

## 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? **Diarrhea could reduce the absorption rate of an oral drug because it causes the passage of substances in the GI tract to move quickly. Thus, not providing the digestive system ample amount of time to properly absorb the medication.**
2. How could the presence of food in the stomach affect the rate of absorption? **The presence of food in the stomach could increase the rate of absorption because food stimulates the digestive system. The stomach mechanically and chemically breaks down food to allow it to pass through the GI tract. So, this could also stimulate the rate of absorption as it is intertwined with the process of digestion.**

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 distribution of oral medication would be negatively affected by a client with less than normal cardiac output. It could cause a delay in the medication distribution because the blood is not being pushed out efficiently to be perfused around the body.**

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? **Nutritional status can affect metabolism because malnourishment can lead to a deficiency in the necessary factors to properly produce medication-metabolizing enzymes. So, without the proper nutritional components, metabolism can be impaired and lead to a deficient liver ability.**
5. What factors influence the rate of medication metabolism? **The factors that influence the rate of medication metabolism are age, an increase in some medication-metabolizing enzymes to metabolize a medication sooner, the first-**

**pass effect where a nonenteral route is required to ensure an active medication, similar metabolic pathways, and nutritional status.**

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 old clients would need to be closely monitored by the nurse for drug toxicity because nephron, which is the functional unit of the kidney, may not work as well. This could cause the kidney to not function properly and lead to drug toxicity.**
7. How can the nurse assess kidney function? **The nurse can assess kidney function through urine output. The nurse could analyze the amount, color, or smell to determine an underlying dysfunction.**