

Pharmacokinetics Class Preparation

Nursing 101

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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 the absorption of an oral drug?

This could affect the absorption of the drug by decreasing the absorption of the oral drug (diarrhea is a barrier), according to the ATI textbook.

2. How could the presence of food in the stomach affect the rate of absorption?

The presence of food in the stomach affects the rate of absorption, by it can alter medication absorption and/or contain substances that react with certain medications according to the ATI textbook.

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 is affected if a client has less than normal cardiac output? I believe that, depending on the medication and its effects, the low cardiac output can most likely delay medication distribution.

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? According to the ATI textbook, it talks about how patients who are malnourished can be lacking in the components that produce specific medication-metabolizing enzymes (damaging metabolism).
5. What factors influence the rate of medication metabolism? The factors are age, increase in some medication-metabolizing enzymes, first-pass effect, similar metabolic pathways, and nutritional status from the ATI textbook.

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 the nurse for signs and symptoms of drug toxicity? They need to be closely monitored because infants have a limited medication-metabolizing capacity. For older clients, smaller doses are necessary because of the possibility of accumulation in the body, according to ATI.
7. How can the nurse assess kidney function? The nurse can assess kidney function by urine output, urine tests, and collection of labs, such as BUN.