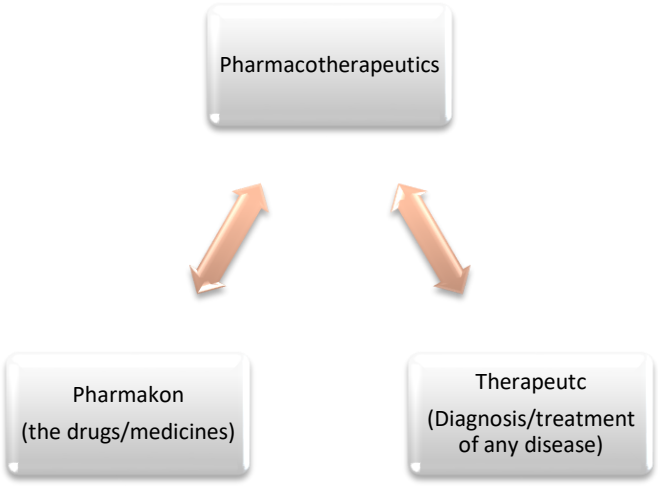
Introduction of Pharmacotherapeutics

Pharmacotherapeutics:

The word of Pharmacotherapeutics derived from the two words, Pharmakon means 'the drugs', and therapeutic means 'diagnosis or treatment of any disease.



Definition of Pharmacotherapeutics: Pharmacotherapeutics is a branch of pharmacology that deals with the therapeutic uses and effects of drugs.

Branches of the Pharmacotherapeutics:

1. **Pharmacokinetics:**

A. **Drug absorption**: Drug absorption may be defined as "Initially, when we consume the medicine then it is dissolved or broken down into smaller particles absorbed by the different-different route according to their solubility and protein/receptor binding capacity".

B. **Drug distribution—** Drug distribution may be defined as, **"**After the completion of absorption, drugs are distributed to the effective area through the blood or other connective tissue and finally bind to the specific receptors and show their action. Distribution is also based on the solubility and protein/receptor binding capacity".

C. **Drug elimination:** Drug elimination may be defined as, "the bioavailability of any drug, the drug is excreted/eliminated from the body".

2. **Pharmacodynamics:**

A. **Systemic effects-** In this branch, we study the drug's action on body organs and their responses. Different chemicals show different mechanisms of action on the different body parts.

B. **Cellular effects-** when the drugs are absorbed they reach the cell and bind to the specific cell receptors and carry on the metabolism.

Scope of Pharmacotherapeutics:

- To increase the knowledge and upgrade the skills which are necessary for the safe use and medicine distribution by the pharmacists and nurses in hospital to the patients.
- The study of Pharmacotherapeutics improves the understanding of the concept of pharmacist working in retail shop for disease eradication and prescribed medicines.
- It ensures the proper and rational use of drugs determination of therapeutic activities, selection most appropriate drug, dosage, and duration of treatment considering the stages of the disease.
- It helps to understand the pathophysiology of common diseases and their management.
- It helps to clear the concepts for different diagnostic and pathology laboraties.

Objectives of Pharmacotherapeutics:

1. The main objective of Pharmacotherapeutics is to hence the safety of prescription maximize the effect of the drug and minimize side effects.
2. To define the patient's problem for which treatment is indicated.
3. To prepare an appropriate therapeutic plan based on diagnosis.
4. To avoid medical errors.
5. To ensure the patient's compliance
6. To understand the positive benefits of the drug therapy.
7. Summarize the possible therapeutic approach in disease management.
8. To maintain the drug therapy costs and provides quality & effective treatment.

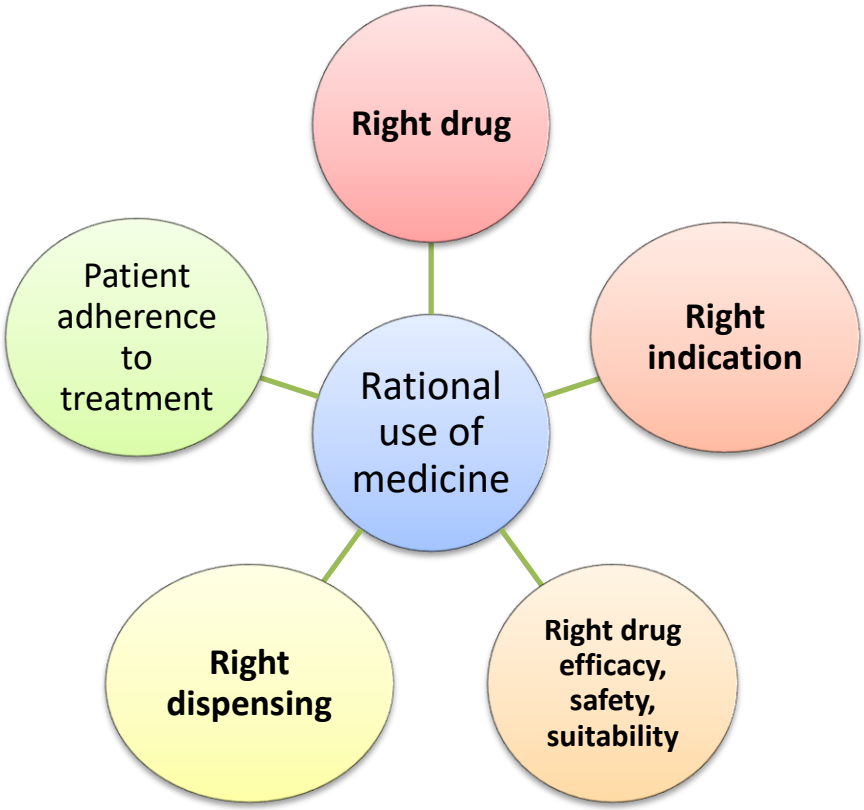
Rational use of medicine:

WHO defines rational use of medicines as, "prescribing the right medicines, in an adequate dose for a sufficient duration to produce appropriate therapeutic action for the patient at the lowest cost".

Rational use of medicine includes:

- Right medicine

- Right dispensed
- Right indication
- Right dose
- Right dose
- Right routes of administration
- Right patient counseling
- Right patient adherence
- Right drug efficacy, safety & suitability.



Irrational use of medicines: It includes

- Unnecessary use of antibiotic drugs.
- Unnecessary combination of drugs.
- Incorrect dosing & route of administration.
- Unnecessary use of expensive medicines & supplementary drugs.
- Poly pharmacy & inappropriate self medication.

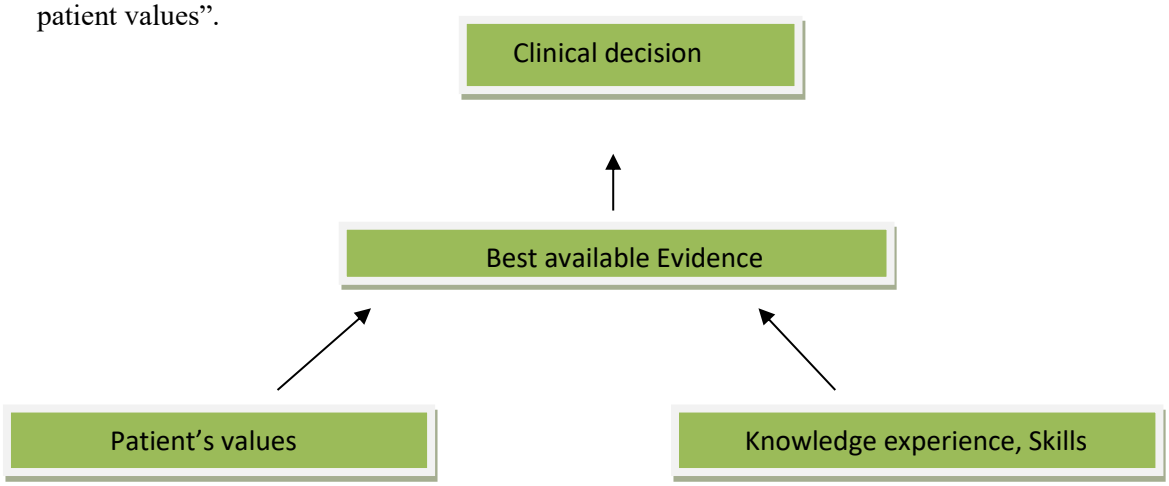
Reasons for irrational use of medicines:

- Lack of sufficient information of medicine.
- Promotional activities of pharmaceutical industries.

- Defective drug supply systems.
- Demand from the patients.
- Confusion about diagnosis.
- Ineffective drug regulation.

Evidence Based Medicine (EBM):

The Evidence Based medicine may be defined as, "the systematic approach to clinical problem solving which allows the integration of the best available research evidence with clinical expertise & patient values".



Flow chart of evidence based medicine

Objectives of Evidence Based Medicine:

1. To use recent knowledge to connect with patient preference and clinical expertise to standardize & improve care process, and ultimately patient outcomes.
2. To recognize information needed while caring for a patient.
3. To identify best existing evidence to help resolve the problem.
4. To integrate the evidence into a medical plan.

Significance of Evidence Based Medicine:

- It provides cost-effective medical care.
- It promotes consistency of treatment and optimal outcomes.
- To establish the standards of patient care.
- It keeps doctors and other healthcare professionals updated.
- It identifies and promotes practices and eliminates those that are ineffective or harmful.

Steps involved in Practice of Evidence Based Medicine: Some steps are involved in practice of EBM:

1. To Framing answerable clinical questions.
2. To Finding the evidence.
3. To Appraising the evidence.
4. To Applying the evidence.
5. To Evaluating performance.

Essential Medicines List:

WHO defines essential medicines are those satisfy the priority healthcare needs of the population.

- The essential medicines should be available at all the times in adequate quantity and in appropriate dosage forms.
- Each country can prepare its own list of essential medicines based on disease burden, priority health concern of that country.

History of the Essential Medicines List:

- In 1970, Tanzania becomes the first country to prepare essential medicine list.
- The first list of essential medicines of WHO model was published in the year 1977 which contained 186 medicines.
- The latest WHO model list of essential medicines in 22nd list published in 2021 which contained 399 medicines.
- The lists of essential medicines of WHO model are updated every two years by the expert committee on selection and use of essential medicines.

Selection of Essential Medicines: The following factors are considered for the selection of essential medicines:

1. Occurrence of disease.
2. The Efficacy, safety, and comparative cost-effectiveness of available medicines.
3. The medicine should be use with the current treatment guidelines for the disease.
4. Level of healthcare facility available.
5. Treatment facilities are available.
6. To training and experience of the available personnel.
7. The local availability of individual drugs.

8. Financial resources are available.
9. The Environmental factor/stability of the product.

Standard Treatment Guidelines:

A standard Treatment Guideline (STG) is a systematically developed statement designed to assist practitioners and patients in making decisions about appropriate healthcare for specific clinical circumstances.

Advantages of Standard Treatment Guidelines:

1. Provides standardized guidance to practitioners.
2. It provides the most effective therapy in terms of quality.
3. Encourages practitioners for high-quality care.
4. The healthcare system needs to provide only the medicines as per the formulary or list of essential medicines.
5. Enables healthcare providers to concentrate on making the correct diagnosis.
6. Provides a basis for evaluating the quality of care provided by health care professionals.
7. Provides a vehicle for integrating special programs (e.g., diarrhoea disease control, tuberculosis control, malaria, etc.)
8. Helps to manage the drug supply system.

Disadvantages of Standard Treatment Guidelines:

1. Inaccurate or incomplete guidelines will provide the wrong information for provides may be harmful.
2. Establishing, developing and implementing of STGs are very difficult and time consuming processes.
3. STG manual should be concise and small enough to carry it easily.

Standard Treatment Guidelines in India:

1. Hypertension: Screening, Diagnosis, Assessment, and Management of Primary Hypertension in Adults in India, AUGUST 2017, Ministry of Health and Family Welfare, Government of India.

2. Treatment Guidelines for Antimicrobial Use in Common Syndromes. 2nd edition. Publications of the ICMR, New Delhi.
3. Guidelines for Programmatic Management of Drug Resistant TB (PMDT) in India, March 2021, National TB Elimination Programme, Central TB Division, Ministry of Health and Family Welfare, Government of India, New Delhi.
4. National Guidelines for Clinical Management of Dengue Fever, National Vector Borne Disease Control Programme, WHO, 2015.
5. Standard Treatment Protocol, Public Health Department, Government of Maharashtra.
6. Standard Treatment Guidelines, A Manual for Medical Therapeutics, First Edition 2014, Gujarat Medical Services Corporation Ltd., Health and Family Welfare Department, Government of Gujarat.
7. Standard Treatment Guidelines (2016), Department of Public Health and Family Welfare, Madhya Pradesh.

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