Test Bank for Pharmacology for the Primary Care Provider 6th Visovsky

Test Bank - Chapter 01

Q1: An advanced practice student asks you to explain the purpose of pharmacokinetics in prescribing medications to a patient. What is your best response?

A. Understanding pharmacokinetics informs the biochemistry of individual medications.

B. The absorption of a medication is the only parameter that impacts prescribing practices.

C. Pharmacokinetic information is used to determine the dose and frequency of medication prescribed to a patient. (Correct)

D. Pharmacokinetic information informs the prescriber if the medication crosses the blood brain barrier.

Rationale: The definition of pharmacokinetics refers to the processes of absorption, distribution, metabolism, and elimination of medication. Pharmacokinetic information is used to determine the dose and frequency of medication prescribed to a patient.

Q2: You are prescribing an intravenous (IV) medication to a patient. What processes of pharmacokinetics are involved in IV medication administration?

A. distribution and elimination (Correct)

B. absorption and elimination

C. metabolism and distribution

D. distribution and absorption

Rationale: Distribution and elimination occur; absorption is immediate, as the medication is 100% bioavailable.

Q3: You have ordered an oral medication for a patient in your care. In considering that the pharmacokinetic properties of medication are affected by the route of administration, which of the following is true about the oral route?

A. For oral medications, elimination of oral medication is not impacted by gastric pH

B. For oral medications, only distribution and elimination occur.

C. For oral medications, first-pass metabolism occurs followed by absorption. (Correct)

D. For oral medications, variable bioavailability affects elimination.

Rationale: When medication is administered orall they undergo first-pass metabolism before absorption. Absorption or oral medications vary and are less than100% bioavailable. When medication is administered orally, absorption occurs over time and is followed by distribution and elimination.

Q4: An adult patient is taking an oral medication that causes gastric reflux. The patient asks you why you have cautioned against taking antacids with this medication. What is your best response?

A. Taking an antacid may block the elimination of this medication.

B. Taking an antacid may alter the distribution of this medication.

C. Taking an antacid may lead to increased drug toxicity.

D. Taking an antacid may interfere with the absorption of medication. (Correct)

Rationale: Changing the pH of the gastric mucosa can alter the absorption of the drug. Drug distribution is not affected. It may indirectly cause drug toxicity if a significant amount of the drug is absorbed. It would decrease stomach upset.

Q5: When considering an inhaled corticosteroid to treat asthma in an adult, the patient why the corticosteroid is given by inhalation instead of by oral administration. What is your best response?

A. Inhaled corticosteroids work slowly, and the action is more sustained.
B. Inhaled corticosteroids have a few systemic side effects. (Correct)
C. Inhaled corticosteroids can use the local blood vessels to deliver the medication dose.
D. Inhaled corticosteroid doses are more easily regulated.

Rationale: Inhaled corticosteroids go directly to the site of action and does not pass through the gastrointestinal tract absorption or liver to get to the lungs. They are generally well absorbed, however, dosing the medication is less accurate as it is not always clear how much of an inhaled drug gets into the lungs.

Q6: You are prescribing two medications that are protein bound to an adult patient. What action should you take when prescribing these two medications?

A. Prescribe increased doses of both drugs.
B. Monitor drug levels, actions, and side effects. (Correct)
C. Teach the patient to decrease protein intake while taking these medications.
D. Tell the patient to increase fluid intake.

Rationale: Protein-bound medications bind to albumin, and thus, serum albumin levels may affect distribution, requiring the provider to monitor drug levels, actions, and side effects and change dosing accordingly. Increasing the dose of both medications is not recommended unless monitoring indicates. Increasing dietary protein or fluids does not affect this.

Q7: A patient who is taking both fluoxetine and warfarin has noticed unusual bleeding from the gums when the teeth are brushed. What effect of the CYP P450 enzyme system can explain this adverse effect?

A. The inhibitory effect of CYP P450 enzyme system (Correct)
B. The substrate effect of CYP P450 enzyme system
C. The inducer effect of CYP P450 enzyme system
D. The metabolism effect of CYP P450 enzyme system

Rationale: An inhibitor is any drug that causes the enzyme to metabolize more slowly or decreases the capacity of the enzyme pathway. A patient on fluoxetine (Prozac) plus warfarin can have the fluoxetine inhibiting effect on the P450 enzyme system from metabolizing warfarin and may produce adverse effects such as bleeding.

Q8: When prescribing oral medications, the primary care provider understands that these medications are subject to first-pass effect. What are the consequences of first-pass effect of oral

medications?

A. Oral medications are excreted more slowly.

B. Oral medications become less bioavailable. (Correct)

C. Oral medications have increased absorption.

D. Oral medications enter the circulation more quickly.

Rationale: When a medication is taken orally, it is absorbed by the GI system, and it then enters the hepatic portal system to the liver before reaching the rest of the body. The liver can extensively metabolize some medications, so little of it is left over to enter the circulation.

Q9: As the primary care provider, you are preparing to prescribe a medication that you know has nonlinear kinetics. What action should you plan to take in the care of this patient?

A. Monitor the patient's creatinine clearance at baseline and periodically.

B. Administer a higher loading dose followed by the maintenance dose.

C. Frequently monitor the patient for desired and adverse effects. (Correct)

D. Administer the medication sublingually to avoid the first-pass effect.

Rationale: Drugs with nonlinear kinetics are not eliminated based on dose or concentration of the drug, and these drugs have a narrow therapeutic window and must be monitored closely for desired effects and toxicity.

Q10: A patient in your care states that he drinks grapefruit juice every morning with his medications. What is your best response?

A. "Drinking grapefruit juice with your medications can neutralize the effect of medication."

B. "Drinking grapefruit juice with your medications provides vitamin C needed for drug metabolism."

C. "Drinking grapefruit juice with your medications can lead to increased potassium levels and should be avoided."

D. "Drinking grapefruit juice with your medications can lead to higher or reduced dose of medication in the bloodstream." (Correct)

Rationale: When grapefruit juice is consumed, enzyme CYP3A4 is inhibited, leading to higher blood plasma concentrations of the nonmetabolized portion of the medication, which in turn can lead either to overdosing when a medication is not metabolized to its inactive form or to a highly reduced dose when the active form of the medication must be metabolized to be activated.

Q11: An advanced practice student asks you to explain pharmacodynamics. What is your best response?

A. Pharmacodynamics refers to the biochemical and physiologic action or effect of a medication on the body. (Correct)

B. Pharmacodynamics refers to the rate at which absorption, metabolism, distribution, and elimination occur in the body.

C. Pharmacodynamics allows the prescriber to determine the dose and frequency of medication.

D. Pharmacodynamics helps medications overcome biologic barriers, such as the blood-brain barrier to exert its effect.

Rationale: Pharmacodynamics (PD) refers to the biochemical and physiologic action or effect of a medication on the body. PD includes the dose–response relationship between a medication's concentration and its subsequent effect. A drug's PD can be affected by physiologic changes due to disease or disorder (e.g., genetic mutation), aging (e.g., alterations in receptor binding), and medication interactions (e.g., competition for receptor binding sites).

Q12: A patient with insulin-dependent diabetes is running 3 to 5 miles daily for exercise. Which statement about the absorption of insulin should be relayed to this patient?

A. Exercising after insulin administration will slow down insulin absorption unless a meal is taken before running.

B. If insulin is injected subcutaneously into the thigh muscle, followed by running, a more rapid absorption of the insulin than occurs. (Correct)

C. There is no effect on the absorption of insulin if injected prior to running for exercise, as the drug is 100% bioavailable.

D. The lipophilic nature of insulin protects the patient from issues of rapid or slow absorption.

Rationale: Circulation at the site of medication administration is important in the absorption process. Any condition that decreases circulation at the administration point will result in decreased drug absorption. For example, insulin injected subcutaneously into a thigh muscle, followed by exercise, will produce more rapid absorption of the insulin than occurs without exercise.

Q13: Which of the following is considered a limitation of the oral route for medication administration?

A. The onset of action is very rapid.

B. The high pH of the stomach increases absorption.

C. There may be variable bioavailability of oral medications. (Correct)

D. Most oral medications are not subject to first pass metabolism.

Rationale: Variable bioavailability may occur because of the molecular size of the medication and first-pass effect or medication solubility.

Q14: You have ordered a transdermal medication for a patient experiencing cancer-related pain. The patient asks why this type of medication formulation has been prescribed as opposed to an oral drug. What is your best response as it applies to pharmacokinetic and pharmacodynamics?

A. Transdermal medications for pain are more potent than oral medications.

B. Transdermal medications do not avoid the first-pass metabolism by the liver.

C. Transdermal medications permit slow, prolonged medication delivery. (Correct)

D. Transdermal medications for pain have no addictive properties.

Rationale: For severe pain, such as cancer-related pain, the slow, prolonged medication delivery is more effective in providing pain relief. Transdermal medications, while not necessarily more potent, avoid first pass metabolism. Addiction is still a concern with transdermal opioids.

Q15: A neonate with a GI dysfunction has an order for a medication to be administered rectally. What should the primary care provider need to understand about rectal medications in this population?

A. In neonates, medications administered rectally can have variable absorption. (Correct)

B. In neonates, medications administered rectally rectal environment have higher enzyme activity.

C. Neonates tolerate rectal medications better as compared to oral medications.

D. Neonates eliminate rectal medications far better as compared to oral medications.

Rationale: In general, rectal medications are not commonly administered to either full-term or preterm neonates, due to erratic absorption as well as a risk of damage to the delicate rectal lining that could lead to infection.