

PHARMACOTHERAPEUTICS

- Pharmacotherapeutics word derived from the two words, Pharmakon means 'the drugs' and therapeutic means 'diagnosis or treatment of any disease. It is the branch of the pharmacology which deals with the drug absorption, drug distribution, drug elimination and their action/effects.
- In the other word, we can say that it is provided the information regarding the drugs and their action for preventing/eliminating the disease. On the basis of receptor capability and bioavailability drugs are act on the body and cure the disease.
- **Pharmacotherapy** is included as the drug therapy to treating the disease after the surgical, radiation, or physical therapy.
- In the modern day, different types of chemical constituted medicine or available which show the effect (may be positive or negative), to correct these problem (according to the demand or patient need) pharmacotherapeutics play a major role in the Indian system of medicine.

Branches of the Pharmacotherapeutics—

1. Pharmacokinetics—

- a. **Drug absorption**— Initially, when we consume the medicine then it is dissolve or break down into the smaller or absorbable particle absorbed by the different-different route according to their solubility and protein/receptor binding capacity.
 - In our G.I.T absorption are starting from the upper parts(mouth) to middle part(stomach, intestine) and finally lower part(rectal and anal) of G.I.T.
- b. **Drug distribution**— After the completion of absorption, drugs are distributed to effective area through the blood or other connective tissue and finally bind to the specific receptors and shows their action. Distribution is also based on the solubility and protein/receptor binding capacity.

- c. **Drug elimination**— on the basis of bioavailability of any drug, drug is excreted/eliminated from the body. When the bioavailability is more than drugs are binds to the receptors and show effects and waste/metabolism products are eliminate but when bioavailability are less then more amount of drug are eliminated as such through urine or fecal matter.
2. **Pharmacodynamics**—
 - a. **Systemic effects**- In this branch we are study about the drug action on body organs and their responses. Different chemical show the different mechanism of action on the different body parts.
 - b. **Cellular effects**- when the drugs are absorbed then it reach to the cell and binds to the specific cell receptors and carry on the metabolism.

Scope and objective of Pharmacotherapeutics

- We gain the correct knowledge regarding the **drug chemical reactions** in the body
- We decide the **correct drugs** categories for treating the specific disease.
- We decide the **correct dose and formulation** for treating the specific disease.
- We decide the **right patient** for the particular drug.
- We decide the **suitable/effective route of administration**
- We decide the **correct time of administration** for particular drug (many gastric related drugs take by empty stomach and many of drugs take after taking the meals)
- Decide the **drug tolerance and resistance** capacity.
- We decide the **drug incompatibility or adverse effect** (aspirin is not taken in dengue condition).
- we decide about the **drug food interactions** (calcium rich food and antibiotics should not take together).
- We decide the **natural/environmental condition** for taking the particular drug.

Rational uses of medicines (RUM)

Introduction-RMU is an important, vital and caretaker aspects/subjects include in the pharmacodynamics because of- Body mechanism of persons varies individually (obese, thin, male female, age of person etc.) due to involvement of RUM we decide that- **correct medicine for correct individual at correct time for correct diseases.**

Day to day, human activities are increases like tree cutting, pollution, more use pesticides, natural conditions are changes leads to born new physiological condition of the body so, it is an also responsible for the RUM.

According to WHO- The rational use of drugs requires the patient receive medication appropriate to their clinical needs, in doses the meet their own individual requirements for an adequate period of time and at lowest cost to them and their community.

Factors responsible for the RUM—

A. Arises during manufacturing procedures— It is the initial step/factor responsible for the RUM because, during the manufacturing drug quantity and measure is the important aspects regarding the drug formulation, it is avoided by the involvement of-

1. Correct platform.
2. Correct equipment.
3. Correct procedure.

B. Arise due to individual— Body physiology of individual varies person to person so chemical requirement also varies person to person for treating any disease. It depends on the different factors-

1. Body structure.
2. Sex of person.
3. Age of person.
4. Prior disease history.
5. Drug contraindication and allergy.
6. Drug tolerance or resistance.

C. Environmental effects— Environmental condition also varies places to places so, it also act as the factors

1. Seasonal variation.
2. Any pandemic.
3. Any mutations.

How to improve the RUM—

1. Educational promotion—Pharmacy field is the most essential field regarding for the health, because in this, we will study about the human physiology and chemical physiology (action) both and compare. So after gaining the knowledge we are designed the different-different formulation with proper quantity and quality regarding the patient requirement. So we can conclude that, if pharmacy field develop more and more with proper education purpose then many of pharmacists grown up and participate in the health promotion. Education promote by-

1. Providing skill educational behaviors.
2. Providing laboratory and practical knowledge.
3. Providing the library.
4. Providing the health and yoga camp etc.

2. Regulatory and management promotion— Management is also an important factor for the regulation and promoting for the RUM. By proper inspection and supervision we are decide the correct requirements (skill person, raw material, perfect platform, perfect equipment etc.) for the manufacturing. If manufacturing are correct and appropriate manner then we finally achieve your goals (correct dose in correct formulation).

QA (quality assurance), QC (quality control) and GMP (good manufacturing practice) are supervision department, which inspect the manufacturing and insure that it is proper or not.

3. By proper compounding and dispensing— Packaging and compounding is the final or attentive stage because, if any mistake are arises during the drugs compounding then may leads to positive or negative effect and sometime cause the serious problem.

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Dispensing is also including to promoting factor because of, many drugs are required special conditions during the dispensing.

4. **Establishment** of a multidisciplinary national body to co-ordinate policies on medicine uses, development and use of national essential medicine lists, sufficient government expenditure to ensure availability of medicines and staff.

Irrational use of the drugs

Irrational use of drugs means, use of medicines in improper manner and improper formulation it involves as-

- By selection of wrong medicine.
- By selection of wrong doses.
- By selection of wrong person.
- By selection of wrong time.

It is cause due to-

1. Improper diagnosis

- ❖ Improper examination of patients
- ❖ Communication problem between RMP and patient
- ❖ Improper document history.

2. Prescription problems.

- ❖ Incorrect prescriptions.
- ❖ Multiple prescriptions.
- ❖ Prescription through multimedia (By calling)

3. Dispensing and compounding

- ❖ Due to unsuitable platform/place
- ❖ Counting and compounding.
- ❖ Unsanitary procedure.

4. Common factors

- ❖ Lack of knowledge.
- ❖ OTC medication.
- ❖ Financial and unbeliefs