

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 client is experiencing diarrhea it would decrease the absorption of an oral drug due to the fact that it isn't in the GI tract for as long.

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

The presents of food in the stomach will slow down the absorption rate.

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?** The medication distribution would be delayed due to the decreased cardiac output.

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 the client is malnourished they would not have some of the key enzymes to help the medication be metabolized. In this case you might have to decrease the dosage of the medication.
- 5. What factors influence the rate of medication metabolism?** Factors that influence metabolism include age (older adults and children require lower dosages due to the risk of it accumulating in the body), the first-pass effect (which involves the liver inactivates some medications on their first pass through the liver), an increase in medication-metabolizing enzymes (can increase metabolism of some medications and might require client to be on a higher dose to maintain a therapeutic level), and medications that have similar metabolic pathways.

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?** The very old and very young have decreased metabolism or limited medication metabolizing extent. This can lead to the drug accumulating in the body which leads to drug toxicity.
- 7. How can the nurse assess kidney function?** Monitor BUN and creatinine levels.