

Pharmacology and Therapeutics

Course Goals and Objectives

Overview.

The central goal of the Pharmacology and Therapeutics course is two-fold. First, to provide students with a solid grounding in the basic concepts and scientific underpinnings of Pharmacology. Second, to provide students with a comprehensive introduction to the fundamental Pharmacology and uses of the major classes of clinically important drugs currently used in medical practice.

Specific key concepts and learning objectives will be provided for each individual lecture topic. However, the general course goals are as follows:

(A) To learn basic scientific concepts and principles that will serve as the foundation for understanding the pharmacology of specific drugs.

Specifically:

- To understand the fundamental scientific principles of drug action and the various mechanisms by which drugs can mediate their pharmacological effect
- To understand the fundamental principles of pharmacokinetics that underly the absorption, distribution, metabolism and elimination of drugs in the body and thereby affect drug effectiveness
- To understand the biochemical reactions that result in the metabolism of drugs within the body
- To understand the rationale behind designing different dosing regimens of particular drugs in specific patient populations
- To understand how specific patient characteristics and genetics can affect the response to a particular class of drugs
- To understand the scientific basis underlying how two different drugs can interact within the body and can have undesirable effects either on drug concentrations or drug clinical effects

(B) To understand the Pharmacology and clinical use of the major class of clinically important drugs.

These include drugs affecting the autonomic nervous system; anesthetics and analgesics; drugs to treat the heart and disease of the cardiovascular system; drugs affecting the pulmonary system; antibiotics; drugs used to treat psychiatric disorders; drugs of abuse and drugs use to treat addiction; drugs that affect the immune system; drugs that affect the endocrine system; dietary supplements and herbal medications; antiviral drugs and chemotherapeutic drugs used in the treatment of cancer

For each drug/drug class you should know the following:

- a) INDICATIONS
 - under what circumstances is the drug used.
- b) DRUG ACTION
 - what clinical effect does the drug have.
- c) MECHANISM OF ACTION
 - what is the scientific basis for how the drug works.
- d) PHARMACOKINETICS
 - are there any factors such as absorption, distribution, metabolism or elimination that might affect the clinical effectiveness of the drug in a given patient population.
- e) ADVERSE EFFECTS
 - are there clinically relevant side effects of the drug that may adversely affect the health of the patient
- f) CONTRAINDICATIONS
 - are there circumstances in which the drug should not be administered to certain patient populations due to a significantly increased risk of adverse effects e.g. the elderly, those with renal insufficiency, pregnant women etc.
- g) DRUG INTERACTIONS
 - are there any possible interactions with other concomitantly administered drugs that might affect the clinical efficacy, bioavailability or toxicity of either drug.