

## 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?  
Presence of stool in the rectum can cause a barrier to absorption and take a longer time for the oral drug to be fully absorbed.
2. How could the presence of food in the stomach affect the rate of absorption?  
The presence of food in the stomach could slow down the rate of absorption as it will take longer to get absorbed into the blood stream.

**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? This would slow down the rate of time it takes for the pill to be spread throughout the body, it's goal is to enter the bloodstream and spread throughout the rest of the body but a decrease in normal cardiac output would slow down this absorption process.

**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? Clients who are malnourished can be deficient in the factors that are necessary to produce specific medication-metabolizing enzymes, thus impairing medication metabolism.
5. What factors influence the rate of medication metabolism? Factors that would influence the rate of medication metabolism include age, increase in some medication-metabolizing enzymes, first-pass effect, 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 clients would need to be monitored closely because they have a limited medication-,metabolizing capacity, while older adults may require smaller doses because they have the possibility of accumulation in the body. Therefore, you should monitor these two patients very closely after administering any medication.
7. How can the nurse assess kidney function? A nurse can assess kidney function through excretion, excretion is the elimination of medications form the body, primarily through the kidneys. So they can test everything they would need to through urine analysis.