# NUR-641E Final Exam Study Guide

**Note:** When taking the final exam, read each question *carefully*. The exam questions have *only one answer,* unless the question **specifically states there is more than one correct answer.**

For the exam, make sure to have a clear understanding and be able to explain the following:

**Pharmacokinetics**

1. Pharmacokinetics involves ADME (absorption, distribution, metabolism and elimination).
    a. Absorption: Absorption from the administration site either directly or indirectly into the blood/plasma.
    b. Distribution: Reversibly or irreversibly move from the bloodstream into the interstitial and intracellular fluid.
    c. Metabolism: Biotransformed via hepatic metabolism or by other tissues.
    d. Elimination: Lastly, the drug and its metabolites are eliminated from the body.
2. The route of administration with the highest bioavailability is intravenous; putting an entire dose into a patient's vein and bypassing absorption.
3. Intravenous route avoids first-pass metabolism in the liver.
4. Rectal administration has variable and erratic absorption.
5. Steady state (SS) is usually reached within 4-5 half-lives of a drug.
6. Half-life of a drug is how long it takes for half the drug to be excreted from the body.
    a. Determines how frequently the drug must be administered.
    b. Predicts how long toxic effects can last.
7. First-order (linear) pharmacokinetics means the metabolism is directly proportional to the free concentration of the drug .
8. Zero-order (nonlinear) pharmacokinetics means a drug is metabolized at a constant rate per unit time.
9. CYP3A4 substrate drugs may have decreased activity if any CYP3A4 inducer drugs are used along with it.

**Drug Development**

1. Drug development process involves these steps according to the FDA:
    a. Discovery: Laboratory research to develop the new drug.
    b. Preclinical research with animal testing for safety.
    c. Clinical research on healthy human subjects to assess medication pharmacokinetics (Phase I).