

Introduction to Pharmacology
PCTX 201
Study Objectives
Chapters 1-12

The student should be able to

Chapter 1:

1. Define the following: drug, pharmacology, therapeutics.
2. Give the properties of an ideal drug (10 properties).
3. Describe the therapeutic objectives as a health practitioner.
4. Discuss the factors that determine the intensity of drug responses: administration, pharmacokinetics, pharmacodynamics, and the characteristics of each patient that cause variation (age, sex, weight, kidney and liver function, genetic variables, etc,).

Chapter 2:

5. Describe the “Five Rights of Drug Administration”.
6. Discuss what is meant by pre-administration assessment AND post-administration assessment, and the steps and goals in this assessment processes.
7. Define what is meant by the statement – “Certain drugs have more than one indication, and dosage may vary depending upon which indication the drug is being used for”.
8. Discuss the basic guidelines that will help to ensure that the drug is administered correctly.
9. Assess adverse effects of drugs and understand how to minimize adverse actions and interactions.

Chapter 3:

10. Discuss the 5 basics steps in the nursing process: assessment, analysis (nursing diagnoses), planning, implementation (intervention), and evaluation.

Chapter 4:

11. Briefly discuss the following legislative enactments and describe their impact on health care: The Federal Pure Food and Drug Act of 1906, The Food, Drug and Cosmetic Act in 1938, the Harris-Kefauver Amendments passed in 1962, the Controlled Substances Act in 1970, the changes in 1992, and the Food and Drug Administration Modernization Act of 1997.
12. Describe the stages that a drug must go through in order to be approved for human use.

13. Define the following: chemical name, generic (non-proprietary) name, trade (proprietary) name. What are the potential problems with each of these “names”?
14. Describe the differences between Generic versus Brand name products.
15. Define OTC drugs and discuss how they impact what you might do as a health care practitioner. What is the classic text/reference on pharmacology?
16. To list at least 3 internet sites that have information on drugs, interactions and adverse effects.

Chapter 5:

17. Define the meaning of the following: pharmacokinetics and describe the processes involved in pharmacokinetic processes (absorption, distribution, metabolism and excretion).
18. Describe the structure of a plasma membrane and discuss how drugs are either kept from entering the cell and how they enter the cell (i.e., how does membrane selectivity occur, and what are the transport mechanisms involved in drug movement across the membrane?).
19. Define: polar molecules, lipid soluble molecules, pH, ions.
20. Describe the factors that affect the rate of drug absorption in each of the following areas, and the pros and cons of drug administration through each of these routes: gastrointestinal tract (oral), intravenous injection, intramuscular injection, subcutaneous injection.
21. Describe the factors that affect the distribution of drugs to the various tissues: blood flow, blood-brain barrier, placental drug transfer, protein binding.
22. Describe the mechanisms involved in drug metabolism (biotransformation) and the therapeutic consequences of drug metabolism.
23. Describe the mechanisms involved in drug excretion: kidney, breast milk, bile, lungs, sweat, saliva).
24. Give a meaningful definition of the following as they related to the effectiveness of drug therapy: minimum effective concentration, therapeutic range, toxic concentration. Include in your discussion the following: single-dose time course, drug $\frac{1}{2}$ life, and how long (in $\frac{1}{2}$ lives) it takes for a drug to be 94% eliminated from the body.

Chapter 6:

25. Define pharmacodynamics. Include in your answer the following: maximal efficacy, relative potency, and how these are important factors in determining what drug to administer.
26. Define a drug receptor and how binding is essential for the action of the drug. Where are these receptors located? What are the four types of receptor families? How does receptor binding relate to intensity of response? To maximal response?

27. Define the following: affinity, intrinsic activity, agonist, antagonist, partial agonist, non-competitive versus competitive antagonists, synergy, ED_{50} , LD_{50} .

Chapter 7:

28. Describe the 4 ways that drugs can interact with each other. Give details.

29. Describe the function of the CYP enzymes and what will occur if CYP enzymes are inhibited?

30. Describe some of the ways that foods may impact drug action or activity: grapefruit juice, full versus empty stomach.

Chapter 8:

31. Define the following as they relate to Adverse Drug Reactions (ADRs): side effects, toxicity, allergic reaction, idiosyncratic effect, iatrogenic disease, physical dependence, carcinogenic effect, teratogenic effect.

32. Discuss how adverse reactions to drugs would be determined.

33. Discuss ways to minimize adverse drug reactions.

Chapter 9:

34. Discuss how each of the following affect drug response: body weight and composition, age, gender, kidney and liver disease, tolerance (pharmacodynamic tolerance and metabolic tolerance), placebo effect, genetics, variability in absorption, bioavailability, diet.

Chapter 10:

35. Describe the precautions necessary for drug therapy during pregnancy and breast feeding.

36. Give 3 drugs that should be avoided during pregnancy and tell why.

Chapter 11:

37. Describe the precautions needed for drug therapy in pediatric patients and discuss the differences between pediatric and adult patients.

Chapter 12:

38. Describe the precautions needed for drug therapy in pediatric patients and discuss the differences between geriatric and young adult patients.