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 can affect absorption in the small intestine by shortening the absorption time. Specifically oral drugs are designed to have longer absorption times so quicker bowel movements can decrease effectiveness.

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

Food in the stomach can slow the movement and rate of dissolution. This will in turn slow the rate of absorption.

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?
   If a client has less than normal cardiac output, the blood flow to organs/tissues is decreased which in turn will cause medications to reach tissues at a slower rate. This will overall delay the drug's effect.

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? Poor nutrition can cause the body to be lacking in important enzymes that are vital for drug breakdown, slowing metabolism. This can possibly lead to drug accumulation and toxicity.
5. What factors influence the rate of medication metabolism?
   Age, medication combinations, similar metabolic pathways, increased in medication metabolizing enzymes, 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? Because people of these ages can’t metabolize and eliminate drugs as efficiently.
7. How can the nurse assess kidney function? Assessment, urinalysis, monitoring urine output, color, clarity, odor can assess kidney function.