

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 decrease drug absorption and make the medication less effective.
2. How could the presence of food in the stomach affect the rate of absorption?
The presence of food in the stomach can significantly affect the rate of absorption, it delays gastric emptying, it is a physical barrier, making them less available for absorption in the stomach or small intestines, and can also alter the pH of the stomach, which can impact solubility and stability of certain substances and their absorptions.

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? **Low cardiac output can delay medication distribution through the blood stream, delaying the time it takes to reach tissues.**

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? **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? **Age, increased in metabolism increasing enzymes, first pass effect, similar metabolic pathways and nutritional status.**
6. 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:

Why would very young and very old clients need to be closely monitored by nurse for signs and symptoms of drug toxicity? **They cannot metabolize and eliminate drugs as efficiently.**

7. How can the nurse assess kidney function? **Assessment, urinalysis, monitor urine output, color, clarity, and odor all can assess kidney function.**