

Pharmacology

GOAL :

The broad goal of the teaching of undergraduate students in Pharmacology is to inculcate a rational and scientific basis of therapeutics.

II) OBJECTIVES :

KNOWLEDGE

At the end of the course, the student shall be able to :

1. Describe the pharmacokinetics and pharmacodynamics of essential and commonly used drugs :
2. List of indications, contraindications, interactions and adverse reactions of commonly used drugs :
3. Indicate the use of appropriate drug in a particular disease with consideration to its cost efficiency and safety for
 - i. Individual needs
 - ii. Mass therapy under national health programme
4. Describe the pharmacokinetic basis, clinical presentations, diagnosis and management of common poisonings.
5. List the drugs of addiction and recommend the management.
6. Classify environmental and occupational pollutants and state the management issues.
7. Indicate causation in prescription of drugs in special medical situations such as pregnancy, lactation, infancy and old age.
8. Integrate the concept of rational drug therapy in clinical pharmacology
9. State the principles underlying the concept of "Essential Drugs".
10. Evaluate the ethics and modalities in the development and introduction of new drugs.

SKILLS :

At the end of the course, the student should be able to:

1. Prescribe drugs for common ailments.
2. Recognise adverse reactions and interactions of commonly used drugs.
3. Observe experiments designed for study of effects of drugs, bioassay and interpretation of the experimental data.
4. Scan information on common pharmaceutical preparations and critically evaluate drug formulations.

INTEGRATION :

Practical knowledge of use of drugs in clinical practice will be acquired through integrated teaching with clinical departments and pre clinical departments.

THEORY SYLLABUS

I. GENERAL PRINCIPLES

- a) Route of administration.
- b) Pharmacokinetics
- c) Pharmacodynamics
- d) Principles of therapeutics – Factors modifying drug actions.
- e) Concepts of essential drugs and rational drug therapy – Pharmacovigilance and therapeutic drug monitoring, P drug concept.
- f) Ethics and modalities of new drug development
- g) Adverse reactions to drugs and common drug interactions.

2. DRUGS ACTING AT SYNAPTIC AND NEURO EFFECTOR JUNCTION

- a) Cholinergic and anticholinergic drugs
- b) Adrenergics and adrenergic blockers,

3. PERIPHERAL NERVOUS SYSTEM

- a).Drugs acting at Neuromuscular Junction and autonomic ganglia.
- b).Local Anaesthetics

4. DRUGS ACTING ON CENTRAL NERVOUS SYSTEM

- a) General anesthetics
- b) Hypno sedatives
- c) Drugs and treatment of psychiatric disorders – psychosis, depression and mania.
- d) Drugs in the therapy of epilepsies
- e) Drugs in the therapy of migraine
- f) Drugs in the central nervous system degenerative disorders
- g) Opioid analgesics and antagonists
- h) Drug addiction and treatment
- i) Drugs used in Parkinsonism

5. AUTOCOIDS

- a) Histamine, Bradykinin, 5 HT and their antagonists
- b) Lipid derived autocooids
- c) Analgesic – antipyretic and anti inflammatory agents

6. DIURETICS AND OTHER AGENTS AFFECTING RENAL CONSERVATION OF WATER

7. DRUGS ACTING ON CARDIOVASCULAR SYSTEM INCLUDING BLOOD

- a) Drugs used for treatment of Myocardial ischemia, heart failure
- b) Anti arrhythmic drugs
- c) Anti hypertensives
- d) Lipid lowering drugs
- e) Drug Therapy of shock
- f) Hematopoietic agents (growth factors, minerals and vitamins)
- g) Anticoagulants, Thrombolytic and antiplatelet drugs

8. DRUG ACTING ON RESPIRATORY SYSTEM

- a) Pharmacotherapy of cough
- b) Pharmacotherapy of bronchial asthma

9 . DRUGS AFFECTING GASTROINTESTINAL FUNCTION

- a) Peptic ulcer
- b). Drugs for emesis, reflux and digestive disorders.
- c). Drugs for constipation and diarrhea.

10. CHEMOTHERAPY

- a) General Principles of Chemotherapy, Rational uses of antimicrobial agents, indication for prophylactic and combined use of antimicrobials.
- b) Chemotherapy of microbial diseases – Sulfonamides, Penicillin, cephalosporins aminoglycosides Macrolides, Tetracyclines, Quinolones, Anti Tubercular drugs, Antileprotic drugs, Antifungal drugs, Antiviral drugs.
- c) Chemotherapy of parasitic infections – Antimalarial drugs, anti Amoebic drugs antihelminthics.
- d) Chemotherapy of neoplastic diseases
- e) Antiseptics and disinfectants

11. DERMATOLOGICAL PHARMACOLOGY

12. ENDOCRINE PHARMACOLOGY

- a) Hypothalamic and pituitary hormones.
- b) Thyroid and antityroid drugs
- c) Adreno corticosteroids and their antagaonists
- d) Gonadal hormones and inhibitors
- e) Panerealic hormones, and antidiabetic drugs

- f) Agents that affect bone mineral homeostasis

13. MISCELLANEOUS

- 1) Drugs used in gout and (Rheumatoid arthritis)
- 2) Ocular Pharmacology
- 3) Therapeutic Gases
- 4) Drugs used for Immunomodulation
- 5) Vitamins & Enzymes in Therapy
- 6) Toxicology - Principles of toxicology and treatment of poisoning, Heavy metals and antagonists

SYLLABUS IN PRACTICAL PHARMACOLOGY

- 1) Prescription writing for common ailments / as per treatment guidelines by National Health Programme – Organo phosphorous poisoning, Microcytic Anaemia, Epilepsy, Insomnia, Rheumatoid Arthritis, Bronchial Asthma, Congestive Heart failure, Essential Hypertension, Lower UTI, Tuberculosis, Typhoid fever, Diabetes Mellitus, Oral Contraceptives, Peptic ulcer, Diarrhoea, etc.
- 2) Prescription audit / Comment, Criticize and Rewrite – CVS disorders, lower urinary infections, Typhoid fever, Tuberculosis, Malaria, HIV, Peptic ulcer, Bronchial asthma, Epilepsy, etc.
- 3) Patient oriented problems relating to adverse drug reactions and common drug interactions – Eg. Digoxin, Diuretics, Nitrates, Diazepam, Phenytoin, Aspirin, Morphine, Chlorpromazine, Promethazine, Cotrimoxazole, Metronidazole, Doxycycline, Prednisolone, Insulin, OC pills, Metoclopramide , etc.
- 4) Experiments designed for study of effects of drugs – Chemical tests to identify drugs in biological solution, Demonstration of effect of drugs on Rabbit eye, Hot plate, Analgesiometer, Photoactometer, Rotarod,
- 5) Critical evaluation of drug formulations – Solid dosage forms, liquid dosage form, Parenteral preparations, Drugs acting on skin and mucous membrane,
- 6) Dosage calculations – Bronchial Asthma, Congestive cardiac failure, Hypertension, Diabetes mellitus, Epilepsy, etc.
- 7) Pharmaco economic problems – UTI, Typhoid fever, Tuberculosis, Hypertension, Angina pectoris, Rheumatoid arthritis, Diabetes Mellitus, Bronchial asthma, etc.
- 8) Interpretation of clinical pharmacology data / GP charts – Bioavailability charts, Plasma half life, Potency chart, therapeutic drug monitoring, tachy phylaxis, etc.
- 9) Communicating to the patients on the proper use of medications
 - a. eg. Inhalers, Venflon, IV set, vial, syringe, etc.
 - b. Advice on drug administration