

## Introduction:

- Concept started in 1960s with incidences of **Thalidomide tragedy, Phenytoin toxicity and Digitalis toxicity**
- Hence, it was realized that studies to investigate bioavailability, pharmacokinetic and toxicity of different formulation is must
- So, the branch of clinical pharmacology was developed and responsibilities was given to clinical pharmacist

### **Definition:**

- Clinical pharmacy is defined as that area of pharmacy concerned with the science and practice of rational medication use
- Clinical Pharmacy is that branch of Pharmacy which is concerned with various aspects of patient care and deals not only with dispensing of drugs but also on advising the patient on the safe and rational use of drugs.
- Clinical Pharmacy involves the participation of clinical pharmacists in drug therapy decisions in patient care areas.
- In India, it is in the infancy stage

## **Concept of clinical pharmacy**

- It includes range of services through which all practicing pharmacists exercise their responsibilities towards the care of patients
- It concern with rational selection and use of medication at patient level.
- The need for drug therapy must be assessed.
- The appropriate drug and dose, route, form, frequency and duration of treatment must be selected and drug have then to be administered accurately.

- The whole process must be monitored and the success or failure of the outcome carefully evaluated.
- Doctor, nurses, pharmacists and patients must involve in decision which determine whether the prescribed therapy is appropriate for patient
- Among the major activities, under clinical pharmacy, includes involvement in prescribing rounds, patient counselling, drug history taking and parenteral nutrition services, pharmacokinetic advisory services and monitoring for adverse drug reaction and interaction.
- Relatively minor activities includes health education, training and education of own staff and doctors, clinical trials, research and clinical meetings

## Objectives of Clinical Pharmacy

- **Basic goal of clinical pharmacy** is to optimize individual drug therapy by maximizing drug effectiveness and minimizing adverse drug effects.
- **Objectives-**
  - To assist the physician in doing better job of prescribing and monitoring drug therapy
  - To assist nurses in administering medications and documentation of medication incidences
  - To maximize the patients role in the drug use process

## **Functions and Responsibilities of clinical Pharmacist**

- Taking medication history of patient
- Rational prescription/ Selection of proper drug therapy
- Patient monitoring/ Drug monitoring
- Adverse drug reactions and drug interactions
- Discharge counseling and patient compliance

- Management of drug policies
- Clinical research and continuing education program
- Research and development programs
- Medical Audit
- Drug Information

## **Level of Action of Clinical Pharmacists**

Clinical pharmacy activities may influence the correct use of medicines at three different levels:

Before, during and after the prescription is written.

### **1. Before the prescription**

- Clinical trials
- Formularies
- Drug information
- drug-related policies



## 2. During the prescription

- Counselling activity
- Monitors, detects and prevents Medication related problems
- Therapeutic drug monitoring
- Adverse drug reactions and Drug interactions.
- Medication use without indication

### 3. After the prescription

- Counselling
- Preparation of personalized formulation
- Drug use evaluation
- Outcome research
- Pharmacoeconomic studies

## **Clinical Pharmacy Services**

### **Drug Therapy Monitoring or Therapeutic drug monitoring (TDM):**

- The clinical practice of measuring specific drugs at designated intervals to maintain a constant concentration in a patient's bloodstream, thereby optimizing individual dosage regimens.
- TDM involves tailoring a dose regimen to an individual patient by maintaining the plasma or blood concentration within a particular range.

### Objectives of TDM

- To attain desired pharmacological effect of the drug.
- To reach the maximal effect in shortest possible time.
- To decrease the risk of toxicity.

### TDM is useful in drugs:

- With a narrow therapeutic index,
- Which are highly protein bound,
- Which are liable to interact,
- In which the metabolite might be toxic.

## Medication chart review

- A review of a patient's medication chart(s) to identify potential risks associated with a patient's medications and clarify information that is not clear
- It is a fundamental responsibility of a clinical pharmacist to ensure the appropriateness of medication orders.
- Objectives:
  - To optimize the patients drug therapy.
  - To prevent or minimize drug related problems/medication errors

### Components of Medication Order Review

- Checking that medication order is written in accordance with legal and local requirements.
- Ensuring that medication order is appropriate with respect to:
  - a) The patient's previous medication order.
  - b) Patient's specific considerations e.g disease state, pregnancy.
  - c) Drug dose and dosage schedule, especially with respect to age, renal function, liver function.
  - d) Route, dosage form and method of administration.
- Medication duplication, Administration time, administration record, cost effectiveness etc

## Clinical Review

- 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.
- Objectives:
  - 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 (to improve compliance).

## **Ward Round participation**

- Ward rounds are the routine clinical rounds where the healthcare providers visit the patients in the ward to assess the progress of the health condition of the inpatients.
- The ward rounds comprises of the unit of medicine or any other specialty where in doctors, senior residents, postgraduates and interns along with pharmacists and nurses observe the patient's condition and assess to decide further therapeutics for the patients.
- At least one visit is conducted every day to review the progress of each inpatient.



### Role of pharmacist in ward round participation

- The pharmacist being an expert in the matters of drug should be available for the ward round team to decide upon the matters of dosage regimens, formulary interpretations, ADR monitoring, Drug-drug interactions, Drug-food interactions and drug and poison information services, cost.
- Optimize drug therapeutic management by influencing drug therapy selection, implementation, monitoring and follow up.
- Assimilate additional information about the patient such as comorbidities, medication compliance or alternative medicine
- Participate in patients discharge planning

## Medication History

- Interviewing a patient for collection of data related to medical history is called medication history interview.
- It provides information of patients' allergic tendencies, adherence to pharmacological and nonpharmacological treatments, self-medication with complementary and alternative medicines.
- Availability of detailed medication history, at time of prescribing stage of medication, is critical to the success of the diagnostic and patient management task.
- It assesses rational for drug prescribed and appraises the drug administration techniques

## Pharmaceutical Care

- It involve, identifying, resolving and preventing potential and actual drug related problems,
- It includes
  - Prescribing errors,
  - dispensing errors,
  - non adherences with medication,
  - patients idiosyncrasy,
  - lack of literacy related to medication in public

## Reference

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