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Diploma in Pharmacy 2nd Year
Pharmacotherapeutics
Chapter 1 : Pharmacotherapeutics

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Chapter 1
PHARMACOTHERAPEUTICS

- → It is a branch of science in which we study about diseases their causes , process of causes development , symptoms and treatment with the help of drugs and changes in lifestyle.
- → Pharmacotherapeutic is formed two words pharmacon means drug and therapy means system to apply.
- → Pharmacotherapeutics is the application of pharmacological informationm, along with the disease knowledge for its prevention, mitigation, or cure.

It includes rational and empirical pharmacotherapeutics:

- ❖ **Rational Pharmacotherapeutics :** It refers to the rational use of drug and its mechanism of action ; for example, adrenaline is used in bronchial asthma and its mechanism of action is well-known.
- ❖ **Empirical Pharmacotherapeutics :** It refers to the use of drug in a particular disease, but its mechanism of action is not known ; for example, colchicines was used in gout, but its action was not known.

Scope of Pharmacotherapeutics

- A person has knowledge about pharmacotheraphetic Can work in the field of treatment.
- A person has knowledge about pharmacotherapeutics can work in the field of diagnostic laboratory.
- Pharmacotheraphetic knowledge provide a foundation level for advance study in the field of disease and their causes.
- A person has knowledge of pharmacotherapeutics can prevent himself in other from being sick by getting changes in lifestyle and diet.
- The person has knowledge of pharmacotherapeutics can make a community healthy.
- The person has knowledge of pharmacotherapeutics can work in the field of epidemiology.
- The person has knowledge of pharmacotherapeutics can work in the field of research and development of drug.

Objectives

- ❖ To ensure proper and rational use of drugs.
- ❖ To avoid and reduce adverse drug reactions and toxicity.
- ❖ To provide quality and effective drugs at an optimum cost.
- ❖ To ensure patient compliance.
- ❖ To use the advances in knowledge made by researchers and scientists.

RATIONAL USE OF MEDICINES (RUM)

- → Rational use of medicines refers to prescribing the right drug, in adequate dose for sufficient duration, and suitable to the clinical requirements of the patient at minimum cost.
- → Rational use of medicines include that patients receive medications as per their clinical needs, in doses that meet their individual requirements, for an adequate time period, and at the lowest cost to them and their community.

Reasons for Irrational Use of Drugs

- Lack of adequate information.
- Defective, insufficient training, and education of healthcare providers.
- Not having diagnostic services.
- Sub-standard drug supply system and bad drug regulation.

To Promote Rational use of medicines

- Establishing a multidisciplinary national body to coordinate policies on medicine use.
- Using clinical guidelines.
- Developing and using national essential medicines list.
- Establishing drug and therapeutics committees in districts and hospitals.
- Using independent information on medicines
- Providing public education about medicines.

EVIDENCE-BASED MEDICINE (EBM)

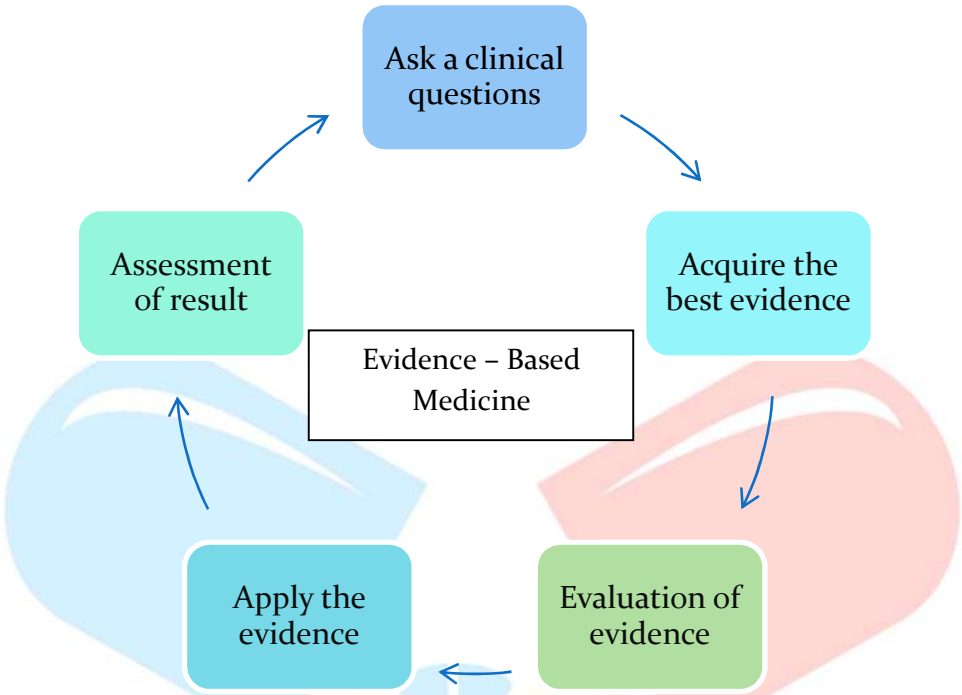
- → Evidence-based medicine refers to an interdisciplinary approach that uses science, engineering biostatistics and epidemiology techniques, like meta analysis, decisim analysis, risk-benefit analysis, and randomised controlled trials to deliver **the right care at the right time to the right patient**

Or

- → It means to use the best available (science based) research for treatment , with the help of epidemiology , engineering technique and risk-benefit analyses .

Five Step Model of EBM

1. To ask clinical questions.
2. To find best evidence.
3. Evaluation of evidence, if it is valid and useful or not ?
4. Application of evidence.
5. Assessment (evaluation) of result.



Importance

- ⇨ EBM helps the clinicians to remain updated on the standardised, evidence-based protocols.
- ⇨ EBM to provide better patient care based on near real-time data.
- ⇨ EBM improves transparency, accountability, and value.
- ⇨ EBM improves quality of care because clinicians have access to previously untapped data and best practices agreed upon by peers.

ESSENTIAL MEDICINES LIST

- → It is a list of essential medicines that satisfy (complete) the basic healthcare needs of the population .

Or

- → According to WHO, essential drugs (medicines) are "drugs that satisfy the priority healthcare needs of the population"
- → The WHO brought out its first Model List of Essential Drugs along with their dosage forms and strengths in 1977, for the guidance of member countries.
- → This model list can be accepted after appropriate modifications according to needs of the people in a location.
- → The WHO Model Lists of Essential Medicines are updated every two years by the Expert Committee on Selection and Use of Essential Medicines.

Selection of essential medicines

- The satisfactory information about the effectiveness and safety of drug , should be available on the drug.
- The drug should be stable in store for long periods.
- The drug should be available in sufficient quantity.
- It should be best amongst two or more similar drugs in comparison of safety , quality , cost and effectiveness.
- They should be single compound.

Current Essential Medicine List

- The Indian Government has released the National List of Essential Medicines (NLEM) 2021, in which 39 drugs, including anti-cancer, anti-diabetes and ant retrovirals have been added to the list.
- The Union Minister of Health and Family Welfare, Mansukhani Mandaviya released the NLEM 2021 during a visit to the Indian Council of Medical Research (ICMR).

39 Current Essential Medicine List of India 2021

They are called NLEM (National List of essential medicines)

1) Amikacin Bedaquiline (anti-TB),
2) Bendamustine Hydrochloride (anti- cancer),
3) Buprenorphine (opioid to treat opioid use disorder),
4) Buprenorphine (A)+ Naloxone (B) (to treat opioid addiction),
5) Cefuroxime (antibiotic),
6) Dabigatran (anticoagulant),
7) Daclatasvir (hepatitis C drug),
8) Darunavir (A) + Ritonavir (B) (antiretroviral),
9) Delamanid (anti-TB),
10) Dolutegravir (antiretroviral),
11) Fludarabine (anti-cancer),
12) Fludrocortisone (corticosteroid),
13) Fomepizole (antidote to certain poisoning),
14) Fulvestrant (anti-cancer),
15) Insulin Glargine (long-acting insulin),
16) Irinotecan HCI Trihydrate (anti-cancer),
17) Itraconazole (antifungal),
18) Ivermectin (anti- parasitic),
19) Lamivudine (antiretroviral),
20) Latanoprost(ophthalmic),
21) Lenalidomide (anti-cancer).

22) Leuprolide acetate (anti-cancer),
23) monelukast (anti-asthmatic),
24) Mupirocin (antibiotic),
25) nicotine replacement therapy (to treat tobacco use disorder),
26) Nitazoxanide (anti-parasitic and antiviral),
27) Ormeloxifene [Centchroman] (non-steroidal oral contraceptive),
28) Phenoxymethyl Penicillin (antibiotic),
29) Procaine Benzyl Penicillin (antibiotic),
30) Rotavirus vaccine,
31) Secnidazole (anti-infective),
32) Tenecteplase (thrombolytic drug).
33) Teneligliptin (anti-diabetic),
34) Tenofovir Alafenamide Fumarate [TAF) (Hepatitis B drug),
35) Terbinafine (antifungal),
36) Valganciclovir (antiviral)
37) 38), 39) Tenofovir + Lamivudine + Dolutegravir (antiretroviral).

Advantages of Essential Medicines

- ✓ The concept of essential medicines has several logical and prescribing advantages.
- ✓ For example, better management of medicines, like easier procurement, storage, distribution, more manageable stock, better quality assurance, easier dispensing, less fragmentation of budget, and enhanced drug availability.
- ✓ Prescribing also improves. due to focused training and drug information, better recognition of adverse drug reactions, drug interactions, and focused education efforts.
- ✓ The list of essential medicines relates to treatment guidelines for clinical diseases and is used for public procurement and supply of medicines, schemes for reimburse of medicines costs, and local medicine production.

STANDARD TREATMENT GUIDELINES (STGS)

- → Standard treatment guidelines (or treatment protocols or prescribing policies) are systematically developed statements designed to assist prescribers in making decisions about appropriate treatment and health care for specific clinical problem.
- → STGs is a tool that helps and guides prescribers (doctors , Pharmacists , dispensers) and other health care staff , who provide primary health care services , to provide evidence -based medicine and quality of care, at good cost .
- → Standard treatment guidelines (or clinical guidelines or clinical protocols) are component of health services that ensure evidence-based medicine and quality of care.
- → It helps in planning and costing of services at the health system level.
- → STGs are also a critical tool for monitoring and authorising procedure in a public funded health insurance schemes.

Key Features of a Successful STG Manual

1) **Simplicity :-** The number of commonly observed diseases are limited , so each disease should be written with a few salient features , with clear information on pharmacological and non pharmacological treatment.
2) **Credibility :-** The STGs guidelines should be developed by most junior and experienced clinicians in the country.
3) **Same standard for all levels : -** the first choice of drugs for treatment of a patient , depends on the patient 's diagnosis and conditions , If a patient attends a primary level or secondary or tertiary level h ospital with same common conditions the treatment may be same.
4) Medicine supply should be based on standards.
5) **Regular updating :-** If any changes occurs in therapeutic option , it should be included in the revised version.
6) **User friendly : -** STGs should be published as small or pocket size , that can be easily carry and used.

Advantages

1) **Patients :**
   - It provides a cost-effective optimal therapy.
   - It improves the availability of drugs.
   - It provides overall better quality of care.
2) **Healthcare Providers :**
   - It provides standardised guidance to practitioners.
   - It provides standard quality of care based on expert consent and basis for monitoring.
3) **Health Care Policy Makers :**
   - It provides focus therapeutic integration of special programs (dianhoes disease control, acute respiratory infection).
   - It provides a system for efficient controlling of cost by using funds.