

Pharmacokinetics Class

Preparation – Nursing 101:

1. **Questions – 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.**
 - a. A client is experiencing diarrhea. How could this affect absorption of an oral drug?
 - i. The presence of a symptom such as diarrhea gives the medication less absorption time in the GI therefore weakening or completely invalidating the expected therapeutic response.
 - b. How could the presence of food in the stomach affect the rate of absorption?
 - i. Food can slow the absorption rate as it decreases the speed of the drug reaching the small intestines, this is where drug absorption mostly occurs.
2. **Question – 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.**
 - a. How do you think the distribution of the oral medication is affected if a client has less than normal cardiac output?
 - i. If a client has less than normal cardiac output this can cause a toxic accumulation of the medication due to poor circulatory functions that inhibit blood flow.
3. **Questions – 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.**
 - a. How might nutritional status affect metabolism?
 - i. A patient who is malnourished may not have certain factors that are needed to produce medication-metabolizing enzymes.
 - b. What factors influence the rate of medication metabolism?

- i. The factors that affect the rate of medication metabolism are: age, an increase in medication-metabolizing enzymes, similar metabolic pathways, and nutritional status.

4. Questions – 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.

- a. Why would very young and very old clients need to be closely monitored by nurses for signs and symptoms of drug toxicity?
 - i. One of the main reasons that clients who are older need to be monitored for drug toxicity is due to the fact that hepatic medication metabolism tends to decline with age therefore their bodies may store inactive medication and that can lead to toxicity.
- b. How can the nurse assess kidney function?
 - i. The client's urine can be assessed to see quantity, as well as if it is clear, yellow and free of any notable odors. Since the kidneys one of the body's filtration systems examining a client's urine can tell a nurse about kidney function.