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?
   -Since the client is experiencing diarrhea, this could lead to a shorter time that the drug will have to be absorbed. Leading to a decrease of the drugs overall effectiveness.

2. How could the presence of food in the stomach affect the rate of absorption?
   -The presence of food in the stomach can affect the rate of absorption by changing the pH of the stomach, delaying gastric emptying time which both can delay the rate at which the drug can reach its absorption site.

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 the oral medication can be affected if a client has less than normal cardiac output by decreasing the delivery of the drug to the target site due to a reduced blood flow.

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 by reducing the factors that are necessary to produce specific medication-metabolizing enzymes which then could impair medication metabolism. An example of this is malnourished clients.

5. What factors influence the rate of medication metabolism?

-Factors that 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 and very old clients need to be closely monitored by the nurse for signs and symptoms of drug toxicity for different reasons, one being that in very young and elderly people the metabolic rate and organ function is different than an adult. Which can affect how drugs are metabolized and excreted from the body. Then could lead to an increased risk of toxicity if not monitored.

7. How can the nurse assess kidney function?

-The nurse can assess kidney function by different methods which include monitoring BUN and creatine levels which are done by laboratory test.