

Pharmacokinetics Class Preparation

Nursing 101

Madison Barber

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?
A client experiencing diarrhea could affect the absorption of an oral drug due to gastric emptying time. When the drug reaches the stomach and the stomach has to empty quickly due to the diarrhea, then the drug will not be absorbed properly and will instead be emptied within the stool.
2. How could the presence of food in the stomach affect the rate of absorption?
The presence of food in the stomach affects absorption by making it slower. If there is no food present in the stomach, then it can easily be absorbed into the epithelial cells, but with food present, it creates a barrier between the drug and epithelial cells.

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?
The distribution of an oral medication is affected by less normal cardiac output because of poor circulation, which means the drug could not adequately reach the areas needing it.

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?
If a person has inadequate nutritional status, this means that their body is lacking the needed enzymes to metabolize a medication. When they lack these enzymes, the liver is unable to breakdown the medication to an easier form for the body to digest.

5. What factors influence the rate of medication metabolism?

Some factors that influence the rate of medication metabolism is age, an increase of metabolizing enzymes, and first pass effect.

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 because of a comprised ability to produce metabolizing enzymes.

This means that the drug is not easy for the body to get rid of, so it builds up in the body leading to drug toxicity.

7. How can the nurse assess kidney function?

The nurse can assess kidney function by monitoring certain lab levels such as BUN and creatinine. A decrease in these numbers can point in the direction of kidney dysfunction, which means that medications could possibly not be properly discarded.