

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 can reduce the absorption of an oral drug by rapidly accelerating the transit time through the gastrointestinal tract. This faster movement decreases the contact time between the drug and the intestinal mucosa, limiting the opportunity for the drug to dissolve and be absorbed into the bloodstream.
2. How could the presence of food in the stomach affect the rate of absorption?
The present of food slows gastric emptying meaning that the drug remains longer in the stomach before reaching the small intestine, which is the main site of absorption. This slower transit delays the rate of drug absorption, often reducing the speed at which drug effects are felt.

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 circulation, the distribution of oral medication is reduced because the medication does not effectively reach the circulatory system and peripheral tissues, resulting in diminished delivery of the drug to its target sites and potentially decreased therapeutic efficacy.

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 directly affects metabolic rate and efficiency through availability of nutrients essential for energy production and biochemical reactions, with malnutrition typically slowing metabolism and overnutrition potentially disrupting metabolic health.
5. What factors influence the rate of medication metabolism?

There are many factors that affect the rate of medication metabolism like genetic variability, age, gender, diet, and health 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 closely monitored for signs and symptoms of drug toxicity due to their immature or aging kidneys, which can lead to drug accumulation and potential toxicity. This increased vulnerability means that even minor changes in their condition can result in significant health risks.

7. How can the nurse assess kidney function?

To assess kidney function the nurse can check results from blood test, urinalysis, imaging and physical assessment.