
Test Generator Questions, Chapter 2, Drugs and the Body

Format: Multiple Choice

Chapter: 2

Client Needs: Physiological Integrity: Pharmacological and Parenteral Therapies

Cognitive Level: Analyze

Difficulty: Moderate

Integrated Process: Nursing Process

Objective: 2

Page and Header: 22, Pharmacokinetics

1. The nurse is caring for a diverse group of clients. In which client should the nurse assess for an alteration in drug metabolism?

- A) a 35-year-old woman with cervical cancer
- B) a 41-year-old man with kidney stones
- C) a 50-year-old man with cirrhosis of the liver
- D) a 32-year-old woman with urosepsis

Ans: C

Feedback: The liver is the most important site of drug metabolism. If the liver is not functioning effectively, as in clients with cirrhosis, drugs will not metabolize normally so that toxic levels could develop unless dosage is reduced. A client with cervical cancer or kidney stones would not be expected to have altered ability to metabolize drugs so long as no liver damage existed. Infections such as urosepsis would not have a direct impact on metabolism.

Format: Fill-in-the-Blank

Chapter: 2

Client Needs: Physiological Integrity: Pharmacological and Parenteral Therapies

Cognitive Level: Apply

Difficulty: Difficult

Integrated Process: Nursing Process

Objective: 3

Page and Header: 22, Pharmacokinetics; 27, Box 2.2

2. A client presents to the emergency department with a drug level of 50 units/mL. The half-life of this drug is 1 hour. With this drug, concentrations above 25 units/mL are considered toxic, and no more drug is given. How long will it take for the blood level to reach the nontoxic range? Provide your answer measured in minutes.

Ans: 60 minutes

Feedback: Half-life is the time required for the serum concentration of a drug to decrease by 50%. After 1 hour, the serum concentration would be 25 units/mL ($50/2$) if the body can properly metabolize and excrete the drug.

Format: Multiple Choice

Chapter: 2

Client Needs: Physiological Integrity: Pharmacological and Parenteral Therapies

Cognitive Level: Analyze

Difficulty: Difficult

Integrated Process: Nursing Process

Objective: 4

Page and Header: 28, Factors Influencing Drug Effects; 28, Box 2.3

3. A client has recently moved from Vermont to South Florida. The client presents to the clinic reporting "dizzy spells" and weakness. The client tells the nurse that they have been on the same antihypertensive drug for 6 years, with stable blood pressures and no adverse effects. The clinic nurse knows that one possible reason for the change in the effectiveness of the drug could be what?

- A) the impact of psychosocial stress associated with moving
- B) the accumulative effect of the drug if it has been taken for many years
- C) the impact of the warmer environment on the client's physical status
- D) problems with client adherence with the drug regimen while on vacation

Ans: C

Feedback: Antihypertensive drugs work to decrease the blood pressure. When a client goes to a climate that is much warmer than usual, blood vessels dilate and the blood pressure falls. If a client is taking an antihypertensive drug and moves to a warmer climate, there is a chance that the client's blood pressure will drop too low, resulting in dizziness and feelings of weakness. Even mild dehydration could exacerbate these effects. Most antihypertensives are metabolized and excreted and do not accumulate in the body. Clients must adhere to their drug regimen on vacation, but this client is not on vacation. Psychosocial factors must be considered, but the client is describing a physiological response.

Format: Multiple Choice

Chapter: 2

Client Needs: Physiological Integrity: Pharmacological and Parenteral Therapies

Cognitive Level: Apply

Difficulty: Moderate

Integrated Process: Teaching/Learning

Objective: 5

Page and Header: 28, Factors Influencing Drug Effects; 32, Box 2.5

4. The nurse is providing medication teaching for a client. The nurse has asked the client to provide a complete list of medications taken to health care providers. Ensuring this list is complete will have what potential benefit for the client?

- A) reducing the client's spending on medications
- B) protecting the client from possible allergic reactions to medications
- C) reducing the client's likelihood of drug-drug interactions
- D) maintaining a therapeutic serum concentration of the new drug

Ans: C

Feedback: It is important that all health care providers have a complete list of the client's medications to avoid drug-drug interactions caused by one provider ordering a medication, unaware of another medication the client is taking that could interact with the new prescription. Informing the provider of all medications taken will not reduce

costs of medications, which is best accomplished by requesting generic medications. Allergies should be disclosed to all health care providers as well, but this is not why it is important to provide a complete list of medications taken. Ensuring that the client's drug regimen is fully disclosed will not have direct effect on serum concentrations of the new drug.

Format: Multiple Choice

Chapter: 2

Client Needs: Physiological Integrity: Pharmacological and Parenteral Therapies

Cognitive Level: Understand

Difficulty: Moderate

Integrated Process: Teaching/Learning

Objective: 1

Page and Header: 20, Pharmacodynamics

5. A client has been prescribed a medication that is known to be a drug agonist. This drug will have what effect?

- A) It will react with a receptor site on a cell preventing a reaction with another chemical on a different receptor site.
- B) The drug will interfere with the enzyme systems that act as catalyst for different chemical reactions.
- C) The drug will interact directly with receptor sites to cause the same activity that a natural chemical would cause at that site.
- D) It will react with receptor sites to block normal stimulation, producing no effect.

Ans: C

Feedback: Agonists are drugs that produce effects similar to those produced by naturally occurring neurotransmitters, hormones, or other substances found in the body. Noncompetitive antagonists are drugs that react with some receptor sites preventing the reaction of another chemical with a different receptor site. Drug–enzyme interactions interfere with the enzyme systems that stimulate various chemical reactions.

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Chapter: 2

Client Needs: Physiological Integrity: Pharmacological and Parenteral Therapies

Cognitive Level: Understand

Difficulty: Moderate

Integrated Process: Nursing Process

Objective: 2

Page and Header: 22, Pharmacokinetics

6. A nurse is caring for a client who has been receiving a drug by the intramuscular route at a dose of 0.25 mg. After discharge, the client will be prescribed the same medication orally at a dose of 2.5 mg. What phenomenon should the nurse describe when explaining the reason for the increased dosage for the oral dose?

- A) passive diffusion
- B) active transport
- C) glomerular filtration
- D) first-pass effect

Ans: D

Feedback: The first-pass effect involves drugs that are absorbed from the small intestine directly into the portal venous system, which delivers the drug molecules to the liver. After reaching the liver, enzymes break the drug into metabolites, which may become active or may be deactivated and readily excreted from the body. A large percentage of the oral dose is usually destroyed and never reaches tissues. Oral dosages account for the phenomenon to ensure an appropriate amount of the drug in the body to produce a therapeutic action. Passive diffusion is the major process through which drugs are absorbed into the body. Active transport is a process that uses energy to actively move a molecule across a cell membrane and is often involved in drug excretion in the kidney. Glomerular filtration is the passage of water and water-soluble components from the plasma into the renal tubule.

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Chapter: 2

Client Needs: Physiological Integrity: Pharmacological and Parenteral Therapies

Cognitive Level: Understand

Difficulty: Easy

Integrated Process: Nursing Process

Objective: 4

Page and Header: 28, Factors Influencing Drug Effects

7. A client's unexpected response to a new medication has been attributed to characteristics of the client's genetic makeup. What area of study **best** explains this client's medication response?

- A) pharmacotherapeutics
- B) pharmacodynamics
- C) pharmacoeconomics
- D) pharmacogenomics

Ans: D

Feedback: Pharmacogenomics is the area of study that includes mapping of the human genome. In the future, medical care and drug regimens may be personally designed based on a client's unique genetic makeup. Pharmacotherapeutics is the branch of pharmacology that deals with the uses of drugs to treat, prevent, and diagnose disease. Pharmacodynamics involves how a drug affects the body. Pharmacoeconomics includes the costs involved in drug therapy.

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Chapter: 2

Client Needs: Physiological Integrity: Pharmacological and Parenteral Therapies

Cognitive Level: Understand

Difficulty: Moderate

Integrated Process: Nursing Process

Objective: 1

Page and Header: 22, Pharmacokinetics

8. The serum lithium levels of a client diagnosed with bipolar disorder have risen to the minimum level required to have a therapeutic effect. What term is used to describe this situation?

- A) critical concentration
- B) dynamic equilibrium
- C) a stable half-life
- D) benefits of active transport

Ans: A

Feedback: A critical concentration of a drug must be present before a reaction occurs within the cells to bring about the desired therapeutic effect. A dynamic equilibrium is obtained from absorption of a drug from the site of drug entry, distribution to the active site, metabolism in the liver, and excretion from the body to have a critical concentration. Active transport is the process that uses energy to actively move a molecule across a cell membrane and is often involved in drug excretion in the kidney. The half-life of a drug affects the achievement and maintenance of a critical concentration, but this drug level is not the half-life itself.

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Chapter: 2

Client Needs: Physiological Integrity: Pharmacological and Parenteral Therapies

Cognitive Level: Apply

Difficulty: Moderate

Integrated Process: Nursing Process

Objective: 5

Page and Header: 28, Factors Influencing Drug Effects; 32, Box 2.5

9. A nurse is caring for a client who is scheduled to receive three medications at the same time. What action should the nurse perform **first**?

- A) Perform hand hygiene before handling the medications.
- B) Consult a drug guide to check for interactions.

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- C) Assess the client's knowledge of the medications.
D) Identify the client by checking the armband and asking the client's name.

Ans: B

Feedback: A nurse should first consult a drug guide for interactions when two or more drugs are being given at the same time. After this review, the medication can be administered. The nurse will perform hand hygiene, check for client allergies, and ensure that the right client receives the medication by using two identifiers. It is important to assess clients' knowledge of their medications, but ensuring compatibility is a priority.

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Chapter: 2

Client Needs: Physiological Integrity: Pharmacological and Parenteral Therapies

Cognitive Level: Understand

Difficulty: Moderate

Integrated Process: Nursing Process

Objective: 2

Page and Header: 28, Factors Influencing Drug Effects; 28, Box 2.3

10. The nurse is preparing to administer an intramuscular dose of meperidine to a client in pain. The nurse should identify what factor that will affect the absorption of the drug by this route?

- A) perfusion of blood to the subcutaneous tissue
B) integrity of the client mucous membranes
C) environmental temperature
D) the amount of adipose tissue that the client has

Ans: C

Feedback: A cold environmental temperature can cause blood vessels to vasoconstrict and decreases absorption or in a hot environment, vasodilate and increase absorption of IM medications. Blood flow to the subcutaneous tissues interferes with subcutaneous

injection. Intramuscular injections enter muscle, so the amount of adipose tissue that the client has will not have a direct effect on absorption. The condition of mucous membranes can interfere with sublingual (under the tongue) and buccal (in the cheek) administration of drugs.

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Client Needs: Physiological Integrity: Pharmacological and Parenteral Therapies

Cognitive Level: Understand

Difficulty: Moderate

Integrated Process: Nursing Process

Objective: 1

Page and Header: 20, Pharmacodynamics

11. The client is taking a drug that affects the body by increasing cellular activity. Where does this drug work on the cell?

- A) receptor sites
- B) cell membrane
- C) Golgi body
- D) endoplasmic reticulum

Ans: A

Feedback: Many drugs are thought to act at specific areas on cell membranes called receptor sites. After the receptor site is activated, this in turn activates the enzyme systems to produce certain effects, such as increased or decreased cellular activity, changes in cell membrane permeability, or alterations in cellular metabolism. Receptor sites are generally located on the outside of cells and allow the drug to bypass the cell membrane. The Golgi body and endoplasmic reticulum are not involved in this process.

Format: Multiple Selection

Chapter: 2

Client Needs: Physiological Integrity: Pharmacological and Parenteral Therapies

Cognitive Level: Understand

Difficulty: Moderate

Integrated Process: Nursing Process

Objective: 2

Page and Header: 22, Pharmacokinetics

12. What physiologic processes contribute to the achievement of dynamic equilibrium when a nurse administers a drug? Select all that apply.

- A) distribution to the site where the drug is active
- B) biotransformation
- C) absorption from site where the drug enters the body
- D) excretion from the body
- E) interaction with other drugs

Ans: A, B, C, D

Feedback: The actual concentration that a drug reaches in the body results from a dynamic equilibrium involving several processes: absorption from the site of entry (can be from the muscle, the gastrointestinal [GI] tract if taken orally, of the subcutaneous tissue if given by that route), distribution to the active site, biotransformation (metabolism) in the liver, and excretion from the body. Interaction with other drugs is not part of the dynamic equilibrium.

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Client Needs: Physiological Integrity: Pharmacological and Parenteral Therapies

Cognitive Level: Understand

Difficulty: Moderate

Integrated Process: Nursing Process

Objective: 2

Page and Header: 22, Pharmacokinetics

13. A nurse is administering digoxin to a client. To administer medications so that the drug is as effective as possible, the nurse should **prioritize** what factor?