

INTRODUCTION TO CLINICAL PHARMACY

- Clinical pharmacy is defined as the branch of pharmaceutical science dealing with utilization of pharmacist knowledge, skills and judgments related to biomedical and pharmaceutical sciences, to prove the safety, the cost and the precision of the drug usage in the patient care.
- 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.

STATUS OF CLINICAL PHARMACY IN INDIA

- ❑ In developed countries like United States of America, Canada etc. Clinical Pharmacy has already taken good shape.
- ❑ In India, it is in the infancy stage.



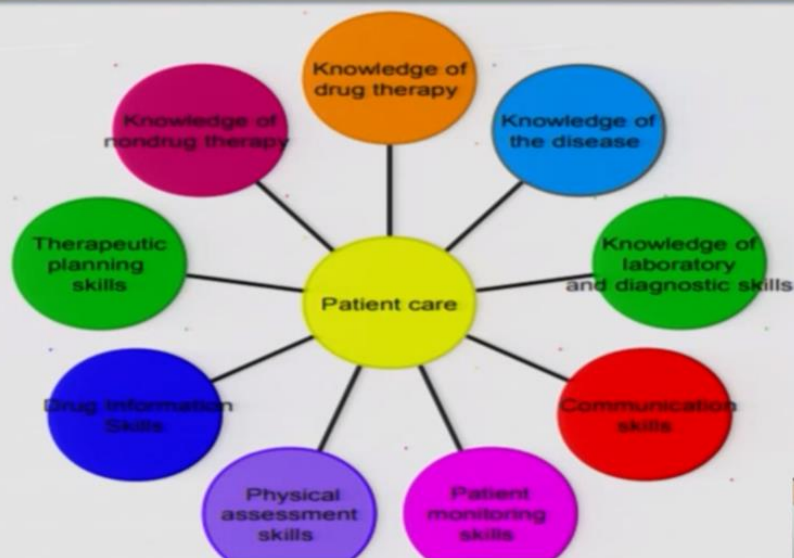
- ❑ The role of the **retail pharmacist** is viewed by many people as simply transferring pills from a large bottle to a small one - counting tablets, typing labels and calculating the price.

HISTORY OF CLINICAL PHARMACY

- ❑ The term clinical pharmacy was first used in 1953.
- ❑ The concept of clinical pharmacology started in 1960s with two incidences.
- ❑ First, in 1962 "**The Thalidomide Tragedy**", wherein it was found that consumption of popular sedative thalidomide resulted in birth of babies with sealed limbs.
- ❑ Second, in 1968 **Phenytoin toxicity** was reported in Australia which was because of change in formulation i.e. switching over from calcium sulfate to lactose as an inert excipient in the

HISTORY OF CLINICAL PHARMACY

CLINICAL PHARMACY REQUIREMENTS



CLINICAL PHARMACY

RESPONSIBILITIES OF CLINICAL PHARMACY REQUIREMENTS

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

- Before the prescription
- During the prescription and
- After the prescription is written.

1. Before the prescription

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

2. During the prescription

- Counseling activity
- Clinical pharmacists can influence the attitudes and priorities of prescribers in their choice of correct treatments.
- The clinical pharmacist monitors, detects and prevents the medication related problems
- The clinical pharmacist pays special attention to the dosage of drugs which need therapeutic monitoring.
- Community pharmacists can also make prescription decisions directly, when over the counter drugs are counseled.

Medication-related Problems

- Untreated indications.
- Improper drug selection.
- Subtherapeutic dosage.
- Drug interactions.
- Medication use without indication
- Medication Failure to receive
- Medication Overdosage.
- Adverse drug reactions.

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- Medication-related Problems**
- Untreated indications
- Improper drug selection
- Subtherapeutic dosage
- Drug interactions

3. After the prescription

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

3. After the pres

CLINICAL PHARMACY PRACTICE AREAS

- | | |
|---------------------------------------------------------------|---------------------------------------------------------|
| <input type="checkbox"/> Ambulatory care | <input type="checkbox"/> Critical care |
| <input type="checkbox"/> Drug Information | <input type="checkbox"/> Geriatrics and long –term care |
| <input type="checkbox"/> Internal medicine and subspecialties | <input type="checkbox"/> Cardiology |
| <input type="checkbox"/> Endocrinology | <input type="checkbox"/> Gastroenterology |
| <input type="checkbox"/> Infectious disease | <input type="checkbox"/> Neurology |
| <input type="checkbox"/> Nutrition Support | <input type="checkbox"/> ADR/DUE |
| <input type="checkbox"/> Transplant | <input type="checkbox"/> Investigational Drugs |
| <input type="checkbox"/> Pharmacoeconomics | <input type="checkbox"/> Nephrology |
| <input type="checkbox"/> Obstetrics and gynecology | <input type="checkbox"/> Pulmonary disease |
| <input type="checkbox"/> Psychiatry | <input type="checkbox"/> Rheumatology |
| <input type="checkbox"/> Nuclear pharmacy | <input type="checkbox"/> Pediatrics |
| <input type="checkbox"/> Pharmacokinetics | <input type="checkbox"/> Surgery |

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 Internal me
 Endocrinol

FUNCTIONS OF CLINICAL PHARMACY

1. Taking the medical history of the patient
2. Patient Education
3. Patient care
4. Formulation and management of drug policies
5. Drug information
6. Teaching & training to medical and paramedical staff
7. Research and development
8. Participation in drug utilization studies
9. Patient counseling
10. Therapeutic drug monitoring
11. Drug interaction surveillance
12. Adverse drug reaction reporting
13. Safe use of drugs
14. Disease management cases
15. Pharmacoeconomics

SCOPE OF CLINICAL PHARMACY

1. Preparation of patient medication histories :

- any hypersensitivity's or allergies to specific drugs observed in the past, any particular drug or food habits, drug dependence or intoxication with chemicals due to occupational hazards, all of which are likely to interfere with the therapy.
- This will help in saving physicians time and efforts and thus will result in faster and more accurate selection of drug therapy.



SCOPE OF CLINICAL PHARMACY
1. Preparation of patient medication histories :

SCOPE OF CLINICAL PHARMACY

2. **Rational prescription** :The clinical pharmacist can suggest the physician and help him in selecting the right drug. Some of the examples of irrational combinations identified by pharmacist are:

- Haloperidol + Diazepam + Amitriptyline
- Reserpine + Sintamil

3. Bioequivalence and generic equivalence of pharmaceutical formulations :

- Number of factors influence the bioavailability of drugs from the dosage forms.
- selection of proper drug therapy based on bioequivalence of different dosage forms of the same drug moiety.

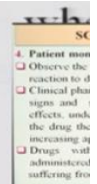
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SCOPE OF CLINICAL PHARMACY

4. Patient monitoring :

- Observe the signs and symptoms that indicate the need for or reaction to drugs.
- Clinical pharmacist who knows correct route of administration, the signs and symptoms of overdosages, contraindications, desired effects, undesired effects and side effects can help in monitoring the drug therapy for safety and efficiency, a necessity with the increasing applications of potent and toxic chemicals and drugs.

- Drugs with **narrow therapeutic index**, or administered in patients who are critically ill or are suffering from chronic diseases.



SCOPE OF CLINICAL PHARMACY

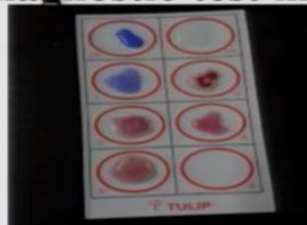
5. Adverse drug reactions and drug interactions:

The clinical pharmacist can compile and process data using computers and make it available to the medical staff.

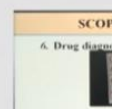
Identify drug effect modifications due to interactions with several foods, alcohol, smoking, environmental chemical etc.

SCOPE OF CLINICAL PHARMACY

6. Drug diagnostic test inferences :



7. Intravenous admixtures :



SCOPE OF CLINICAL PHARMACY

8. Drug Information Specialist :

- A clinical pharmacist being an expert on drugs may operate a drug information service.



SCOPE OF CLINICAL PHARMACY

9. Retail pharmacy stores :

- A clinical pharmacist at retail drug stores can maintain patient drug profiles, family drug profiles and family records based upon which the pharmacist can counsel the patient each time while filling the prescription.

SCOPE OF CLINICAL PHARMACY

10. Discharge counseling and patient compliance :

The compliance to drug therapy can be improved several times, by educating and counselling the patient at the time of discharge from hospital or while dispensing the prescription at the retail counter.

SCOPE OF CLINICAL PHARMACY

11. Clinical research and continuing education program :

- The clinical pharmacist can participate in an evaluation program on investigational drugs.
- He can help in conducting clinical trials based on sound principles of biostatistical methods of evaluation.
- He can also develop training programs for pharmacists, nurses and interns.

SCOPE OF CLINICAL PHARMACY

12. Medical Audit

- Medical audit is a logical and necessary procedure within organized teamwork. The clinical pharmacist is either the initiator or a very active member of a functioning committee