

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 cause the oral medication to move much quicker through the GI tract, causing the medication to not 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 make it much harder for the medication to be absorbed through the body. The body has to digest the food and also absorb the medication, which could cause it to take longer to absorb the medication.

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 less than normal cardiac output would mean that the distribution of medication would be delayed. Because the heart is not pumping out enough blood or it is not pumping fast enough, the medication would take longer to distribute throughout 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 it can cause deficiencies with the liver. Patients who may be malnourished would not be able to produce specific enzymes, which would lead to the accumulation of the drug in the liver.
5. What factors influence the rate of medication metabolism? _____
The rate of metabolism is influenced by age, an increase in 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, such as infants, do not have fully developed organs, including the kidneys. This means that they are at a much higher risk for drug toxicity due to their underdeveloped organs. Very old clients are also at a higher risk for drug toxicity due to the fact that their organs are most likely starting to fail, including the kidneys. Very old clients would likely have some failure or dysfunctioning in the kidneys, making it harder for medications to be properly excreted from the kidneys.
7. How can the nurse assess kidney function? _
The nurse can assess kidney function by getting consistent urine samples to monitor the clients BUN and creatinine levels.