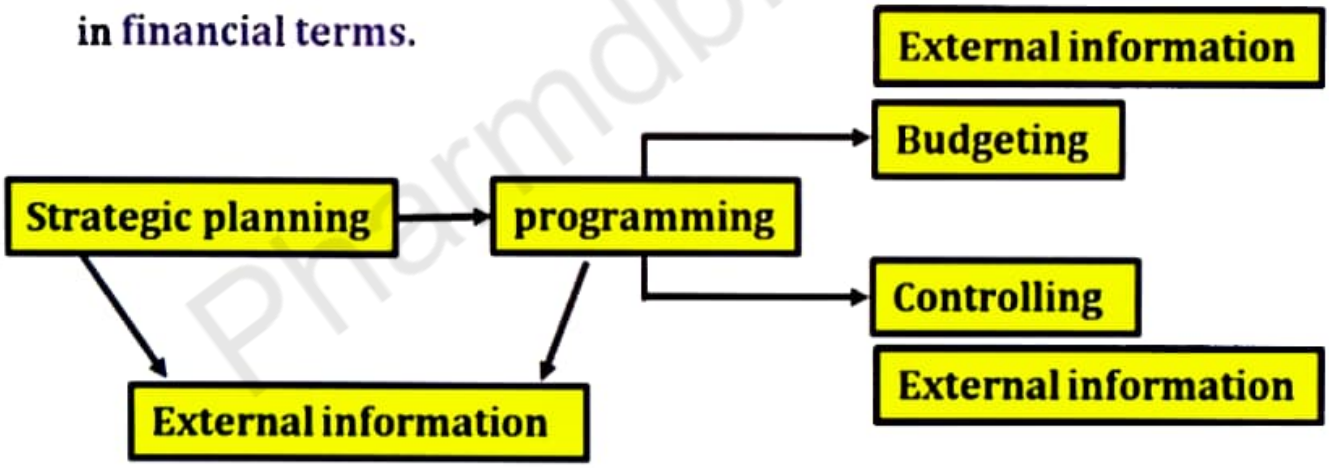
PREPARATION AND IMPEMENTATION

Points to be covered in this topic

BUDGET PREPARATION AND IMPLEMENTATION

❑ BUDGET

- Budget is described as an instrument through which hospital administration, management at the departmental levels and the governing bodies can review the hospital services in relation to the prepared plan in a comprehensive and integrated form expressed in financial terms.



❖ OBJECTIVES

- Development of standards
- Comparison of actual results with standards.
- Identification of deviation and standards.
- Analysis of deviation
- The responsible person will use the budget details to determine whether the proposal is economically feasible and realistic.
- To monitor the hospital financial activities.
- Estimate the cost of completing objectives identified in the proposal

❖ ADVANTAGES

- Develop **better financial planning**
- Gives a **better focus** on **decision making** to the management
- **Effectively manage** the **financial aspects** of the hospital
- Exposes the **reason of over expenditure**
- **Helps to focus** on **hospital priorities**
- **Enhance efficiency** of staffs and others

TYPES OF BUDGETS

Sales budget :-
Estimation of sales forecast for specific period
Production budget :-
Estimation of cost for manufacturing a product
Labour budget :-
Wages and incentaives of work force

Fixed budget :-
Remains unchanged irrespective of level activity
Flexible budget :-
Calculate depending upon changes in amount of actual revenue
Master budget :-
Overall picture of proposed activities
Cash budget :-
Cash plan for specific period of time

Personnel budget :-
Manpower requirement
Administrative budget :-
Salaries of managerial personnel
Selling and distribution expenses budget :-
Expenses for promotion and distribution of products

❑ PREPARATION BUDGETS

- Each budget is classified into **3 divisions**
    1. **Income account**
    2. **Expenditure account**
    3. **Equipment and construction budget**

1. INCOME ACCOUNT

- Total income must be calculated for the implementation of the budget.
- Income is calculated by maintaining daily/weekly/monthly annual records
- The avg. total sum up represents income of the department from various sources
- Pharmacy department or accounts department maintains daily , weekly , monthly and annual cost of the pharmaceuticals issued to the patient services.
- Hospital income further depends upon the type of patients ,i.e. category of patients
    - ✓ No of prescription
    - ✓ No of prescription dispensed by each pharmacist
    - ✓ Hours of work put in prescription volume per hour of service
    - ✓ Mediation cost per patient day
    - ✓ Average drug cost per clinic visit
    - ✓ Average salary cost per prescription
    - ✓ Average supply cost per requisition

2. EXPENDITURE ACCOUNTS

- Expenditure account further divided into following expenses
    - ✓ Administrative and general expenses
    - ✓ Professional care of the patients
    - ✓ Out – patient and emergency expenses
    - ✓ Miscellaneous expenses
- The expenditure accounts include the following categories
    - ✓ Salaries and wages
    - ✓ Supplies and expenses
    - ✓ Drugs and pharmaceutical expenses
    - ✓ Purchase expense
    - ✓ Miscellaneous supplies and expenses

✓ **Salaries and wages**

- Includes :- Pharmacist , assistants , clerks
- Administrative , professional and non-professional staff
- Full time and part time staff
- New post and overtime

✓ **Drugs and pharmaceuticals**

- Dispensed by prescriptions , hospital pharmacy department , out patient , emergency and other departments

✓ **Purchase services**

- Include the cost of prescription purchased from out side pharmacy in case the hospital does not have its own pharmacy.

✓ **Miscellaneous**

- Bottles , labels , glasswares , stationary , pharmacist uniforms , reference books

3. EQUIPMENT AND CONSTRUCTION BUDGET

- It requires major monetary funds
- Budget for immediate arrangements of a new model equipment
- Budget for remodeling and replacement of equipment
- Construction of building.

PROFESSIONAL EQUIPMENT		ADMINISTRATIVE EQUIPMENT
Balances	Prescription case	Bookcases
Cabinets	Pressure pumps , vacuum pumps	Bulletin boards
Capsule machine	Refrigerator	Calculators , computers
Chemical hoods	Sterilizers	Clocks
Distilling apparatus	Tanks	Lockers , metal
Metallic filters	Typewriters	Worktables
Homogenisers	pH meter , polarimeter	Filling cabinets

Autoclaves	Tabet manufacturing equipment	Work tables
	Granulator	

❑ IMPLEMENTATION OF A BUDGET

- For the **Implementation** of a budget there is a **requirement of different** parameters:

❖ ACTUAL FUND POSITION

- **Successful implementation** of the budget will **depend** on **the financial position** of a firm.
- The **master budget** will give **insight into the plan.**
- A **cash budget** will help to know the **cash plan** for a **specific period.**
- Overall, all **types of budgets** are studied at the **micro level** to implement the **planned budget.**

❖ UTILITY OF PARTICULAR ITEM

- This depends **upon materials** used and **expressed in quantities** whereas the **materials purchases** budget is expressed in both ways is **quantitative and financial.**
- This **helps in scheduling** the purchase of **materials** to produce a given **volume of output** during a **particular period.**

❖ COST OF PRODUCTS

- Study of the **cost required** to **manufacture/purchase** a particular product is **very important** in **budget planning.**
- **Cost includes direct costs** and **indirect costs.**
- It is the **production and non-production** costs required to manufacture a **particular product.**

❖ QUANTITY OF PRODUCTS

- **Effective inventory** management is needed for the **successful implementation** of a **budget plan.**
- To **avoid stock** out and **over stock** , **effective inventory** control is needed , as a **huge amount** of capital is **invested in inventory.**

CLINICAL PHARMACY

Points to be covered in this topic

- INTRODUCTION
- CONCEPT
- FUNCTIONS AND RESPONSIBILITIES
- DRUG THERAPY MONITORING
- MEDICATION CHART REVIEW
- CLINICAL REVIEW
- PHARMACIST INTERVENTION
- WARD ROUND PARTICIPATION
- MEDICATION HISTORY
- PHARMACEUTICAL CARE
- DOSING PATTERN AND DRUG THERAPY

INTRODUCTION

- Clinical pharmacy may be defined as the science and practice of rationale use of medications, where the pharmacists are more oriented towards the patient care rationalizing medication therapy Promoting health , wellness of people.
- It is the modern and extended field of pharmacy.
- The discipline that embodies the application and development (by pharmacist) of scientific principles of pharmacology, toxicology, therapeutics, and clinical Pharmacokinetics, Pharmacoeconomics, Pharmacogenomics and other allied sciences for the care of patients.

CONCEPT

- The concept of clinical pharmacy includes the range of services through which all practising pharmacists exercise their responsibilities towards the care of patients.
- Clinical pharmacy is concerned with the rational selection and use of medications at the patient level.
- It ensures the appropriate and safe use of drugs in patient care.
- The appropriate drug and the dose, route, form, frequency and duration of treatment must be selected and drugs have then to be administered accurately.
- The active participation of the pharmacist in patient care with the long-term aim of giving advice on medication with an individual patient in mind and tailoring drugs therapy for that individual.
- Among the major activities, covered under the term clinical pharmacy, include involvement in prescribing rounds, patient counselling, drug history taking, parenteral nutrition service, pharmacokinetic advisory service and monitoring for adverse drug reactions and interactions

- Relatively minor activities are health education, training and education of own staff and doctors, nurses, clinical trials, case references, research and clinical meetings.
- A clinical pharmacist works side by side with the physician, by the patient's bed-side where he monitors the drugs, dosages and the side effects and advices the physician on these.
- Hence, we can say clinical pharmacy has brought the pharmacist into closer touch with the prescribers and the details of treatment of patient.

FUNCTIONS AND RESPONSIBILITIES

❑ TAKING OF THE MEDICATION HISTORY OF THE PATIENT

- This includes maintenance of the past and current medication history of the patient for both prescription and non-prescription drugs , determining drug allergies and sensitivities , nothing the side effects , toxicity , incorrect drug administration and any specific problem associated with the administration of a drug to the patient.

❑ PATIENT EDUCATION

- Patients need to be educated on the mode of administration, use and storage of drugs, their possible actions and side effects, the importance of compliance, possible interactions with other prescription or non-prescription drugs and reporting of an adverse or unusual effect to the physician or the clinical pharmacist.

❑ PATIENT CARE

- The clinical pharmacist is required to monitor the drug therapy of the patient making use of the available pharmacokinetic data
- He may, if necessary, consult the physician or other health care professional regarding the drug therapy.

❑ PARTICIPATION IN DRUG UTILIZATION STUDIES

- By virtue of his professional training, a clinical pharmacist is an important person to conduct patient care audit which could highlight the deficiencies in the existing system and devise strategies for the overall improvement in the quality of health care of the patient.

❑ FORMULATION AND MANAGEMENT OF DRUG POLICIES

- Being in a key position in assessing and monitoring drug therapy, possessing sound knowledge about the various aspects of drug action, adverse reaction etc. and his active collaboration and inter action with members of the health care team, he naturally commands considerable importance in framing and implementation of drug policies.

❑ EDUCATION OF MEDICAL AND PARA-MEDICAL STAFF

- By virtue of his being a source of knowledge on drugs, a clinical pharmacist has a role to play in educating the medical and para-medical staff on rational drug therapy.

❑ RESEARCH AND DEVELOPMENT

- The clinical pharmacist can be an important person in undertaking research on drug development , formulations and bioavailability studies.

❑ DRUG INFORMATION

- A clinical pharmacist is well equipped to respond to drug related queries and to provide information on drugs to various members of the health care team.

DRUG THERAPY MONITORING

- One of the fundamental activity of the clinical pharmacist working in hospital.
- Individualisation of patient drug therapy
- Rational usage of drugs
  - ✓ Appropriate drug
  - ✓ Appropriate patient
  - ✓ Appropriate dose
  - ✓ Appropriate route
  - ✓ Appropriate frequency
  - ✓ Appropriate duration

- A reliable and responsive drug therapy monitoring service depends on team work between nurses, doctors, pharmacist, scientist and technical staff.
- The clinical pharmacist should provide advice to medical staff on the appropriate use of drugs and assist them in obtaining better therapeutic results.

❑ GOAL

- To optimise the drug therapy and patient outcomes by implementing a strategy involving following components.
  - ✓ Collation and interpretation of patient specific information.
  - ✓ Identification of desired therapeutic outcomes.
  - ✓ Review of drug therapy.
  - ✓ Formulation and interpretation of monitoring strategy.
  - ✓ Review of outcomes.
  - ✓ Modification of patient monitoring if required.

❑ COMPONENTS OF DRUG THERAPY MONITORING

- ✓ Medication order review
- ✓ Clinical review
- ✓ Pharmacist intervention

MEDICATION CHART REVIEW

- It is a **fundamental responsibility** of a **pharmacist** to ensure the **appropriateness of medication** orders.
- It serves as starting point for other **clinical pharmacy** activities (medication counselling, TDM, DI, and ADR)
- **Organizing information according** to **medical problems** helps breakdown a **complex situation** into its **individual parts.**

❑ GOAL

- To optimize the **patients drug therapy**
- To prevent or **minimize drug** related problems / **medication errors**

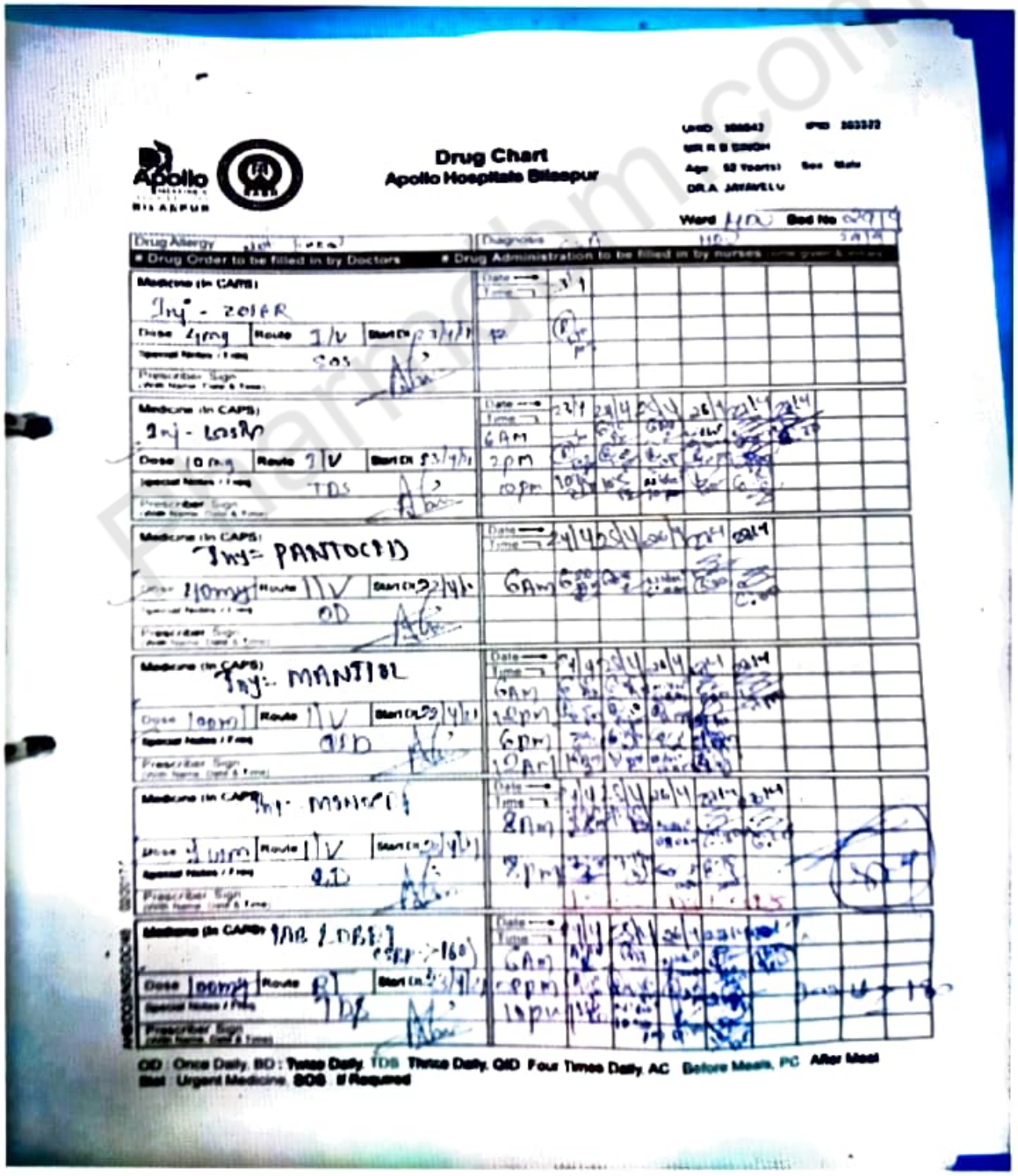
❑ PROCEDURE

- The **patients medical record** should be **reviewed in conjugation** with the **medication administration record.**
- **Recent consultations**, **treatment plans** and **daily progress** should be taken into account when **determining the appropriateness** of **current medication orders** and **planning each patient's care.**
- All current and **recent medication orders** should be reviewed.

- Ensuring that the medication order is comprehensible and unambiguous , that appropriate terminology is used and that drug name are not abbreviated.
- Annotate the chart to provide clarification as required.
- Detecting orders for medication to which the patient may be hypersensitive / intolerant
- The patient's previous medication order.
- Patient's specific considerations e.g disease state, pregnancy.
- Drug dose and dosage schedule, especially with respect to age, renal function, liver function.
- Route, dosage form and method of administration.
- Checking complete drug profile for medication duplication, interactions or incompatibilities.
- Ensuring that administration times are appropriate e.g. with respect to food , other drugs and procedures
- Checking the medication administration record to ensure that all ordered have been administered.
- Ensuring that the drug administration order clearly indicates the time at which drug administration is to commence.
- Special considerations should be given especially in short course therapy as in antibiotics and analgesics.
- Ensuring that the order is cancelled in all sections of medication administration record when the drug therapy is intended to cease.
- If appropriate follow up of any non- formulary drug orders , recommending a formulary equivalent if required.
- Ensuring appropriate therapy monitoring is implemented.
- Ensuring that all necessary medication is ordered . e.g. premedication , prophylaxis.
- Reviewing medication for cost effectiveness

❑ COMPONENTS OF MEDICATION ORDER REVIEW

- **Checking that medication order is written in accordance with legal and local requirements**
  - ✓ **Patient name and IP number**
  - ✓ **Age, gender**
  - ✓ **Drugs in capitals**
  - ✓ **Dose, ROA**
  - ✓ **Frequency**
  - ✓ **Duration of the treatment**
  - ✓ **Physician signature**
  - ✓ **Physician address** and phone number



❑ IDENTIFICATION OF DRUG RELATED PROBLEMS

- ✓ Untreated indication
- ✓ Inappropriate drug selection
- ✓ Sub therapeutic dose
- ✓ Adverse drug reaction
- ✓ Failure to receive drug
- ✓ Drug interactions
- ✓ Drug use without indication
- ✓ Over dosage

CLINICAL REVIEW

- Clinical review is one of the integral components of medication review and should preferably be performed on a daily basis.
- It is the review of the patients progress for the purpose of assessing the therapeutic outcome.
- The therapeutic goal for the specific disease should be clearly identified before the review.

❑ GOALS

- The primary aims of the clinical review
- Assess the response to drug treatment.
- Evaluate the safety of the treatment regimen.
- Assess the progress of the disease and the need for any change in therapy.
- Assess the need for monitoring, if any.
- Assess the convenience of therapy.

❑ PROCEDURE

- Collection of patient specific data should he undertaken routinely.
- The data collected should be clinically relevant, and documented in the pharmacy patient profile.
- Results of biochemical, haematological, microbiological, radiological and other investigations should be reviewed.

- Information elicited from the patient should also be considered.
- Information obtained must be interpreted and evaluated with reference to
  - ✓ Clinical features
  - ✓ Pathological condition
  - ✓ Indication for investigation
  - ✓ Patient medication history
  - ✓ Planned outcomes of therapy

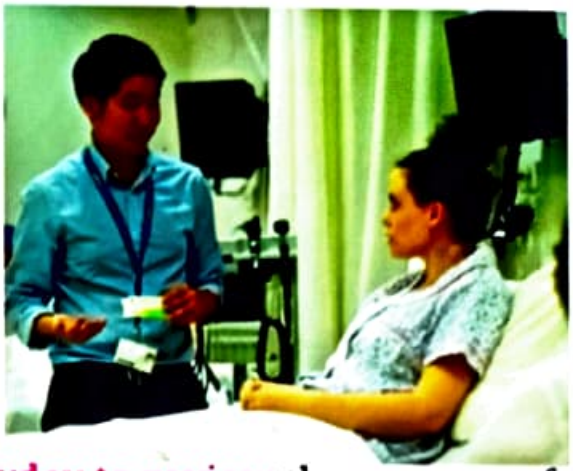
PHARMACIST INTERVENTION

- Any action taken by the pharmacist that directly results in a change in management or therapy. Intervention by pharmacist to assist prescribing can be
  - ✓ Active -Use of therapeutic guidelines
  - ✓ Passive -Drug in service
  - ✓ Reactive - Seeking amendment of those that. are unclear inadequate or inappropriate
- Interventions can also be classified in accordance with categories of drug related problems.
- Documentation of each and every intervention is very important
- That document should include the following details
  - ✓ Patient details
  - ✓ Date, ward and pharmacist
  - ✓ Drugs involved
  - ✓ Description about the intervention
  - ✓ Details of response to intervention

❑ FACTORS DETERMINING THE SUCCESS OF INTERVENTION

- Effective communication skills
- Appropriateness of the intervention
- Way of approach

WARD ROUND PARTICIPATION



- **Ward round** is a visit made by a **medical practitioner**, alone or with a team of **health professionals** and **medical students** to hospital inpatients at their **bedside to review** and **follow-up progress** in their health.
- At least one **ward round** is conducted **everyday to review** the progress of each **inpatient.** However more than **one is not uncommon**.
- **Various countries** has shown **pharmacist participation** in **ward round** helps patient as well as other **health care professionals**,
- **Addition of pharmacist** participation in **ward rounds** helps **ensure safe, effective and economic** use of drugs which **ultimately results** in **decreased adverse drug events**, improved **patient care,** induced length a hospital stay and **reduced health care cost.**

❑ OBJECTIVE

- Gain an **improved understanding** of the patient's , **clinical status** and **progress** , **current planned investigations** and therapeutic goals.
- Provide **relevant information** on various aspects of the **patient's , drug therapy** , such as **pharmacology, pharmacokinetics, drug availability, cost, drug interactions** and ADRs
- Optimise therapeutic management by **influencing drug therapy** selection, implementation, monitoring and follow-up.
- Investigate unusual **drug orders or doses**
- Assimilate **additional information** about the patient such as **co-morbidities**. medication compliance or **complementary** , and **alternative medicine** use that **might he relevant** to their management.
- Detect **adverse drug reactions** and **drug interactions**
- Participate in **patient discharge planning** .

❑ CLASSIFICATION OF WARD ROUND

1. Pre round
2. Register / resident rounds
3. Professor / unit chief rounds
4. Teaching rounds

1. PRE ROUND

- Interns or post graduates students perform a daily review of patients in their unit or ward.
- Learning opportunity to familiarise themselves with the cases
- Trainee clinical pharmacists may join the intern or postgraduates in their pre rounds and complete the patient medication and clinical review.

2. REGISTER/RESIDENT ROUNDS

- Registrar or resident individually or in a team conduct ward rounds at least once a day at a fixed time.
- These rounds are extensive and may also involve clinical teaching to medical postgraduate students and interns.
- Useful rounds for clinical pharmacists of all level of experience to join.

3. PROFESSOR / UNIT CHIEF ROUNDS

- Unit/ward chief conducts the round together with their registrar, residents, postgraduate students and interns for all the patient under their care.
- These rounds are extensive and address more complex issues regarding diagnosis and management
- These rounds may be more challenging for clinical pharmacists in terms of their clinical knowledge.

4. TEACHING ROUNDS

- In teaching hospitals, academic medical staff conduct bedside clinical teaching rounds for residents, medical postgraduate students, interns and medical undergraduate students.
- Conducted few times a week
- These round provides opportunity for pharmacist to improve their clinical knowledge.

MEDICATION HISTORY

- A **medication history** is a detailed , accurate and **complete account** of all **prescribed** and **non-prescribed medications** that a patient had taken or is **currently taking prior** to a initially **institutionalized** or **ambulatory care**
- It provides **valuable insights** in to **patient's allergic tendencies** , adherence to **pharmacological** and **non-pharmacological treatments** and **self medication** with complementary and **alternative medicines** .

❑ IMPORTANCE

- **Preventing prescription errors** and **consequent risk** to patients.
- Useful in **detecting drug -related** pathology or changes in **clinical signs** that may be the result of **drug therapy.**
- It should **encompass all currently** and recently **prescribed drugs**, previous **adverse drug reactions** including **herbal or alternative medicines** and **adherence to therapy** for better care plan.

❑ GOALS

- The **information collected** can be utilized to

1. **Compare medication** profile with the **medication administration** record and **investigate the discrepancies.**
2. **Verify medication history** taken by **other staffs** and provide **additional information** where appropriate.

- The following information is commonly recorded
  1. Currently or recently prescribed medicines
  2. OTC medication
  3. Vaccinations
  4. Alternative or traditional remedies
  5. Description of reactions and allergies to medicine
  6. Medicines found to be ineffective
  7. Adherence to past treatment and the use of adherence aids

❑ INFORMATION SOURCES

1. Patient
2. Family or caregiver
3. Medication vials / bubble packs
4. Medication list
5. Community pharmacy
6. DPIN (Drug programs information network)

PHARMACEUTICAL CARE

- The responsible provision of drug therapy for the purpose of achieving definite therapeutic outcomes that improve the patients quality of life.
- Pharmaceutical care involves the process through which a pharmacist cooperates with a patient and other professional in designing , implementation, and monitoring a therapeutic plan that will produce specific therapeutic outcomes for the patient.

❑ OUTCOMES OF PHARMACEUTICAL CARE

- Cure of a disease
- Elimination or reduction of patients symptomology
- Arresting or slowing of a disease process
- Preventing a disease or symptoms

❑ MAJOR FUNCTIONS OF PHARMACEUTICAL CARE

- Identifying potential and actual drug related problems
- Resolving actual drug related problems
- Preventing potential drug related problems

❖ SKILLS REQUIRED FOR THE CLINICAL PHARMACIST FOR A BETTER PHARMACEUTICAL CARE

- He must possess knowledge and skill in pharmaceutics and clinical pharmacology
- He must be able to mobilize the drug distribution system by which drug use decisions are implemented
- He must be able to develop relationship with the patients and other health care professionals needed to provide pharmaceutical care
- He must be available in the society /community for patient in time
- He should have commitment to quality improvement and assessment procedure

❑ PROCESS OF PHARMACEUTICAL CARE

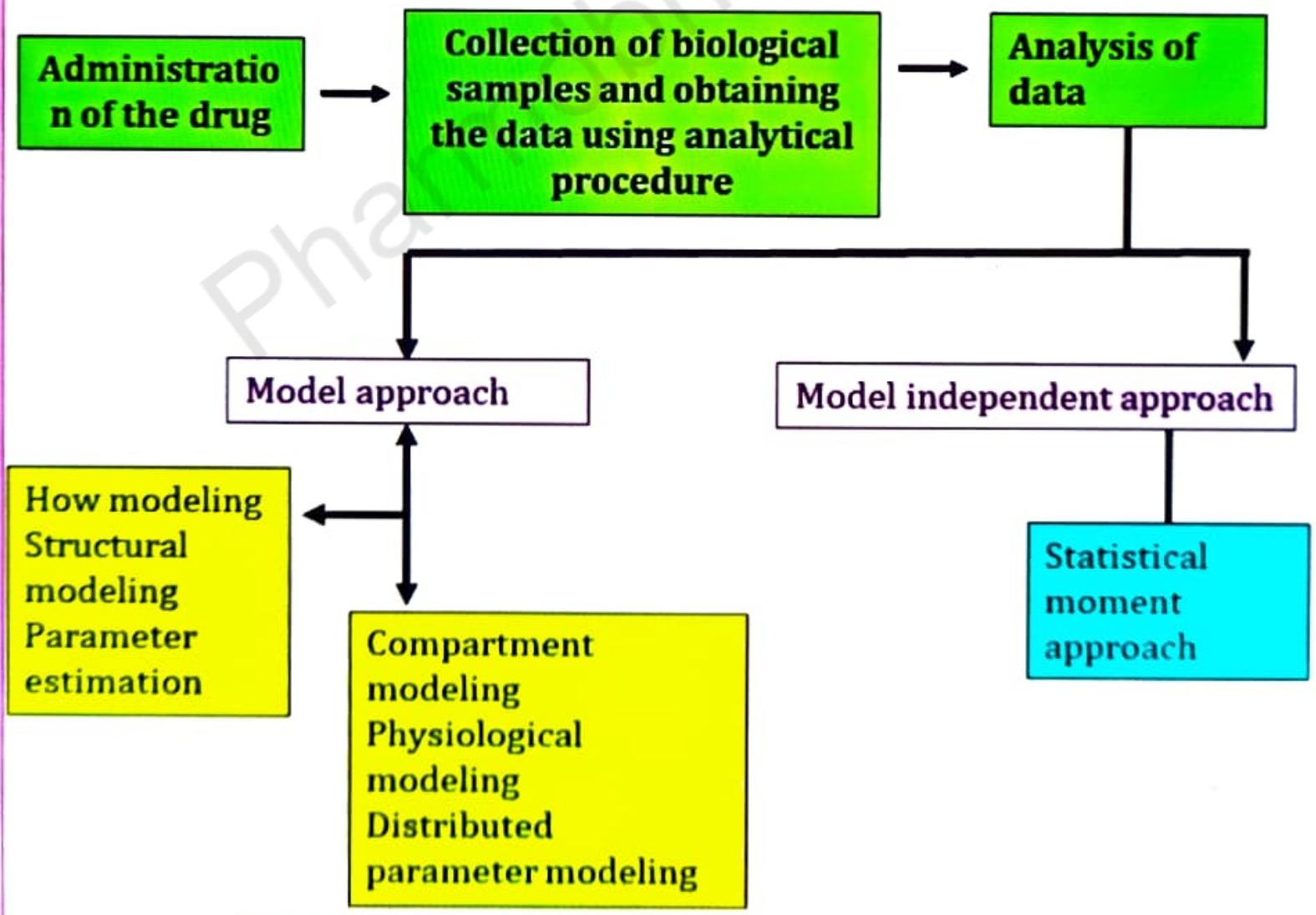
- Establish pharmacist
- Patient relationship
- Collect data
- Interpret data Identify drug related problems
- Determine priority of drug related problems
- Determine desired outcomes(clinical or therapeutic)
- Develop therapeutic plan
- Develop monitoring plan
- Implement and follow up pharmaceutical care plan

DOSING PATTERN AND DRUG THERAPY

❑ PHARMACOKINETIC

- **Pharmacokinetics** is the study of the **time course** of **drug absorption** , **distribution** , **metabolism** and **excretion.**
- It also **concerns the relationship** of these processes to the **intensity** and time course of **pharmacologic effects** of **drugs and chemicals.**
- **Pharmacokinetic** is a **quantitative study.**

❑ OVERVIEW OF PHARMACOKINETICS

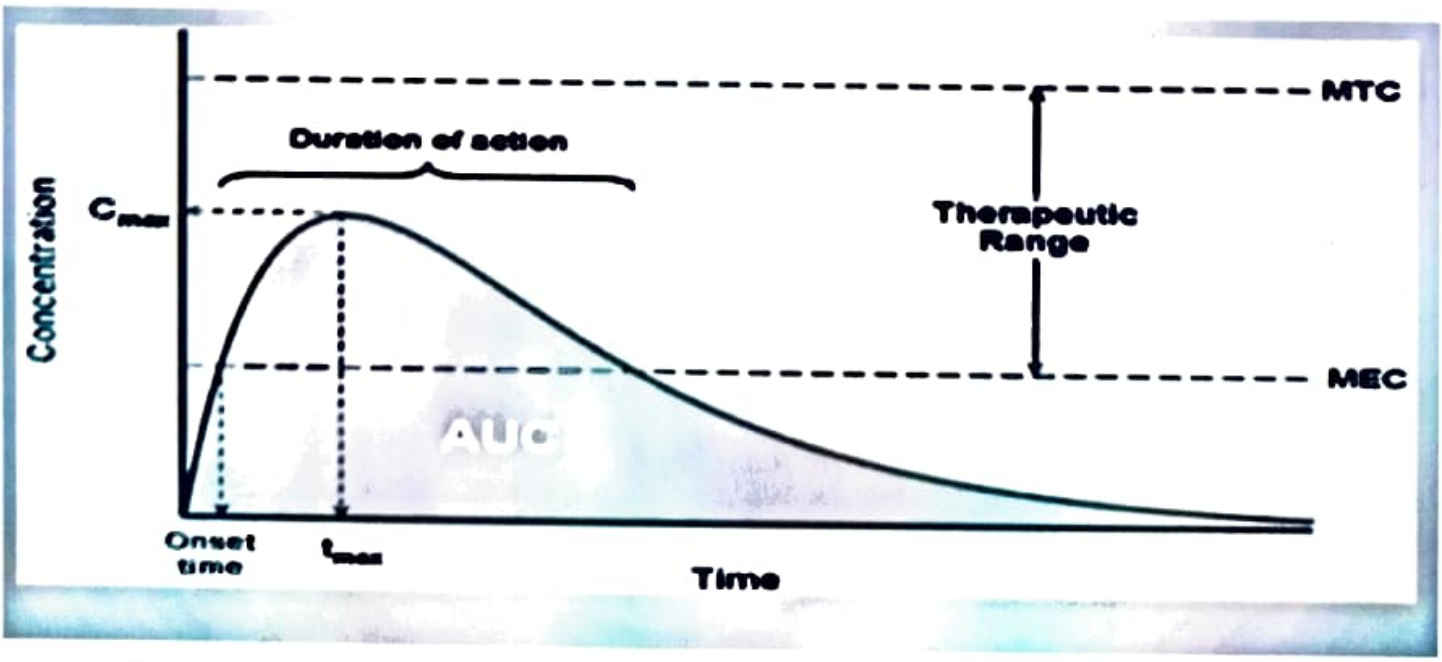


❑ APPLICATION OF PHARMACOKINETICS

- Design and development of **drugs** with **lesser side effects** and **improved therapeutic effectiveness.**
- Design and development of **optimum formulation** for **better use of drug**
- Design and development of **targeted** and **controlled release formulation**
- Design of **multiple dosage regimen**
- Selection of **appropriate route of administration**
- Select of **right drug** for **particular illness**
- **Predict interactions**
- **TDM**
- **Dosage adjustments** at times of **altered physiology.**

❑ DESIGN OF DOSAGE REGIMEN AND MULTIPLE DOSING

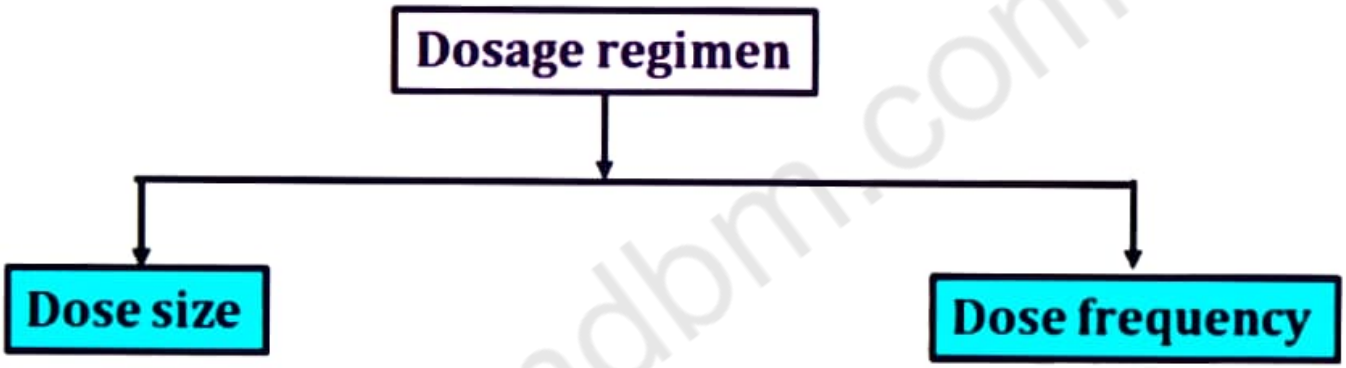
- **Dosage regimen** is the manner in which a **drug is taken.**
- It is the **selection of drug dosage** , **route and frequency** of **administration** in an informed manner to **achieve therapeutic objectives.**
- Duration of **most illness** is longer than a **single dose** .
- Therefore to prolong the **therapeutic effect** multiple **dosing dosage regimen** is preferred.



- An optimal dosage regimen is the one in which the drug is administered in suitable doses , with sufficient frequency that ensures maintenance of plasma concentration with in the therapeutic window for the entire duration of therapy

❑ APPROACHES TO DESIGN OF DOSAGE REGIMEN

- Empirical dosage regimen
- Individualized dosage regimen
- Dosage regimen on population averages
- Fixed model
- Adaptive model



❖ DOSE SIZE

- The magnitude of both therapeutic and toxic responses depend upon dose size.
- Dose size calculation requires the knowledge of amount of drug absorbed after administration of each dose.

❖ DOSE FREQUENCY

- Dosing frequency means the number of times per day that effluent is applied to an absorption system or sand filter.
- Dosing tank means a watertight receptacle receiving effluent from the septic tank or another treatment device, equipped with a siphon or a pump designed to discharge effluent.

FACTORS TO BE CONSIDERED

- **Pharmaceutical factors**
  - Type of dosage form
  - Route of administration
- **Patient related factors**
  - Individual patients tolerance of the drug
  - Genetic predisposition
  - Concurrent administration of other drugs
  - Patients age , bodyweight ., gender
  - Length of illness
  - General physical health
  - Liver and kidney function in the patient

OVER THE COUNTER SALES

Points to be covered in this topic

- INTRODUCTION
- RATIONAL USE OF COMMON OVER THE COUNTER MEDICATIONS

INTRODUCTION

- Over-the-counter (OTC) drugs are medicines sold directly to a consumer without a requirement for a prescription from a healthcare professional , as opposed to prescription drugs, which may be supplied only to consumers possessing a valid prescription.

❑ TYPES OF OTC MEDICATIONS

1. Analgesics
2. Antibiotics
3. Cough suppressents
4. Anti acne drugs
5. NSAIDS
6. Antiseptics
7. Decongestants

8. Antacids
9. Antifungals
10. Anti histamines
11. Smoking cessation drugs

❑ SIDE EFFECTS OF OTC

- ✓ Nausea
- ✓ Vomiting
- ✓ Diarrhea
- ✓ Dizziness
- ✓ Drowsiness

❑ ADVANTAGES

- The use of OTC drugs allows the patient to have greater access to a variety of drugs available in the market to treat some medicinal conditions.
  - ✓ Low misuse
  - ✓ Self treat
  - ✓ Self manage
  - ✓ Health practioners are not needed

❑ DISADVANTAGES

- ✓ Poorer compliance
- ✓ More difficult to study a drug's effects
- ✓ Misdiagnosis occurs.

RATIONAL USE OF COMMON OVER THE COUNTER MEDICATIONS

- Rational use of medicines refers to the correct, proper and appropriate use of medicines.
- Rational use requires that patients receive the appropriate medicine, in the proper dose, for an adequate period of time and at the lowest cost.

1. ANALGESIC

- An analgesic drug, also called simply an analgesic, pain reliever, or painkiller, is any member of the group of drugs used to achieve relief from pain
- Example - Acetaminophen, Aspirin, Ibuprofen, and Naproxen

2. ANTIBIOTICS

- An antibiotic is a type of antimicrobial substance active against bacteria.
- It is the most important type of antibacterial agent for fighting bacterial infections, and antibiotic medications are widely used in the treatment and prevention of such infections.
- Example - Bacitracin , Polymyxin , Neomycin , Benzoyl peroxide

3. COUGH SUPPRESSANTS

- Cough is protective reflex , its purpose being expulsion of respiratory secretions or foreign particles form the lungs and upper airway passages.
- Example - Dextromethorphan

4. ANTIACNE DRUGS

- Antiacne drugs are the medicines that help clear up the pimples, blackheads, whiteheads, and more severe forms of lesions that occur when a teen has acne.
- Example- Benzoyl peroxide, salicylic acid, sulfur, sulfur with resorcinol

5. NSAIDS

- Non-steroidal anti-inflammatory drugs are members of a therapeutic drug class which reduces pain, decreases inflammation, decreases fever, and prevents blood clots.
- Example – Aspirin , Ibuprofen , Naproxen sodium

6. ANTISEPTIC

- An antiseptic is an antimicrobial substance or compound that is applied to living tissue/skin to reduce the possibility of infection, sepsis, or putrefaction.
- Example - Hydrogen Peroxide and Rubbing Alcohol

7. DECONGESTANTS

- Decongestant, any drug used to relieve swelling of the nasal mucosa accompanying such conditions as the common cold and hay fever.
- Example - Afrin, Dristan, Vicks Sinex , Sudafed PE, Suphedrin PE , Silfedrine, Sudafed,

8. ANTACIDS

- An antacid is a substance which neutralizes stomach acidity and is used to relieve heartburn, indigestion or an upset stomach .
- Some antacids have been used in the treatment of constipation and diarrhea.
- Example - Aluminium hydroxide , Magnesium carbonate , Magnesium trisilicate , Magnesium hydroxide , Calcium carbonate.

9. ANTIFUNGAL

- Antifungals are medicines that kill or stop the growth of fungi that cause infections.
- They are also called antimycotic agents.
- Example - miconazole , terbinafine , clotrimazole , butenafine, tolnaftate

10. ANTIHISTAMINES

- A drug that **reduces or eliminates** the **effect mediated** by the **chemical histamine**
- **Histamine is released** by your body during an **allergic reaction** and acts on **specific histamine receptors**.
- Example – **Brompheniramine** , **Cetirizine** , **Chlorpheniramine** , **Clemastine** , **Diphenhydramine**

11. SMOKING CESSATION DRUGS

- **Smoking cessation**, usually called **quitting smoking** or **stopping smoking**, is the **process of discontinuing** tobacco smoking .
- Tobacco smoke **contains nicotine**, which is **addictive** and can cause **dependence**
- Examples - **Nicorette** , **Nicotine patches**, **gum, and lozenges**

❑ IRRATIONALITY

- **Ineffective** and **unsafe drug treatment**
- **Inappropriate self medication**
- **Worsening** or **prolonging of illness**

❖ CONSEQUENCES OF IRRATIONAL USE OF MEDICINE

- **Incorrect** use of **medicine occur** in all countries , **causing harm** to people and **wasting resources.**

✓ **Antimicrobial resistance**

- Overuse of antibiotics **increases antimicrobial resistance** and the **number of medicines** that are no longer effective **against infectious disease.**

✓ **Adverse drug reactions & medication errors**

- **Harmful reactions** to medicine caused by **wrong use or allergic** reactions to medicine can lead to **increased illness**, **suffering and death.**

- ✓ **Lost resources**
  - **10-40% of national budget** are spent on medicines. out of **pocket purchase** of **medicines** can cause severe **financial hardship** to individuals and their **families.**
- ✓ **Eroded patient confidence**
  - **Exacerbated** by the overuse of **limited medicine**, drugs may be often out of stock or at **unaffordable prices** and as result erode **patient confidence.**
  - Poor or **negative health** outcomes due to **inappropriate use** of medicine may also **reduce confidence**.

❑ FACTOR CONTRIBUTE TO INCORRECT USE OF MEDICINES

- **Lack of skills** and **knowledge**
- **Inappropriate unethical promotion** of medicines by pharmaceutical companies profit from **selling medicine**
- **Unrestricted availability** of medicines
- **Overworked health personnel**
- **Unaffordable medicines**