

Pharmacokinetics Class Preparation

Nursing 101

GI SYSTEM: The oral medication reaches the systemic circulation through the GI system. As a result, numerous factors can affect the absorption of the pill.

Questions:

1. A client is experiencing diarrhea. How could this affect absorption of an oral drug?
Diarrhea speeds up peristalsis and decreases absorption in the intestines, which can reduce the time an oral drug has to be absorbed. This might result in less of the drug entering the blood stream and a reduced effect of the medication.
2. How could the presence of food in the stomach affect the rate of absorption?
Food in the stomach can slow the rate of drug absorption by delaying the drug's passage into the small intestine.

CARDIOVASCULAR SYSTEM: Once the pill is absorbed into the bloodstream, it is carried or delivered to the sites of pharmacologic action where the drug produces its effects.

Question:

3. How do you think the distribution of the oral medication affected if a client has less than normal cardiac output?
If a client has less than normal cardiac output, the distribution of oral medication may be slowed or reduced. This is because limited blood flow can impair the medications' ability to reach target tissues effectively.

LIVER: Most biotransformation takes place in the liver. Any decrease in the ability of the liver to metabolize medication could lead to an accumulation of the active drug in the bloodstream. This could put the client at risk for toxic effects and adverse reactions.

Questions:

4. How might nutritional status affect metabolism?
Nutritional status affects metabolism because clients who are malnourished can be deficient in the factors that are necessary to produce specific medication-metabolizing enzymes, thus impairing medication metabolism.
5. What factors influence the rate of medication metabolism?
The factors that influence the rate of medication metabolism are age, increase in some medication-metabolizing enzymes, first-pass effect, similar metabolic pathways, and nutritional status.

KIDNEYS: Drug excretion/elimination occurs mainly through the kidneys into the urine. If there is any impairment in kidney function, medications may not be excreted at the anticipated speed. Subsequent medication administration may lead to accumulation and potential toxicity.

Questions:

6. Why would very young and very old clients need to be closely monitored by nurse for signs and symptoms of drug toxicity?

Very young and very old clients need to be monitored by the nurse for signs and symptoms of drug toxicity because their liver and kidney functions, which are essential for metabolizing and excreting medications, are often immature or diminished. This increases the risk of medications building up in their system, leading to toxicity.

7. How can the nurse assess kidney function?

A nurse can assess kidney function by monitoring lab results, such as blood urea nitrogen (BUN) and creatine levels.