugs and their immediate use for diagnosis or symptomatic treatment.
- Selection of Non-charge floor stock drugs: A list of non-charge floor stock is prepared on the basis of following criteria:
  - The cost of preparation
  - The frequency of use
  - The quantity use
  - The hospital budget

**iv. Unit dose dispensing system:**

- Unit dose packages are defined as those medications which are ordered, packaged, handled and administered and charged in the multiples of single dose units containing a predetermined amount of drug or supply sufficient for one regular dose, application or use.
- The pharmacist is held responsible for unit dose dispensing system.
- Example: Single dose disposable syringes of medications and single unit foil or cellophane wrapped capsules and tablets.
- Advantage of unit dose dispensing:
  - Better financial control.

- It prevents the loss of partially used medications.
- It does not require storage facilities at the nursing station.
- It eliminates labeling errors
- There is an accurate medication charge [1].

- Two methods of dispensing unit doses are:

**a. Centralised unit-dose dose dispensing (CUDD):**

- All in-patient drugs are dispensed in unit doses and all the drugs are stored in central area of the pharmacy and dispensed at the time the dose is due to be given to the patient.
- Drugs are transferred from the pharmacy to the indoor patient by medication cards.

**b. Decentralized unit dose dispensing: (DUDD)**

This operates through small satellite pharmacies located on each floor of the hospital.

Procedure:

- Patient profile card containing full date, disease, and diagnosis is prepared.
- Prescription is sent directly to the pharmacist who is then entered in the patient profile card.
- Pharmacist checks medication order.
- Patient profile card and prescription order is filled by pharmacy technicians.
- The nurses administer the drugs and make the entry in their records [3].

Advantages:

- Easy for the administration staff.
  - Accounting becomes easier in certain cases.
  - Better stability of the products
- Ex-Eno-fruit salt in sachets.

Disadvantages:

- High cost.
- Consumes more time and doubtful.
- Occupy more space for storing.
- Ledger posting and inventory control problem [1].

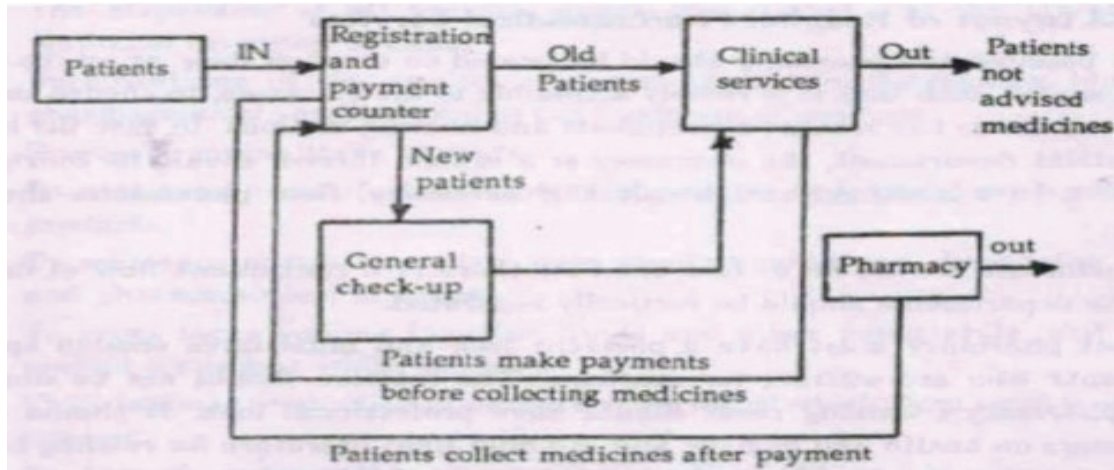


Figure-1: Flow chart of patients in hospital [2]

### 3. CHARGING POLICY AND LABELLING:

- It is necessary to charge from patients for dispensing of prescription in order to meet the expenses.
- Costing the prescription is a policy matter decided by hospital management in consultation with pharmacy incharge.
- Low income group patients are exempted from costing or they are charged at concessional rate.
- Prescription cost can be calculated by adding conversion cost into material cost.
- Conversion cost is worked out in accordance with an established procedure of costing. It also includes the element of profit, decided in consultation with the management.
- Material cost includes the cost of main medicament and other pharmaceutical ingredients e.g. overages and packing materials [3].

### 4. DISPENSING OF DRUGS TO AMBULATORY PATIENTS:

- The terms “Outpatients” or “Ambulatory patients” refers to the patients not admitted in the hospitals. In the modern era the ambulatory care or out patients setting has taken special important interest among the health care professionals. [2].
- **Labeling requirements for drugs dispensed to ambulatory patients (out-patients)**  
Labels must contain:

- Name, address and telephone of the dispenser

- Full name of the patient
- Name of the drug, strength, and amount dispensed
- Directions to the patient regarding how to use the drug
- Name of the prescribing practitioner
- Name or initials of dispensing individual and date dispensed
- DEA caution labels and/or patient ancillary labels for safe use
- Pharmacy's identifying serial number will be affixed to containers of unit of use packaged drugs issued by the pharmacy, applies only to drugs dispensed from an outpatient pharmacy.
- All drugs dispensed to outpatients will be packaged to conform to the Poison Prevention Packaging Act PPPA (PL 91-601), December 30, 1970.

Categories of ambulatory patients:

- Emergency care, referral or tertiary care and primary care [2, 4, 5]

## **5. DISPENSING OF CONTROLLED DRUGS:**

- These drugs should keep under lock and key.
- A separate register should be maintained to register the drugs.
- Procedure: Medical superintendent is overall responsible for handling of controlled drugs.
- Chief pharmacist procures, stores and dispense the drugs
- Prescription of narcotic drugs under Narcotics and psychotropic substances act 1985 must include following information a) Patients 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
- If the required drug is not in the stock the complete controlled drug prescription must be written on hospital prescription blank form by registered medical practitioner and signed.
- Delivery of narcotic drugs from pharmacy to the wards should be carried out by reliable person
- After dispensing, nurses resume responsibility for administration, control and auditing of the inventory.
- If patient refuse or doctor cancels any dose, nurse should destroy the drug in to sink and record "Refused by patient" or "Cancelled by doctor" [4, 5].