

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?
If a patient is experiencing diarrhea in other words passing loose, watery bowel movements more frequently than normal there will be a decrease in the absorption of an oral drug. Since oral drugs pass through the GI tract to reach the circulatory system, there is a good chance the medication will be less absorbed if at all as the GI tract is passing stool quickly.
2. How could the presence of food in the stomach affect the rate of absorption?
The presence of food in the stomach could negatively affect the rate of absorption as it may decrease the size of the surface area where the medication will be absorbed. Which leads to a decrease in the rate of absorption.

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? An individual who has less than normal cardiac output will absorb medication at a slower rate since the blood flow is lower than normal, rather than a high blood flow which then medications would be absorbed more rapidly.

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 can affect many factors when it comes to metabolism. If an individual has a poor nutritional status they may have a deficiency in specific medication-metabolizing enzymes, which impairs the rate that medications are metabolized.

5. What factors influence the rate of medication metabolism?
Some factors that influence the rate of medication metabolism are an individual's age, first-pass effect, an increase in some medication-metabolizing enzymes, similar metabolic pathways and a patient's 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? Young and old patients may need to be monitored closely due to a high risk for developing medication toxicities from not being able to metabolize and excrete a medication. In younger patients they have immature liver function, which decreases their rate of metabolism. In older patients' medication toxicity normally comes from those with impaired cardiac, liver, and kidney function.
7. How can the nurse assess kidney function? The nurse can measure the output of urine in a certain amount of time, whether it is hourly or daily. Also assess the urine for any unusual findings in the urine such as color, odor, clarity, protein, ketones, hemoglobin, etc.