

STUDY GUIDE

PHARMACOLOGY

Pharmacology basics

Pharmacology is the scientific study of the origin, nature, chemistry, effects, and uses of drugs. This knowledge is essential to providing safe and accurate medication administration to your patients.

Basic concepts of Pharmacology:

- Pharmacokinetics – The **absorption, distribution, metabolism, and excretion** of drugs by the body.
- Pharmacodynamics – The **biochemical and physical effects** of drugs and the mechanisms of drugs by the body.
- Pharmacotherapeutics – **The use of drugs to prevent and treat diseases**

Naming and classifying drugs: Drugs have a specific kind of nomenclature – that is a drug can go by three different names.

- Chemical name- A **scientific name** that precisely describes the **drug's atomic and molecular structure**.
- Generic/Nonproprietary name - is **an abbreviation** of the chemical name.
- Trade name/proprietary name (Also known as brand name) – is **selected by the drug company** selling the product.
 - **Trade names are protected by copyright.**
 - ® symbol after a trade name indicates that **the name is registered by and restricted to the drug manufacturer.**

Class Act: Pharmacologic class (family) - Drugs that share the similar characteristics that are grouped together.

Beta-adrenergic blockers are an example of **pharmacologic class** – refers to how an agent works at the molecular, tissues, and body system levels.

Note: Pharmacologic class is a group of active moieties that share scientifically documented properties and is defined on the basis of any combination of three attributes of the active moiety

- **Mechanism of Action**
- **Physiologic effect**
- **Chemical structure**

A second type of drug grouping is **Therapeutic class** – categorizes drugs by the therapeutic use. *Anti-hypertensive* are an example of a therapeutic class.

Where drugs come from

Traditionally, drugs were derived from natural sources such as: Plants, Animals, Minerals. Today however laboratory knowledge, along with chemical science to develop synthetic drug sources. One advantage of chemically developed drugs is that they're free from the impurities in natural substances. Also, researchers and drug developers can manipulate the molecular structure of substances such as antibiotics so that a slight change in the chemical structure makes the drug effective against different organisms. The first, second, third, and fourth generation cephalosporins are an example.

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