

DRUG DISTRIBUTION SYSTEM IN A HOSPITAL

Points to be covered in this topic

INTRODUCTION

TYPES OF DRUG DISTRIBUTION SYSTEMS

CHARGING POLICY AND LABELLING

**DISPENSING OF DRUGS TO AMBULATORY
PATIENTS**

DISPENSING OF CONTROLLED DRUGS

INTRODUCTION

- **Drug distribution** is defined as, “**Physical transfer of drugs** from **storage area** in the **hospital** to the **patient's bedside**”.
- **Drug distribution** system falls into **three broad categories**
- **Ward - controlled system**
- **Pharmacy controlled imprest-based system**
- **Pharmacy controlled patient issue system**
- This involves two types of drug distribution. they are
 - ✓ **In-patient distribution**
 - ✓ **Out-patient distribution**

IN-PATIENT DISTRIBUTION

- The **drug distribution** to the in **patient department** can be carried out from the out **patient dispensing area**.
- The **pharmacists** involved in **dispensing** the drugs for **out patient** can **dispense drugs** for in patients too.
- The **pharmacist employed** for **drug distribution** to the in patient wards should be well skilled and **qualified staff**.



❑ OUT - PATIENTS DISTRIBUTION

- **Out patient refers** to the patients not **occupying beds** in hospital or in **clinics, health centres** and **other places** where out patients usually go for **health care**.
- **No medicaments** should be issued without the **prescription**.
- After the issue has been made the **quantities supplied** must be recorded.
- In short form the **out patient department** was **called as OPD**.



TYPES OF DRUG DISTRIBUTION SYSTEMS

- There are **four different systems** in use for **drug distribution** in hospitals
 1. **Individual prescription order system**
 2. **Complete floor stock system**
 3. **Combination of individual prescription and floor stock system**
 4. **Unit dose system**

❑ INDIVIDUAL PRESCRIPTION ORDER SYSTEM



- It is a type of **drug distribution system** wherein **physician writes the prescription** for **individual patient** who obtains the **drugs prescribed** from any **medical store** or **hospital dispensary** by paying own charges.
- This system is generally used by the **small and/or private hospitals** because of the reduced **man power requirements** and **desirability** for **individualised service**.

❖ ADVANTAGES

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

❖ DISADVANTAGES

- **Wrong errors, illegible writings** of the **physicians**.
- **Physician** may write **high economic drugs** in the **prescription** or **cost effective drugs**.

2. COMPLETE FLOOR STOCK SYSTEM

- **Drugs** are given to the patient from the **nursing station** & the **pharmacy supplies** from the **drug store**.
- The way of **floor-stock distribution** includes 2 types They are:
 - i. **Charged floor-stock system**
 - ii. **Uncharged floor-stock system**



i. CHARGED FLOOR STOCK SYSTEM

- In this method **medicines** which are **stocked** in the **nursing stations** all the **times & charged** to the **patients account** after administered to them.
- The **patient is charged** for **every single dose** administered to him.
- Once the **floor-stock** list is prepared it is the **responsibility** of the **hospital pharmacist** to make the **drugs available**.

ii. NON CHARGED FLOOR-STOCK SYSTEM:

- These system **includes the medicaments** placed in the **nursing station** that are used by all the **patients on the floor**.
- There shall be **no direct charge** from the **patients account**.

3. COMBINATION OF INDIVIDUAL PRESCRIPTION AND FLOOR STOCK SYSTEM

- This system is followed by all **government hospitals** and **also private hospitals** those run on the **basis of no -profit** and **no loss**.
- **Surgical items** are given to the **patients**, who **purchases and deposit** those items in a **hospital wards** on **rooms under** the supervision of **registered headness** .

4. UNIT DOSE SYSTEM

- Those **medications ordered**, **stored, packed, handed, administrated** and **charged in multiples** of **single does units** containing a **predetermined amount** of a **drug or supply sufficient** for **one regular dose**.
- A **single unit package** is one which contain one complete **pharmaceutical dosage form**.
- **Ex- 1 tablet or 1 capsule**.
- **Two methods** of dispensing unit doses are
 - i. **Centralized unit dose drug distribution system (CUDD)**
 - ii. **Decentralized unit dose drug distribution system (DUDD)**

i. CENTRALISED UNIT DOSE DRUG DISTRIBUTION SYSTEM (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 dose is due to be **given to the patient**.
- **Drugs retransferred** from the pharmacy to the **indoor patient** by **medication cards**.

ii. DECENTRALIZED UNIT DOSE DISPENSING

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

❖ PROCEDURE

- ✓ **Patient profile** card containing full **date, disease, diagnosis** is prepared.
- ✓ **Prescription** are **sent directly** to the **pharmacist** which are 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**.

❖ ADVANTAGES

- **Better financial control**
- It **prevents loss** of **partially used medications**.
- Does **not require storage facilities** at nursing stations.

❖ DISADVANTAGES

- **Irregular dosage**
- **Skill physician** is required for **administration of drug**.
- **Regular monitoring** is required.

CHARGING POLICY AND LABELLING

❑ CHARGING POLICY

- The **hospital should** have **uniform schedule** of **charging of drugs**.
- An **equitable price** for drugs should be kept in **mind to protect** the **hospital financial interests**.
- These policy can be **categorized** under **several system** like
 1. **All inclusive**
 2. **A part inclusive rate**
 3. **The professional fee concept**
 4. **Break even point purchase**
 5. **A cost plus rate system**
 6. **The profit aspect**
 7. **Computerized pricing**

1. ALL INCLUSIVE

- In this system , charges for about **250 patients** are **studied** and their average **daily charges** for **drugs and pharmaceutical services** are **calculated**.
- A comparison of the **actual charge** , and the **projected rate** would produce the **same revenue** as the **itemized charging method**.
- This system provides **quality pharmaceutical services** and enables hospital to **reduce administrative** and **accounting cost**.

2. A PART INCLUSIVE RATES

- A pharmacy **service charge** is implemented.

3. THE PROFESSIONAL FEE CONCEPT

- This **fee concept** is "the **exclusive professional** fee to meet all **operating expenses** including **overhead and compensation** but not the **actual cost of drug** and **containers** ".

- The concept is **well growing** and is **prepared** as it **recovers expenses** of pharmacy, total **hospital expense**.
- This **professional fee concept** implies that a **percentage of wholesale** selling price is used as a basis for **recovering all direct** and **indirect expenses**.

4. BREAK-EVEN POINT PRICING

- It is a **useful tool** in overall analysis of **cost volume relationship** and is defined **on the level** at which there is **neither profit nor loss**.

5. A COST PLUS RATE SYSTEM

- In this system, **pharmacist maintains** a **better control** using formula
- Desired income from **drugs/Cost of prescription drugs** x **100 = % above cost** to be **charged for prescription**.
- It helps in adjustment of cost **fluctuation, difference in currency value, financial requirement**.
- It **offers fairness** to the **hospital and patients**.

6. THE PROFIT ASPECTS

- In this, **profit is calculated** into price to the patient by following ways
 - ✓ **A fixed fee per prescription**
 - ✓ **Addition of predetermined percentage** of the break even point figure.

7. COMPUTERIZED PRICING

- This system is **quite fair** and **provides computerized** on-line pharmacy pricing.
- The **computer program** will ask for only following information
 - ✓ **Patient number**.
 - ✓ **Drug identification number**.
 - ✓ **Dose factor**.
 - ✓ **Total number of doses dispensed**.

□ LABELLING

- Label means **display of written , printed or graphic matter** upon **immediate container** or the wrapper of a drug package
- Types of label
 1. **Manufacturer label**
 2. **Dispensing label**



1. MANUFACTURER LABEL

- A **label** which contain **drug information** for the use of **medicinal practitioner , pharmacist or nurse** supplied by the **manufacturer , paper** or drug distribution of the drug.
- **Legal requirements** of a **manufacturer label**
 - ✓ The **name of preparation**
 - ✓ **Strength** and **dosage form**
 - ✓ Quantity
 - ✓ **Instruction** for the use
 - ✓ **Precautions** and warning
 - ✓ **Registration number**
 - ✓ **Batch number**
 - ✓ **Manufacturing** and expiry date
 - ✓ **Price**
 - ✓ **Manufacturer information**

✓ THE NAME OF PREPARATION

- **Generic name** – according to **drug labelling** and **packaging rules 1986**
- **International , non - proprietary name** means the **name of a drugs** as recommended by **WHO** or may notified by the govt. in the **official gazette**
- **Brand name** – brand name which used to **market the drug**
- **Property of drug company.**

✓ STRENGTH AND DOSAGE FORM

- It is the **amount of active drug** per unit dose.
- Example **amoxicillin 250mg / 500 mg capsules**.
- **Dosage form** - Dosage form of the **medicine** should be **mentioned** on the label.
- Example - **different dosage** forms of **amoxicillin** , **Oral suspension** and **capsules**.

✓ QUANTITY

- **Quantity /volume present** per a **packaging unit**

✓ INSTRUCTIONS

- **Keep in refrigerator**
- **Shake well before using**
- Give with food.
- **Precautions**
- **Do not use if pregnant**
- **Do not drink alcohol** after taking medicine
- **Do not take other medicine**
- Read the **medicine guide**
- **Storage condition** - **store in a cool place** , **protect from sunlight**
- **Warning** - for external use only , **inflammable**

✓ REGISTRATION NUMBER

- A **number given** to a **specific drug** when it is **registered according** to specific rules by **registration board** set up by **federal government**.

✓ BATCH NUMBER

- According to **drug act 1976**
- A **designation printed** on label of drug that identifies the **batch and permits** the **production history** of batch including all stages of **manufacturer** and **controlled** to be **traced and are viewed**

✓ MANUFACTURE DATE AND EXPIRY DATE

- **Date started** on the label of a **drug** after which a **drug is not expected** to retain its **claimed efficacy**, **safety**, **quantity**, **potency** or after which it is **not permissible** to **sell the drug**.

✓ PRICE AND BAR CODES

- It is an **optical machine** readable **representation of data**, **show data** about the object to **which it is attached**.

✓ MANUFACTURER INFORMATION

- **Name and address of company**.

2. DISPENSING LABEL

- Label that the **pharmacist attaches** to a **prescription medicine**.
- It includes :-
 - ✓ **Drug name and quantity**
 - ✓ **Patient name**
 - ✓ **Prescription number**
 - ✓ **Phone number**
 - ✓ **Instruction for use**
 - ✓ **Pharmacy name and address**

DISPENSING OF DRUGS TO AMBULATORY PATIENTS

- It is also called **ambulatory services** and refers to **those patients** who are **not occupying beds** in **hospitals** or in **clinics**, **health centers** and other places when they come for **consultation and diagnosis, treatment**.

- Categories of **Ambulatory Services**:

1. EMERGENCY OUTPATIENTS

- For emergency **outpatient**, **24 hours** services are given who requires **immediate care** for the **survival**.

2. REFERRED OUTPATIENT

- **These patients** are referred to the **hospital** for a **specific purpose** due to lack of **facilities available** with the private **clinic practioners** or patient needs extra care.

3. SPECIAL OUTPATIENT

- After compilation of general check up the patients are asked to go for accurate diagnosis by the clinical , pathological or radiological examination.
- After receiving the test report of examination medicine is given to him.

4. GENERAL OUTPATIENT

- These patients come for the general checkup and medicines are prescribed to him.
- They may either undertake minor surgery ,superficial surgery or dressing at hospital

DISPENSING OF CONTROLLED DRUGS

- Controlled substances is a drug or chemical which ownership , manufacture or use is the absolutely regulated by a respective government of country such as illegally used drugs or prescription medications.
- These laws enforcement leads to prevention in the unauthorized use of such medications.
- These laws enforcement leads to prevention in the unauthorized use of such substances /drugs such as central analgesics (opoids) , anaesthetic , steroids, etc
- These controlled substances are listed following schedules.

❑ SCHEDULE

❖ SCHEDULE 1

- The drugs under this schedule have high potential for abuse and have no accepted medical use in the treatment (e.g Marijuana , raw opium)

❖ SCHEDULE 2

- The drugs under this schedule have less as compare to above potentials for abuse, accepted for medical treatment and have less physical dependence and psychological dependence (e.g benzodiazepine and painkiller, phenobarbitone codeine, steroids).

❖ SCHEDULE 3

- The drugs under these **schedules** have **less as compare** to above **potentials** for **abuse**, **accepted** for **medical treatment** and have **less physical dependence** and **psychological dependence** (e.g **benzodiazepine** and **painkiller**, **phenobarbitone**, **low strength codeine**, **steroids** etc)

❑ HOSPITAL CONTROL PROCEDURE

- Following **procedure and person/department** is responsible for **manufacture and record** of control substances in **hospital**.

❖ PHARMACIST IN CHIEF

- **Responsible** for the **purchase, storage accountability**, and **appropriate dispensing** of the **control substances** in the hospital.

❖ HEAD NURSE

- Responsible for the **record of proper storage**.

❖ ADMINISTRATION HEAD

- Responsible for the **proper safeguarding** and **handling of controlled substances**.

❑ POLICIES AND PROCEDURE FOR ORDERING OF CONTROLLED SUBSTANCES

❖ PREPARATION OF ORDERS

- Order of the **control substances**, should be made by **using ink** or **incredible pencil**, **typing** and **duly sign** by the **respective doctor**.

❖ DOCTORS ORDERS FOR ADMINISTRATION OF CONTROLLED DRUGS

- Order of **control substances** for **ward stock** must on **physician order sheet** or **patient chart**.

- If the **control substances** for **ward stock** must write on **physician order sheet** or **patient chart**.

- If the **control substances** are not in **ward stock**.

❖ PRO RE NATA ORDERS (PRN ORDER)

- This type of **order** must be **discouraged** except under **special circumstance**.

❖ ORDERING NON- WARD STOCK-CONTROLLED DRUGS FROM PHARMACY

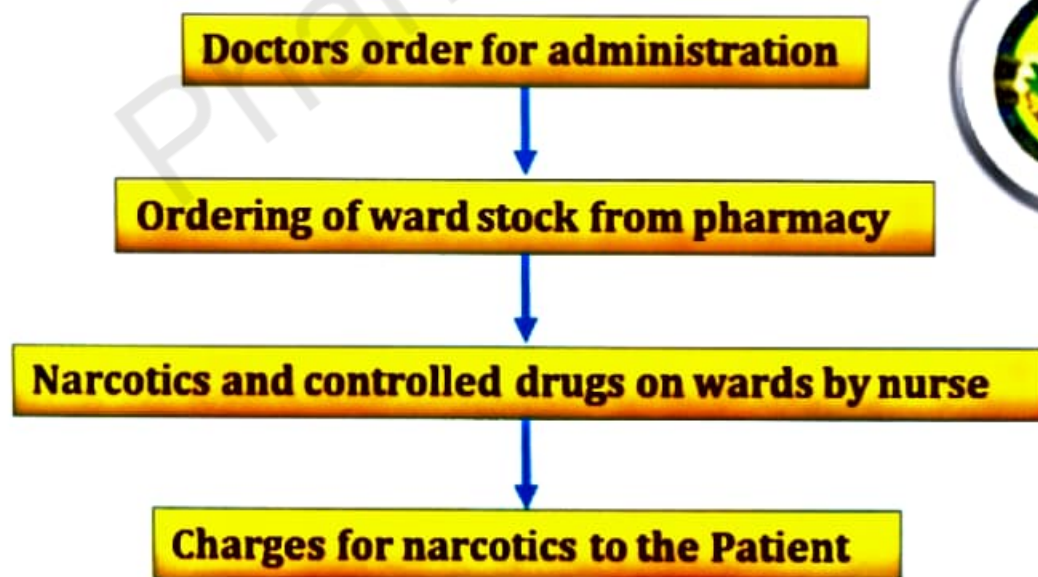
- Ordering of the **control substances** for **non-ward stock** done by **doctor sign** and if **more substances** are again needed then **doctor** may sign again.

❖ ORDERING WARD STOCK- CONTROLLED SUBSTANCES FROM PHARMACY

- Ordering of the **control substances** from **pharmacy** must be taken on the **ward stock** from which is **completed** by **placing** a **check mark** on the **opposite** the **name, and strength**.

- This order from must be **duly sign** by the **doctor**.

❑ PROCEDURE FOR DISPENSING OF CONTROLLED SUBSTANCES FOR IN PATIENTS



❑ **PRESCRIBING OF CONTROL DRUGS IN OUT PATIENT DEPARTMENT (OPD)**

- **Dispensing** of the **controlled drugs** for **outpatient** from pharmacy must be the made **on the prescription** only by **clearly mentioning** the strength and the **quantity** with **duty sign of doctor**.
- The **information** for **such order includes:**
 - ✓ **Date.**
 - ✓ **Details of patients.**
 - ✓ **Patients hospital number.**
 - ✓ **Amount of drug ordered.**
 - ✓ **Strength.**
 - ✓ **Name of the prescriber and their signature.**

HOSPITAL FORMULARY

Points to be covered in this topic

INTRODUCTION

CONTENTS OF HOSPITAL FORMULARY

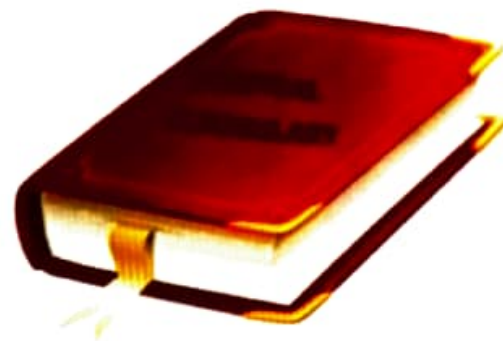
DIFFERENTIATION OF HOSPITAL
FORMULARY AND DRUG LIST

PREPARATION AND REVISION

ADDITION AND DELETION OF DRUG

INTRODUCTION

- The **hospital formulary** is a continuously revised **compilation** of **pharmaceutical dosage agent** and their forms etc.
- Which **reflects** the current **clinical judgment** of the **medical staff**.
- The **hospital formulary** system is a method whereby the **medical staff** of a hospital with the **help of pharmacy** and **therapeutic committee** selects and **evaluate medical agents** and their **dosage form** which are considered to be **most useful** in the **patient care**.
- The hospital formulary system **provides the information** for **procuring , prescribing , dispensing** and **administrative** of drug under **non proprietary** names and instance where **drugs** have both names



ORIGIN IN INDIA

- The first **hospital formulary** in India was **published in 1968** by the department of pharmacy, **CMC , Vellore**.
- The first **hospital formulary** for the **development of government hospital** teachings was **published in 1997** at government **medical college , Trivendrem , Kerala**

GUIDLINE FOR HOSPITAL FORMULARY

- The **governing body** of the hospital shall **appoint a pharmacy and therapeutic committee** composed of **physician and pharmacist** which will prepare the **hospital formulary system**.
- The **medical staff** in the **governing body** shall **sponsor and outline** the **purpose , organisation** function and **scope** of the **hospital formulary system**. it should adopt the principle as per the **need of particular hospital**.

- The **pharmacy and therapeutic committee** shall develop policy and **procedure governing** the **hospital formulary** and the medical staff shall adopt these **policies and procedures** subject to **administrative approval**.
- The **policy and procedures** shall afford guidance in the **appraisal , selection , procurement , storage , distribution , use , safety** procedures and other **matter relating** to drug in the **hospital** and shall be published in the **hospital's formulary** or other media available to the member of **medical staff**.
- To ensure the **maintenance** of the **responsibility** and **procreative** of the **physician in the exercise** of his **professional judgment**.
- The **medical staff** shall adopt the **policy formula**, and **procedure for including drugs** in the formulary by their non **proprietary names** even though proprietary names continue to being **use in the hospital** physicians. He may be **encouraged to prescribe** drug under their **non proprietary names**, although nomenclature used in **entirely a matter** of individual Practitioner's discretion.
- In the absence of **written policies** approved by the **medical staff** related to the **operation**
- The **hospital shall make** it certain that the **nursing personnel** are informed in writing through its system of **news of communication** that there exists the **formulary system** in the hospital and the procedure **governing its operations**.
- In the **formulation of policies** and procedure the term **substitute or substitution** should be avoid since these term have been used to **imply** the **unauthorized dispensing** of entire different **drug , nither** of which takes place under a properly operated **hospital formulary system**
- It shall be made known to the **medical staff** about the changes in the working in the **hospital formulary** system or in the content of the **hospital system**

- **Provision shall be** made for the **appraisal** of the **member of the medical staff** for the use of the drug **not include** in the **formulary** or the **investigational drugs**.
- The pharmacist with the **advice and guidance** of the **pharmacy and therapeutic committee** , **shall ascertain** the **quantity and source** of supply of all drugs , **chemical** , **biological** and **pharmaceutical** preparation used for **diagnosis and treatment** of patient.
- The **labeling of drug** and **medicine container** with **non proprietary** name of the content always should be proper. The use of proprietary name other than that **describing** the **actual content** is not correct and proper if it is used in a manner that can be taken as **description of the content**

MEMBERS INVOLVED IN THE PREPARATION OF HOSPITAL DRUG FORMULARY



➤ A representative clinician from each major specialty



➤ A clinical pharmacist



➤ A nurse, usually the senior infection control nurse, or sometimes the matron.



➤ A pharmacist (usually the chief or deputy chief pharmacist)



➤ A clinical microbiologist or a laboratory technician where there is no microbiologist.



➤ A member of the hospital records department.



An administrator, representing the hospital administration and finance department

CONTENTS OF HOSPITAL FORMULARY

- The **main objective** of a **formulary** is not **only to control** the use of drug but also to **supply useful information** to the **prescribers**.
- The **primary objective** of the formulary is to provide the **hospital staff** with
 - ✓ **Information of drug products approved by PTC**
 - ✓ Information of **hospital policies** and **procedures governing** the use of drug
 - ✓ **Special information regarding drug.**
- In this view there are **three main sections** of formulary
 1. **Information on hospital policies and procedures concerning drugs.**
 2. **Drug products listing**
 3. **Special information**

1. INFORMATION ON HOSPITAL POLICIES AND PROCEDURES CONCERNING DRUGS

- Information on **hospital regulations governing** the **prescribing , dispensing , administration** of drugs
- **Description of PTC**
- **Pharmacy operating procedures**
- Information on **using formulary**
- How the **formulary** and the **entries are arranged** in the system.



2. INFORMATION DRUG PRODUCTS

- This section is the heart of formulary and consist of descriptive entries for each item.

❖ FORMULARY ITEM ENTRIES

- Alphabetically by **generic name**
- Alphabetically within **therapeutic class**

❖ TYPE OF INFORMATION

- Dosage form , strength , packaging
- Active ingredients
- Adult / pediatric dose
- Route of administration
- Cost

❖ INDEXES TO THE DRUG PRODUCTS LISTING

- Generic name /brand name
- Therapeutic / pharmacological index

❑ SPECIAL INFORMATION

- Equivalent dosages of similar drugs
- hospital approved abbreviations
- Rules or calculating pediatric dosages
- List of sugar free drugs
- List of dialyzable poisons
- Metric conversion tables
- Poison control information
- Table of drug interactions

❑ PREPARATION OF FORMULARY

- Essential point of formulary for improving drug therapy in hospitals.
- Effectiveness of formulary system depends on the abilities of the pharmacists involved with it.
- It is decided by PTC.
- Visually pleasing, easily readable and professional in appearance.
- A drug that has specific advantages in a small number of patients will be included in the formulary.
- The initial step in the preparation of a formulary for any hospital is its size.

- A **typical formulary** must have the **following composition**;
 1. **Title page**
 2. **Names & titles of the members** of the PTC
 3. **Table of contents**
 4. Information on **hospital policies & procedures concerning drugs**
 5. **Products accepted** for use at hospital
 6. **Appendix**

❑ **CONTENTS**

1. **INTRODUCTION**

- **List of abbreviations**
- List of **drug used in the formulary**

2. **BASIC INFORMATION ON EACH DRUG**

- **Efficacy** for the treatment of **specific conditions**
- **Safety profile** of the item
- Interaction profile
- **Adverse effect**
- **Pharmacokinetic profile**
- **Availability** of the item
- Availability **dosage form**
- **Cost**
- **Acceptability to patients**

3. **SUPPLEMENTARY INFORMATION ON EACH DRUG**

- **Storage guidelines**
- **Patient counselling information**
- **Labelling information**
- **Brand names and price**

4. **PRESCRIBING AND DISPENSING GUIDELINES**

- Principles of **prescription writing**
- **Reporting of ADR**
- **Prevention of ADR**

5. GENERAL DRUG USE AND ADVICE

- Use of **IV drugs**
- Special situations like **pregnancy , breast feeding , liver/ kidney** diseases
- **Poisoning information** and **antidotes**
- Treatment of **snakebites and inset bites**

6. MISCELLANEOUS SECTION

- **Children's dose**
- **Renal adjustments**
- **Metric units**
- **Diagnostic aids**

DIFFERENTIATION OF HOSPITAL FORMULARY AND DRUG LIST

HOSPITAL FORMULARY

- Listing of drugs by their generic names followed by information on strength , form . Posology , toxicology , use and recommended quantity to be dispensed.
- Prepared by locally by its own clinical staff
- Information provided is subject to local needs and desires.

DRUG LIST

- Generic names followed by data on strength and form
- Prepared by country's outstanding clinicians , pharmacologists , and pharmacists .
- According to their pharmacological properties.

ADDITION AND DELETION OF DRUG

□ ADDITION

- The assessment of **new medicines** is **critical to managing** a **formulary list**, which involves **Adding new medicines** and **deleting old ones**.
- Drugs should be **evaluated and compared** on the basis of.
 - ✓ Efficacy, **comparative efficacy**
 - ✓ Effectiveness, **comparative effectiveness**
 - ✓ **Safety, comparative safety**
 - ✓ **Cost of use**
 - ✓ **Quality**
- **Efficacy, effectiveness** and **safety** can be **evaluated** from a critical assessment of the **literature**.
- A **request for inclusion** of a drug in the **hospital formulary** shall be made by **submitting a formulary addition** request along with **supporting literature** and a **signed disclosure** of dual interest to the **pharmacy and therapeutics**
- The **committee** will make one of the **following decisions** regarding the request.
 - ✓ **Approval**
 - ✓ **Denial**
 - ✓ **Deferment**

□ DELETION

- Suggestions for **deletion of drugs** from the formulary may be **submitted** to the **P and T committee** by any member of the **medical, pharmacy, or nursing staff**.
- In order to **control growth** of the **hospital formulary**, **some additions** will be balanced by **deletions of another drug**.
- **P and T committee** shall periodically review its **stocks** and **various therapeutic classes** on an ongoing basis to effect **deletion of duplicate** drugs whose **usage is low** or those which can readily be replaced by **less costly but equally**.

THERAPEUTIC DRUG MONITORING

Points to be covered in this topic

INTRODUCTION

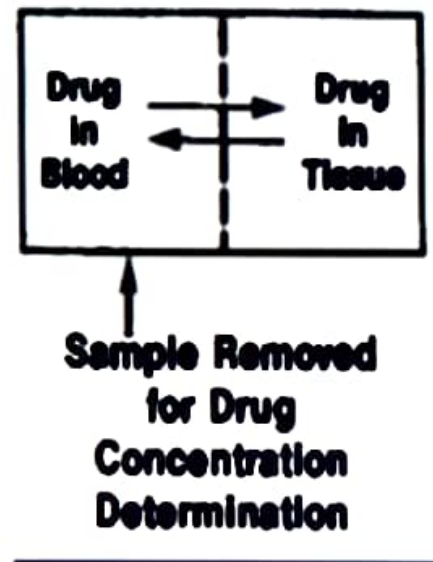
**NEED FOR THERAPEUTIC DRUG
MONITORING**

FACTORS

INDIAN SCENARIO

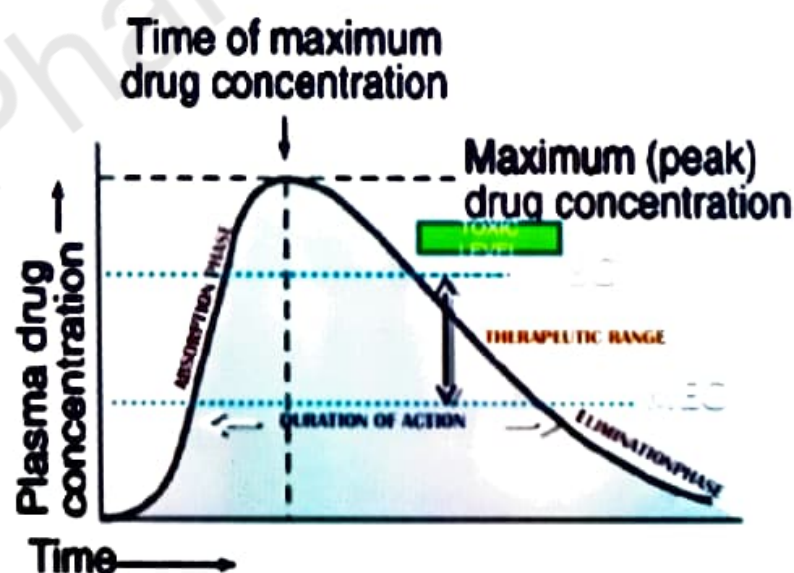
INTRODUCTION

- **Therapeutic drug monitoring** refers to the measurement of **drug concentrations** in **biological fluids** with the purpose of **optimizing a patients** drug therapy.
- **During administration** of a **dosage regimen**, the concentration should be maintained within the **therapeutic window**.
- TDM refers to the **tool utilized** to individuals **dosage regimen** by **maintaining plasma** or blood drug concentrations within the **therapeutic range**.



□ CONCEPT OF TDM

- TDM is based on the principle that for **some drugs** there is a **close relationship** between the **plasma level** of the drug and its **clinical effect**.
- If such a **relationship** does not exist **TDM** is of **little value**.
- The clinical value of **plasma level** of **monitoring depends** on how precisely the **treatment outcome** can be defined.
- When a precise **therapeutic end point** is difficult to define, **monitoring of drug levels** may be of considerable **therapeutic assistance**.



❑ FUNCTION

- **Select drug**
- **Design dosage regimen**
- **Evaluate patient response**
- Determine need for **measuring serum concentration**
- Assay for **drug concentration in biological fluids**
- Perform **pharmacokinetic evaluation** of drug concentration
- **Re-adjust the dosage regimen**

❑ CRITERIA FOR TDM

- An appropriate **analytical test** for drug and **active metabolites** must exist
- Drug should have a **narrow therapeutic range**.
- Patients not showing **adequate clinical response** to a drug despite being on **adequate dose**.
- The therapeutic effect can **not be readily assessed** by the **clinical observation** (e.g. anticonvulsants, anti arrhythmics, etc.)
- Large **individual variability** in steady state **plasma concentration** exists at any given dose.
- There are **several classes** of drugs **commonly monitored** to ensure correct **blood concentration**, including the following.
 - ✓ **Antiepileptics** (phenytoin, valproic acid etc.)
 - ✓ **Antiarrhythmics** (digitalis, lignocaine etc.)
 - ✓ **Antibiotics** (gentamycin, amikacin, tobramycin)
 - ✓ **Antineoplastics** (methotrexate)
 - ✓ **Antimaniacs** (lithium)
 - ✓ **Bronchodilators** (theophylline)
 - ✓ **Immunosuppressive** (cyclosporine)

NEED FOR THERAPEUTIC DRUG MONITORING

- The **number of studies** in recent years has pointed to a need for more **intensive monitoring** of drug therapy.
- These reports have **identified following reasons**.

1. POLYPHARMACY

- The overuses of **medications by patients** and over **prescribing by physician** have repeatedly been cited as cause of **drug induced disease**.

- ✓ Ex; **Hospital patients- 8-10 drugs** receive.
- ✓ **Nursing home patients-5-9 drugs** receive.
- ✓ **Ambulatory patients- 5-6 drugs** receive.



2. ADVERSE REACTIONS

- **Adverse drug reactions** of drugs are a major **public health problem** and it **accounts for 3-5%** admitting to **hospitals**.
- More **careful prescribing** and **monitoring** **60-80%** **adverse reactions** can be prevented.



3. MEDICATION ERRORS

- **Hospitalised patients** usually face problems with by nurse **wrong drug administration** or **pharmacist** in dispensing multiple doses.
- Unit dose **drug distribution** significantly decreases the **medication errors**.



4. NON-COMPLIANCE

- Prescribed therapy also represents major public health problems.
- Non compliant patients can be identified and appropriate education is given.



FACTORS

❑ FACTORS INFLUENCING IN THERAPEUTIC DRUG

MONITORING

1. Patient demographics
2. Patient compliance
3. Individuals capacity to absorb / distribute / metabolize / excrete the drug
4. Concomitant disease , tropical disease and nutritional deficiencies
5. Alternative system of medicine
6. Alcohol and tobacco use
7. Medication or sampling errors
8. Laboratory errors
9. Cost effectiveness
10. Quality control in drug assay
11. Genetic factors

1. PATIENT DEMOGRAPHICS

- Age , sex and lean body weight are particularly important for renally cleared drugs as knowledge of these allows calculation of creatinine clearance.



2. PATIENT COMPLIANCE

- If the **concentration** of the **drug** is **lower** than expected, the **possibility** of **non compliance** should be considered before a **dose increase** is recommended

Better
Compliance



=



Better
Data

=



Better
Results

3. INDIVIDUALS CAPACITY TO ABSORB / DISTRIBUTE / METABOLIZE / EXCRETE THE DRUG

✓ Absorption

- Absorption refers to the **ability** and **process of a dosage** reaching the **blood stream**.
- There are **different routes** of **drug administration**.
- The most common are: **Oral**, **Intramuscular**, **Subcutaneous**, **Rectal** etc



Absorption

✓ Distribution

- Once the **drug is absorbed**, a certain **drug concentration** is reached in the **body**.
- The **volume** in which the **drug is distributed** is a product of the **drug's dose** divided by the **plasma concentration**.
- **Half-life information** is used to determine the **correct drug dose** required to attain the **desired therapeutic range**.



Distribution

✓ Metabolism

- In addition , **drug metabolites** can be either **protein bound** (inactive) or free (active)
- The **drug dosage** will depend on how the **drug metabolizes**.
- Factors that **impact drug metabolism** includes **genetics , environment , nutrition , and age**.



Metabolism

✓ Excretion

- **Drug excretion** from the **body occurs** through the **kidneys** , or **fluids excreted** through the **lungs , GI or skin**.
- **Renal dysfunction** reduces **drug clearance** and **may contribute** to **drug accumulation** and increased risk of **adverse drug effects**.



Excretion

4. CONCOMITANT DISEASES , TROPICAL DISEASE AND NUTRITIONAL DEFICIENCIES

- This includes diseases **highly prevalent** in **developing countries** such as
 - **Infections ,**
 - **Diarrhoea**
 - **Tuberculosis**
 - **Nutritional deficiencies**
 - **Higher proportion** of patients with **diabetes and AIDS**



5. ALTERNATIVE SYSTEM OF MEDICINE

- **India is unique** in having at least **three systems** of medicines **coexisting** with **western medicine** ; **ayurveda** , **homeopathy** and **unani**.
- A **patient** with a history of generalized **tonic-clonic seizures** , **well controlled** and with **plasma phenytoin** levels within the **therapeutic range** , presented with **sudden loss of seizure control**.



6. ALCOHOL AND TOBACCO USE

- **Chronic use** of **alcohol** has been shown to cause **non-specific hepatic microsomal enzyme induction** , resulting in **increased clearance** and decreased **serum concentrations** of **hepatically cleared drugs**.
- **Cigarette smoking increases** the **hepatic clearance** of theophylline and patients who have recently **stopped smoking** may have unexpectedly **high theophylline concentrations**.



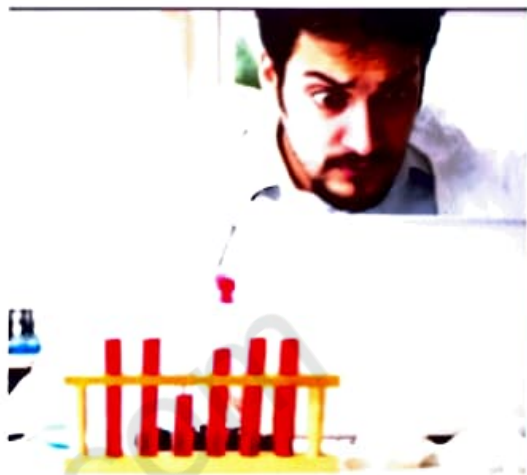
7. MEDICATION OR SAMPLING ERRORS

- In cases where the **TDM result** is incompatible with **drug administration** records, the **possibility of a medication or sampling error** should be considered.
- For example, the drug may have been given to the **wrong patient**, or **blood** may have been mistakenly drawn from a patient in a **neighbouring bed**.



8. LABORATORY ERRORS

- If a **laboratory error** is suspected, the **laboratory** should be **contacted** and asked to **repeat the assay**.
- Alternatively, a **new blood sample** can be **drawn** and sent to a **different laboratory** for assay.



9. COST EFFECTIVENESS

- **Rapid** and **cost effective** measurement of most drug is **indicated** can be achieved using **commercial kits analysers** using a number of **different methodologies** including **fluorescence polarization immunoassay**.



10. QUALITY CONTROL IN DRUG ASSAYS

- For **TDM programs**, **quality control** is **vitaly important** and in developing countries there are **hardly** any procedures for **laboratory accreditation** or **external quality control**.



- In India, **one centre** in **Southern India** offers an **external quality control** program (for biochemical tests).

11. GENETIC FACTORS

- It plays an as yet poorly defined role in **therapeutic drug monitoring**, as is the case of the **poor ability** of some **racial groups** to **acetylated drugs**.



INDIAN SCENARIO

- **TDM service** began in a small way in **1988** with a **single HPLC** and one **research assistant** in a tiny **laboratory trucked** away in a corner of an **1800 bed teaching** public hospitals.
- Even though **TDM** has **grown itself** into an **unavailable part** of health care system and the **position** has gained due **respect and support** from the **patients and medical professionals** equally, it seems that the **Indian government officials** are turning a **blind eye** to these developments taking place globally.
- In India there are **no regulatory guidelines** for having a **qualified clinical pharmacist** in the **Indian hospitals**.
- The **main reason** for this phenomenon is the **lack of recognition** of the post of **clinical pharmacist** at the **regulatory level**.
- The students **after completion** of their studies are **either forced** to take up a **job in an industry** or move **into academics**, the last option being to seek **jobs abroad** where the **pharmacy professions** is well received.
- Many **pharmacy schools** have started to understand the **impotence of pharmacy practice** and are including it in the four year syllabus of the **UG course**.

- Another **positive sign** is the introduction of **Pharm D courses** in a handful of **institutions in India**.
- Its six year **doctoral course including** one year **rotating internship** aimed at creating competent **clinical pharmacist** for the **hospital in India**.
- The **current scenario** can only be brought **under control** by the **timely intervention** from the **government authorities**, as a nurturing regulatory **environment** is a necessity for the development of **health professions** like pharmacy and also with the **collaborative efforts** from the academics leaders and **government authorities**.
- TDM has the **bright potential** to grow into a **very strong pharmacy wing** in the **health care system**, particularly in a **country like** India with such a **strong medical foundations** and **dynamic** and **varied population** waiting to receive any **additional patient services**.
- The only way that **clinical pharmacy** can grow unhindered in India as by **gaining the support and acceptance** of the entire **medical profession** and **community** as whole, and this in turn sets in the hands of the present day **pharmacy students** and **pharmacy professionals**.

❖ APPLICATIONS OF THERAPEUTIC DRUG MONITORING

1. Monitoring of **certain drugs** with the **increased efficacy** and **decrease incidences** and side effects Ex- **theophylline , methotrexate**.
2. Used in **developing dosing protocol** this will avoid **non-optimum initial** therapy.
3. It provides additional input in **pharmacotherapy**. Monitoring encourages **professional interaction** between members of the health care teams and **physician and pharmacist**.
4. **Monitoring determines** the safety of the **dosage regimen**.
5. It provides an **opportunity** for **clinical pharmacist** to excel in **therapeutic challenges**.

MEDICATION ADHERENCE

Points to be covered in this topic

INTRODUCTION

CAUSES OF MEDICATION NON ADHERENCE

PHARMACIST ROLE

MONITORING

INTRODUCTION

- It is defined as the **exact or extent** to which a **patient medication** taking **behaviour concedes** with the intention of the **health advice** he / she has been given.
- Medication adherence** is the one of the most important factors that determines the **therapeutic out comes**, especially in a **patient suffering** from **chronic illness/diseases**.



- ✓ **Compliance**

- How well the **patient follows** the instruction of when and how to **take the medication**.

- ✓ **Persistence**

- Duration of **time patient** takes medication , from **initiation to discontinuation** of therapy.

- Adherence is a **multidimensional phenomenon** determined by the interplay of **fives sets** of factors , termed "**dimensions** " by the world **health organization**

- ✓ **Social / economic factors**
- ✓ **Provider - patient / health care system factors**
- ✓ **Condition related factors**
- ✓ **Therapy - related factors**
- ✓ **Patient related factors**



1. SOCIAL AND ECONOMIC DIMENSION

- Limited **English language** proficiency
- **Low health literacy**
- **Lack of family** or **social support** network
- Unstable **living conditions** ; homelessness
- **Burdensome schedule**
- Limited access to **health care facilities**
- Lack of **health care insurance**
- Inability or difficulty accessing pharmacy
- **Medication cost**
- **Cultural** and **lay beliefs** about illness and treatment
- **Elder abuse**



2. HEALTH CARE SYSTEM DIMENSION

- Provider - **patient relationship**
- Provider **communication skills**
- Disparity between the **health beliefs** of the **health care provider** and those of the patient
- Lack of **positive reinforcement** from the **health care provider**
- **Weak capacity** of the system to **educate patients** and provide follow - up
- **Lack of knowledge** on **adherence** and of **effective interventions** for improving it
- Patient information **materials written** at too high literacy level
- Restricted formularies ; **changing medications** covered on **formularies**
- **High drug cost** , **copayments** , or both
- Poor access or **missed appointments**
- **Long wait times**
- **Lack of continuity** of care



3. CONDITION RELATED DIMENSION

- **Chronic conditions**
- **Lack of symptoms**
- **Severity of symptoms**
- **Depression**
- **Psychotic disorders**
- **Mental retardation / developmental disability**



4. THERAPY RELATED DIMENSION

- Complexity of **medication regimen**
- **Treatment requires** mastery of **certain techniques**
- **Duration of therapy**
- **Frequent changes** in **medication regimen**
- Lack of **immediate benefit** of therapy
- Medications with **social stigma** attached to use
- Actual or **perceived unpleasant** side effects
- Treatment interferes with lifestyle or requires **significant behavioral changes**



5. PATIENT RELATED DIMENSION

- ✓ **Physical factors**
 - **Visual impairment**
 - **Hearing impairment**
 - **Cognitive impairment**
 - Impaired **mobility or dexterity**
 - **Swallowing problems**
- ✓ **Psychological / behavioral factors**
 - **Knowledge about disease**
 - **Perceived risk / susceptibility to disease**
 - Understanding reason **medication is needed**
 - **Expectations or attitudes** toward treatment
 - Perceived **benefit of treatment**
 - Confidence in ability to follow **treatment regimen**



❑ BENEFITS OF MEDICATION ADHERENCE

- Enhances **patient safety**
- Decrease **health care costs**
- **Improves long term therapies** and outcomes.
- **Good investment** for tackling **chronic conditions**

CAUSES OF MEDICATION NON ADHERENCE

- The **causes of nonadherence** can be managed to **reduce the risk** of the **patient not taking** their medication.
- Let's **dive deeper** into the causes to explore what **continues to drive** medication **non-adherence**.

❑ FORGETFULNESS

- Just like **implementing** any **new habit**, **incorporating** the act of **taking medication** into your **daily routine** can be a challenge at the start.
- It **requires reminders**, accountability, and drive to stay consistent.
- Even for **veteran medicators**, a change in **environment or schedule** can throw off their **routine and lead** to missed doses.



❑ FEAR AND WORRY

- As a **patient**, it's common to have **anxiety around** new medication, **perhaps around** expected **side effects** or the **social stigma** of taking **medication in public**.
- This may result in a **patient intentionally** not taking their **medication** and then **fearing** to tell the **truth** to their **healthcare provider**.



- By **educating the patient** on their condition, their **upcoming journey**, how to cope with **side effects**, and the **importance of their medication** – they can be **better supported** to overcome any **fears or challenges** they may face.

❑ MISUNDERSTANDING

- What a **medicine is prescribed** for, how the **medication** should be taken (e.g. together with a meal or not), and for how **long the medication** should be taken is **information** that can often be **misunderstood** or **misinterpreted** between **doctor and patient**.



❑ ADVERSE SIDE EFFECTS

- For many, the **side effects** of a **new medication** may be too **negative or intense** to wish to **continue being adherent**.
- Similar to **fear and worry**, a **patient may intentionally stop** taking their medication due to the **side effects**.
- It is important to report any **adverse side effects** and to discuss with a doctor how to **manage side effects** that will appear along the way and when it is time to **change medication** if they **become too negative**.



❑ COMPLEX MEDICATION SCHEDULES

- **Complex medication schedules** require **supporting your medication organization** in addition to having **set reminders** to take **doses throughout** the day at the **right time intervals**.



- For **some patients**, such as minors, others may have to be involved to **support the patient** in medicating.

❑ **LACK OF SYMPTOMS**

- It has been shown that it is **particularly** difficult to **maintain a medication taking behaviour** when the **medicine** is of **preventive nature**.



- If a **medication is taken** to avoid an event in the **future** and when the **patient does not feel any direct positive effect** from taking the medication or **direct negative effect** from not **taking the medication** it is of **course** even harder to keep the **motivation high**

❑ **SUFFERING MENTAL HEALTH**

- If a **patient suffers** from a **mental illness** which **negatively alters** their **mental state**, this **can impact** a **patient's ability** to take their **medication** on schedule and as **prescribed**.
- Mental **health support** along a **patient's journey** is key to ensure that they can feel the best they can to **actively contribute** to their **own treatment**.



PHARMACIST ROLE

- **Pharmacists often provide** verbal education and **written individualized** information for the **patient although** the benefits of these **strategies alone are unclear.**
- **Macdonald studied** the effects of **patient education** by pharmacists on **medication adherence** in **post-discharge patients**, which demonstrated a **clear benefit** in the patients **receiving education** from pharmacists.
- In an unpublished study by authors, **clear benefit** was demonstrated in a **randomized control** trial in both **asthma and COPD** patients with a follow-up period of two months in improving **medication adherence** along with the **inhalation technique** following pharmacist- based educational **interventional program.**
- It was **interesting** to note that the improvement in the inhalation technique continued with each **educational sitting.**
- The **patients received** both **oral education** and **written instructions** in the **local language** about their diseases, need for **regular medication** and the importance of **each medication** in an **educational programme** lasting **45 minutes** in each sitting.
- The information that patients need to know which **pharmacists** can **impart includes**
 - ✓ **Name and purpose** of the drug. When and how to take the medication.
 - ✓ **Possible side effects.**
 - ✓ **Precautions .**
 - ✓ **Interaction with food** or other drugs.
 - ✓ **Duration of therapy.**
 - ✓ Action to take if a **dose is missed.**
 - ✓ How to tell if the **medication is working** or **not working .**

- Apart from **patient education**, a **pharmacist** may contribute towards **improving medication** adherence by other means including advice to prescribers on the **simplification** of **drug regimens**, **providing patients** with **medication cards** or **medication aids** such as a **dosette**, and by **identifying** the **predisposing**, **enabling**, and **reinforcing factors** which may **contribute towards** medication **non-adherence**.
- Though **patient interviews**, the pharmacists can assess the **patient's knowledge** of their **drug therapy** and **usual medication habits**.
- For example, does the **patient** have a **set of routine** and is **family support** available to **supervise medication** use.
- The **pharmacist** is also able to identify if the **patient** has any **specific problems** with medication, such as a **problem swallowing** large tablets, of **difficulty opening** child-proof containers.
- The **pharmacists** can also assess the **patient's ability** to comprehend and **recall information**, and if an **adverse drug reaction** may discourage **medication adherence**.

❖ STRATEGIES TO IMPROVE THE PHARMACIST-PATIENT RELATIONSHIP

- Be **friendly and approachable** to the patient.
- Improve **communication skills**.
- Take into **account the spiritual** and **psychological needs** of the patient.
- Improving **patient education**.
- Encourage the **patient to discuss** their main concern **without interruption** (or) **pre mature closing**.
- **Elicit** the **patient perception** of the illness and **associated feelings** and expectations.
- Learning methods of **active listening** and **empathy**.
- Give **clear explanation**.
- Check the **patient understanding**.
- Simplify the **therapeutic regimes**.

- Monitor the **side effects**.
- Monitor the **beneficial effects**.
- Speak the **same language of patient**.
- Involvement of **patient treatment** discussion.
- Through the **patient interviews** the **pharmacist** can assist the **patient knowledge** of their **drug therapy** and **usual medication habits**.

MONITORING

- **Assessment**, **quantification**, **measurement** and **evaluation of adherence**

❖ DIRECT METHODS

- **Drug monitoring**
- **Detection of the drug** or its metabolites in **biological fluid**
- **Direct observation therapy**
- Most accurate methods of **adherence measurement** but are expensive.
- ✓ **Direct measurement**
 - Home **finger prick sampling**.
 - **Biological markers**
 - **Directly observed therapy**

❖ INDIRECT METHODS

- **Self reports**
- **Pill counts**
- Rates of **prescription refills**
- Assessment of the **patient's clinical response**
- **Measurement of physiologic markers** as well as patient diaries
- ✓ **Indirect measurement**
 - **Self report measure**
 - **Morisky's medication adherence scale**
 - Medical outcome **adherence study scale**
 - Brief **adherence rating scale**
 - **Electronic adherence monitoring**

PATIENT MEDICATION HISTORY INTERVIEW

Points to be covered in this topic

INTRODUCTION

**NEED FOR THE PATIENT MEDICATION
HISTORY**

MEDICATION INTERVIEW FORMS

INTRODUCTION

- **Medication history** is a part of **pharmaceutical consultation** that identifies and **document allergies** or other serious **adverse drug medication** events as well as information about how medicines are **taken currently** and have been taken in the **past**.



- **Starting point** for **medication reconciliation** and **medication review**.
- Part of **medical history** which focuses on **medication therapy**.

NEED FOR THE PATIENT MEDICATION HISTORY

- The goal of a **medication history** interview is to **acquire information** on aspects of **drug use by patients**.
- So, **such information** may help pharmacists for **improvement** in the overall **care of a patient**.
- The **collected information** can be **helpful to achieve** the following goals:
 1. Helps to **investigate the medication** discrepancies by **comparing the medication** profile with the **medication administration record**.
 2. Other staff verify the **collected history** of a patient and can provide **additional information** wherever **require appropriately**.
 3. Helps to document the **allergies** and **drug-related adverse reactions**.
 4. Helps to **evaluate** the **rationale for prescribing drugs**.
 5. Helps to assess indications of **drug abuse**.
 6. Helps to check the **drug interactions**.
 7. Helps to access **drug administration techniques**.
 8. Helps to examine the **requirement of assistance** in medication.

❑ IMPORTANCE OF ACCURATE MEDICATION HISTORY

- Helps in the **prevention of prescription errors** and **subsequent risks** to the patients.
- Helpful in a finding of **drug-related pathology** and any **clinical signs** due to **results of drug therapy**.
- Considering all **accurate medication history** information helps to establish a **better care** plan for the **patients**.

❑ STAGES OF PATIENT MEDICATION HISTORY

- There are **three stages involved** while **practicing** for **patient medication** history. The **objective and procedure** at each stage are discussed below:

❖ STAGE 1: BEFORE TAKING MEDICATION HISTORY.

- ✓ **Objective:** To create **good relationships** and **build confidence** in patients.
- ✓ **Method:** Following are different steps in this procedure:
 1. **Confirmation** of **patient identity**.
 2. **Self-Introduction**.
 3. **Reason of interrogation** and total time **required for interrogation**.
 4. Initiate in **taking of medication history** of a **patient**.

❖ STAGE 2: DURING TAKING OF HISTORY.

- ✓ **Objective:** To collect **accurate information** on the **medication history**.
- ✓ **Method:** Following is the **step followed** in this stage.
 1. Ask the **question according** to the **format given** for the collection of **medication information**.

❖ STAGE 3: AFTER TAKING HISTORY.

- ✓ **Objective:** Documentation and **analysis of information**.
- ✓ **Method:** Following are steps follow in this stage:
 1. **After completion** of the **interview, a pharmacist** must express **appreciation for providing** this information.
 2. **Review and analyzes** the past **medical record**.
 3. Documentation of **important medication history** data of a patient.

□ A PATTERN OF QUESTIONS TO BE ASKED BY PHARMACIST IN INTERVIEW

- ✓ Following are **some questions** patterns that may be asked by **pharmacists** while a **collection information** on the **medication history**.
- The name of the **medication used**.
 - Type of **dosage form**.
 - **Dose** of medication.
 - How are they **taking it** (by which route)?
 - How many **times take** in a day?
 - For what **reason** you are taking medications?
 - Any **allergic reactions** were seen with **medications** and what was the reaction?
 - Are you taking **any medicine** on a regular/needed basis? If yes, for what reason?
 - Any **counter medications** are you taking on a **regular** or as-needed basis? If yes, for what reason?
 - Any **traditional medicines** are you taking on a **regular or as-needed** basis? If yes, for what reason?
 - **Any vitamins** or **other supplements** are you taking? If yes, for what reason?
 - Have you taken any **new medicine**?
 - Are there **any changes** in dose or **stop of medication** by a doctor recently?
 - Recently did you **minimize the doses** or stop any of your medications?
 - Are any of the **medications producing** any kind of **side effects**?
 - Did you **stop or change** any **medications** due to unwanted **side effects/feel worse**?
 - Did you **stop taking** your **medicine sometimes** whenever you feel better?

PATIENT MEDICATION HISTORY INTERVIEW FORM

Date: ____/____/____

NAME:

Birthdate:

____/____/____

Last

First

M. I.

Age: _____ Sex: F M

How did you hear about this clinic?

Describe briefly your present symptoms:

Please list the names of other practitioners you have seen for this problem:

Psychiatric Hospitalizations (include where, when, & for what reason):

Have you ever had ECT?

Have you had psychotherapy?

COMMUNITY PHARMACY MANAGEMENT

Points to be covered in this topic

INTRODUCTION

FINANCIAL

MATERIALS

STAFF

INFRASTRUCTURE REQUIREMENTS

INTRODUCTION

COMMUNITY PHARMACY

- Community pharmacy is a **pharmacy service** center established in a **community set up** catering to the needs of the **society** for their **drug products** , **health care items** and related materials .
- **Community pharmacy** in India is known as **retail pharmacy** store or simply a **drug store**.

COMMUNITY PHARMACY MANAGEMENT

- **Represents** all activities involved in the **organization and direction** of getting people together to **accomplish** desired and objectives of **pharmacy enterprisers**.



OBJECTIVES

- **Compare the proportion** of the **patients** receiving appropriate treatment , as defined by currently available **evidence and guidelines** , between **intervention** and **control groups** at **baseline and follow up**.
- **Quality health** gain by describing the change in **patient health** status after the **intervention** as defined by **standard measures** , both general and **conditions specific**.
- Conduct an **economic evaluation** of the **medicines management** intervention

□ SCOPE OF COMMUNITY PHARMACY

- In processing prescriptions
- Clinical pharmacy
- Patient care
- Drug monitoring
- Extemporaneous preparation
- Alternative medicines
- Checking symptoms of minor ailments
- Health care professionals

□ ROLES AND RESPONSIBILITIES OF COMMUNITY PHARMACIST

- Dispensing prescription medicines to the public.
- Ensuring that different treatments are compatible
- Checking dosage and ensuring that medicines are correctly and safely supplied and labeled supervising the preparation of any medicines.
- Keeping a register of controlled drugs for legal and stock control purposes.
- Liaising with doctors about prescriptions
- Selling over the counter medicines.
- Counseling and advising public on the treatment of minor ailments.
- Advising patients of any adverse side - effects of medicines
- Measuring and fitting compression hosiery.
- Monitoring blood pressure and cholesterol levels.
- Offering a diabetes screening service.
- Arranging the delivery of prescription medicines to patients.
- Managing , supervising and training pharmacy support staff.
- Budgeting and financial management.
- Keeping up to date with current pharmacy practice , new drugs and their uses.

❑ FINANCIAL MANAGEMENT

- Financing is required to set up a new **community pharmacy** in order to **maintain the medicines** and **stock cover** the **expenses**.



❖ PURPOSE OF FINANCE

- To **purchase land** , **building** , **machinery** and **equipment**
- To **purchase raw materials** and other materials
- To **pay salaries** , **wages** and **incidental charges**.
- To maintain **stock and supply products**

❖ TYPES OF FINANCE

✓ **Fixed capital**

- **Fixed / tangible assets** that are free from **financial obligation** or **debts**.
- **Invested in permanent** assets such as **land and building** , **plant and machinery** , furniture etc

✓ **Working capital**

- **Required for purchase** and for **meeting** day to day **expenses** such as **wages** , **salary** , **rent** , **taxes** etc.
- It is either **fixed or variable**.

❖ SOURCES OF FINANCE

✓ **Owned finance**

- Generated by **owner** , **partner** or **shareholders**.
- As long as **business run** it remains and **surplus** is returned to the **shareholders**.

✓ **Loan finance**

- The **capital is generated** from bank or other **financial institutions** .
- Interest is **paid periodically** at a **fixed rate** , can be **obtained against** mortgage or **pledge of the property**.

MATERIALS

❑ **MATERIAL MANAGEMENT**

- **Material management** is the **planning** , **directing** , **controlling** and **coordinating** the activities concerned with material and inventory **requirements** from the point of **their inception** to their introduction into the **manufacturing process**.
- ✓ **It includes**
 - **Procurement of material**
 - **Maintenance of stock**
 - **Issuing , handling and transport**

❖ **STOCKING**

- ✓ **Functions of stocking**
 - **Receiving , handling** and **speedy issue** of material
 - **Custodian of goods** in store against **damage**
 - To established **regular supply** of **materials**
 - **Physical stocking** and its **checking**
 - **Efficient utilization** of store space.
 - To **provide service** to the **organization** in most **economic way**.
 - **Proper identification** and easy location of items.
- ✓ **Stocking of drugs in drug store**
 - According to **manufacturer**
 - According to **pharmacological action**
 - **Alphabetical order**
 - As per **old stock** and **date of expiry**

❖ CODING OR CODIFICATION

✓ **Advantages of codification**

- It helps in **easy identification** of **items**.
- It helps in **grouping the similar** items together.
- The **ambiguity in description** of the **materials** can be avoided.
- It helps in **avoiding duplication** of items
- It helps in **physical counting**.
- It helps in **inspection of the materials**.
- The **coding helps** in **maintaining the secrecy** of the items.

✓ **Methods of codification**

- **Alphabetical order** method/letter code
- **Mnemonic method**
- **Numerical method** / **sequence system** method
- Combination method of **alphanumeric method**

✓ **Location coding**

1. **Fixed location**
2. **Random location**
3. **Zonal location**

STAFF

- The **management** of **staffing** is the process of **hiring and developing** the **required positions** in the organization.
- It involves the **scientific and systemic procurement**, **allocation**, **utilization**, **conversion** and development of **human resources**

❖ FEATURES OF STAFF MANAGEMENT

- It is **continuous** and **persistent function**.
- It is an **integral part** of the **management process**.
- **Staff management** is a **difficult process** because, it deals with **human beings** who have their **own needs**, **emotions and aspiration**.
- It is concerned with the **HR of an organization**.

❖ IMPORTANCE OF STAFF MANAGEMENT

- Staffing helps to build the **healthy organization** in which the **job performance** and **satisfaction** of every **employee is high**.
- Staffs management inject life into of **organization** by providing the **right person** for every job.
- **Employees** are the **most important** asset in the **organization**.
- The **quality of the employees** decides the **future and scope** of organization

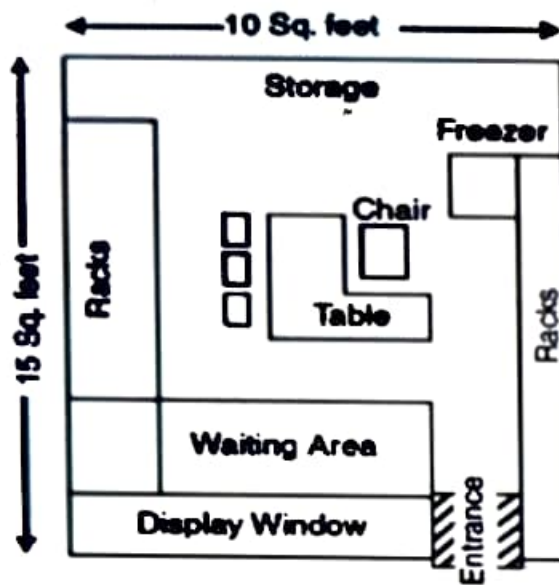
INFRASTRUCTURE REQUIREMENTS

❑ SELECTION OF SITE

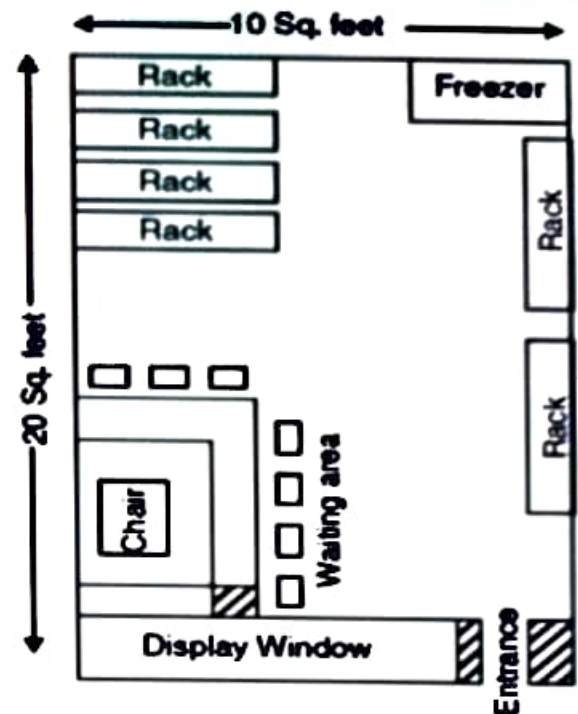
- Site is **well connected** with various **modes of transport**
- Surrounding should be **good ; no congestion** of traffic
- Site of the plot has a **sufficient scope** for **expansion**.

❑ LAYOUT OF STORE

- **Flexibility** in arrangement
- Convenience in **physical counting** of materials
- Items used **sparingly** should be **easy to locate**
- **Efficient protection** against **deterioration** and **pilferage of materials**.
- Better **stock control** but **minimum routine** work like record.
- Efficient use of **floor space** and **height**.
- **Safety from hazards** , insurance etc.
- **Proper illumination** and **ventilation**
- **Shelves and bins** should not be **very deep**.
- **Minimum handling** and **transportation of materials**.



Retail drug store design



Whole sale drug store design

❑ OBJECTIVES OD LAYOUT PLAN

- To attract **maximum customers**
- To **increase purchase** from **each customer**
- To **improve general appearance** and **professional image**
- To **maximize utilization** of space.
- To **reduce pilferage**, theft and **provides surveillence**
- To **control movement** inside the store.

Storage condition	Temperature in °c
Cold temperature	2 to 8
Cool temperature	8 to 25
Room temperature	25 to 30
Warm temperature	30 to 40
Excessive heat	Above 40
Controlled room temperature	15 to 30
Freezer	-20 to -10
Dry place	40 average relative humidity