

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 effect absorption of an oral drug?
 - a. This could affect the absorption of an oral drug because when having diarrhea, the oral drug may move quicker through the digestive track. When the drug moves faster the drug may not have time to metabolize and may not work as efficient.
2. How could the presence of food in the stomach affect the rate of absorption?
 - a. The presence of food in the stomach could affect the rate of absorption by slowing down the rate in which it is metabolized, it can also affect the pH of the stomach affecting the rate of which the medicine can be metabolized (slower or faster depending on the needed environment.)

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?
 - a. The distribution of oral medication can be affected if the client had less than normal cardiac output by delaying medication distribution, due to limited blood flow and perfusion.

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?
 - a. If a client is malnourished, they could lack or be deficient in certain factors that are necessary to produce medication metabolizing enzymes, ultimately resulting in impair medication metabolism.
5. What factors influence the rate of medication metabolism?

- a. Age, increase in some medication metabolizing enzymes, first pass effect, having similar metabolic pathways, and nutritional status can all influence the rate of medication metabolism.

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?
 - a. Young clients have a limited medication metabolizing capacity, and for elderly client's medication metabolism tends to decline, both can result in the accumulation of the medication in the body that can cause drug toxicity. This is why monitoring is important to ensure this doesn't happen, or so you are able to help.
7. How can the nurse assess kidney function?
 - a. Nurses can assess the kidney function of a client by monitoring BUN and creatinine levels, which relate closely to the kidney's function.