

Workman: Understanding Pharmacology

Chapter 01: Drug Actions and Body Responses

Test Bank

MULTIPLE CHOICE

1. How are intrinsic drugs different from extrinsic drugs?
 - a. Intrinsic drugs are made by the body, whereas extrinsic drugs are made outside the body.
 - b. Intrinsic drugs are administered by the parenteral route, whereas extrinsic drugs are administered by the oral route.
 - c. Extrinsic drugs can only be applied to the skin or mucous membranes, whereas intrinsic drugs are taken internally.
 - d. Extrinsic drugs require a prescription for administration, whereas intrinsic drugs are available over the counter.

ANS: A

Intrinsic drugs are the hormones, enzymes, and other chemicals made by the body that change cell activity. Extrinsic drugs are manufactured from chemical, animal, or plant sources and must have a means of entering the body in order to change cell activity.

PTS: 1 DIF: Cognitive Level: Understanding (Comprehension)
REF: p. 3 TOP: Nursing Process Step: N/A
MSC: Client Needs Category: Physiological Integrity

2. How are the terms *drug* and *medication* different in the health care environment?
 - a. Medications must be prescribed, whereas drugs are available over the counter.
 - b. Medications are used to treat health problems, whereas drugs can be abused.
 - c. Drugs are always illegal, whereas medications are legal.
 - d. There is no difference between these two terms.

ANS: D

Although the lay public may think there is a distinction between these two terms, in health care they mean the same thing. Both are used to treat health problems and both can be abused.

PTS: 1 DIF: Cognitive Level: Understanding (Comprehension)
REF: p. 3 TOP: Nursing Process Step: N/A
MSC: Client Needs Category: Physiological Integrity

3. Which patient response indicates a drug's therapeutic response?
 - a. Ankle swelling
 - b. Bone strengthening
 - c. Constipation
 - d. Dizziness

ANS: B

A therapeutic response is a drug's intended action to help a health problem. Effects that are caused by a drug but are not the intended action are known as *side effects*. No one prescribes a drug with the intention to cause ankle swelling, constipation, or dizziness.

PTS: 1 DIF: Cognitive Level: Understanding (Comprehension)
REF: p. 3 TOP: Nursing Process Step: N/A
MSC: Client Needs Category: Physiological Integrity

4. Which type of drug name is used mainly by drug developers and manufacturers, and not by prescribers?
- Generic name
 - Brand or trade name
 - Chemical name
 - Proprietary name

ANS: C

Chemical names are long and contain the exact chemical composition of the drug. It does not indicate a drug category or use.

PTS: 1 DIF: Cognitive Level: Remembering (Knowledge)
REF: p. 4 TOP: Nursing Process Step: N/A MSC: Client Needs Category: N/A

5. What major consideration allows a drug to be available over the counter rather than by prescription?
- Side effects are not induced by the drug.
 - Over-the-counter drugs must cost less than prescription drugs.
 - The drug is so mild that no federal regulations are needed.
 - The drug is safe when the directions for dosage and scheduling are followed.

ANS: D

Drugs available over the counter are still subject to federal regulation and do have side effects. Cost is not the most important issue. The main feature that any over-the-counter drug must have before it can be available without a prescription is that harmful effects are not expected when directions for dosage and scheduling are followed.

PTS: 1 DIF: Cognitive Level: Remembering (Knowledge)
REF: p. 4 TOP: Nursing Process Step: N/A
MSC: Client Needs Category: Physiological Integrity

6. Why must the nurse always ask a patient about his or her use of any herbal supplements or botanicals?
- Many states do not have regulations about herbal supplements or botanicals.
 - These substances are illegal and the nurse must report patients' use of them.
 - Patients who use botanicals seldom take their prescribed drugs.
 - These substances can interact with a prescribed drug.

ANS: D

Many herbal supplements and botanicals have effects on cell activity. Sometimes these agents can make drug side effects worse or can reduce the effectiveness of a prescribed drug. Others can actually cause health problems.

PTS: 1 DIF: Cognitive Level: Understanding (Comprehension)
REF: p. 5 TOP: Nursing Process Step: N/A
MSC: Client Needs Category: Physiological Integrity

7. In the United States, which group is responsible for enforcing established standards for drug manufacturing?
- United States Pharmacopeia
 - National Institutes of Health
 - Food and Drug Administration
 - Association of Pharmaceutical Manufacturers

ANS: C

The standards for drug manufacture are established by the U.S. Pharmacopeia. These standards are enforced by the Food and Drug Administration. Neither the National Institutes of Health nor the Association of Pharmaceutical Manufacturers has any authority to enforce drug standards.

PTS: 1 DIF: Cognitive Level: Remembering (Knowledge)
REF: p. 6 TOP: Nursing Process Step: N/A MSC: Client Needs Category: N/A

8. How are the effects of naturally occurring testosterone changed when a patient is taking a drug that is a testosterone agonist?
- Effects are increased
 - Effects are decreased
 - Effects are eliminated
 - Effects are unchanged

ANS: A

An agonist drug has the same effects of the naturally occurring drug. So, taking a testosterone agonist adds to the effects of the patient's naturally occurring testosterone.

PTS: 1 DIF: Cognitive Level: Understanding (Comprehension)
REF: p. 7 TOP: Nursing Process Step: N/A
MSC: Client Needs Category: Physiological Integrity

9. Which statement about agonist and antagonist drugs is true?
- The target tissues for these types of drugs are invading bacteria and viruses.
 - Both agonist and antagonist drugs must interact with receptors to produce their intended responses.
 - Antagonist drugs produce only intended responses and agonist drugs produce both intended responses and side effects.
 - These types of drugs are less likely to cause allergic responses than drugs that are neither agonists nor antagonists.

ANS: B

Agonist drugs excite a receptor to produce their intended responses on a cell or tissue in the same way that a naturally occurring substance does. Antagonist drugs produce their intended responses by binding to and blocking receptors.

PTS: 1 DIF: Cognitive Level: Understanding (Comprehension)
REF: pp. 7-8 TOP: Nursing Process Step: N/A
MSC: Client Needs Category: Physiological Integrity

10. Which statement about drug side effects is true?
- All drugs have side effects.
 - Severe side effects are all considered allergic responses.
 - All patients taking a specific drug experience the same side effects.
 - Any patient experiencing a drug side effect must stop taking the drug immediately.

ANS: A

Although some drugs have fewer side effects or more mild side effects than other drugs, every drug has at least one side effect. Not all patients taking the same drug experience all side effects or experience them to the same degree.

PTS: 1 DIF: Cognitive Level: Understanding (Comprehension)
REF: p. 9 TOP: Nursing Process Step: N/A
MSC: Client Needs Category: Physiological Integrity

11. The nurse is teaching a patient about adverse drug reactions (ADRs). Which precaution is most important for the nurse to include?
- “Take your medications right before you go to bed so that you can sleep through an ADR.”
 - “Keep a written record of the date and time an ADR occurs.”
 - “Stop taking the drug and flush it down the toilet.”
 - “Immediately seek medical help.”

ANS: D

An adverse drug reaction can cause tissue damage and death. Any patient experiencing an ADR needs to seek medical help immediately to reduce the chances of serious problems.

PTS: 1 DIF: Cognitive Level: Applying (Application) or higher
TOP: Nursing Process Step: Implementation
MSC: Client Needs Category: Health Promotion and Maintenance

12. What would be a patient's response to a drug dose that is below the minimum effective concentration (MEC)?
- Drug entry exceeds drug elimination.
 - The intended response fails to occur.
 - The risk for toxic side effects is increased.
 - The drug's duration of action is longer than expected.

ANS: B

In order for a drug to produce its intended response, its blood levels must reach the MEC.

PTS: 1 DIF: Cognitive Level: Understanding (Comprehension)
REF: p. 11 TOP: Nursing Process Step: N/A
MSC: Client Needs Category: Physiological Integrity

13. Morphine and hydromorphone (Dilaudid) are two types of opioid receptor agonists used for pain management. Hydromorphone is a more potent drug than morphine, and lower doses are needed to control pain. How do actions at receptor sites explain this difference?
- Morphine remains bound to opioid receptors longer than hydromorphone does.
 - Hydromorphone remains bound to opioid receptors longer than morphine does.
 - Morphine is metabolized and eliminated at a faster rate than hydromorphone.
 - Hydromorphone is metabolized and eliminated at a faster rate than morphine.

ANS: B

The length of time and intensity of an agonist drug's response is related to how tightly and how long it remains bound to its receptors. More potent agonist drugs stay bound longer than do weaker agonist drugs.

PTS: 1 DIF: Cognitive Level: Understanding (Comprehension)
REF: p. 7 TOP: Nursing Process Step: N/A
MSC: Client Needs Category: Physiological Integrity

14. Which drug administration route is most likely to result in reduced drug bioavailability?
- Enteral
 - Intravenous
 - Transdermal
 - Subcutaneous

ANS: A

The enteral route involves using the GI system. Not all drugs are completely absorbed from this area, and because drugs absorbed in the GI tract first undergo some liver metabolism before entering systemic circulation (resulting in first pass loss), drugs administered enterally always have a lower bioavailability than those administered by the parenteral route.

PTS: 1 DIF: Cognitive Level: Understanding (Comprehension)
REF: p. 13 TOP: Nursing Process Step: N/A
MSC: Client Needs Category: Physiological Integrity

15. Which drug administration route is the most dangerous?
- Enteral
 - Intravenous
 - Transdermal
 - Subcutaneous

ANS: B

Drugs administered intravenously are immediately available in the bloodstream. If the dosage is wrong or if it is the wrong drug, there is no simple way to stop the drug's action.

PTS: 1 DIF: Cognitive Level: Understanding (Comprehension)
REF: p. 14 TOP: Nursing Process Step: N/A
MSC: Client Needs Category: Physiological Integrity

16. Which factor is a major disadvantage of the transdermal drug delivery route?
- a. Only a prescriber can administer drugs by the transdermal route.
 - b. Transdermal drugs must be sterile rather than clean.
 - c. First pass drug loss by this route is the most extensive.
 - d. Drug absorption is dependent on adequate circulation.

ANS: D

Once a transdermal drug moves through the skin, it must enter the bloodstream to reach its target tissue. If circulation is poor to the area where the transdermal drug is applied, very little, if any, of the drug will reach its target tissue.

PTS: 1 DIF: Cognitive Level: Remembering (Knowledge)
REF: pp. 12-13 TOP: Nursing Process Step: N/A MSC: Client Needs Category: N/A

17. The likelihood that a drug will sequester (be trapped) in fat cells and remain in the body longer is increased by which drug characteristic?
- a. Physical small size
 - b. Physical large size
 - c. Dissolves easily in water
 - d. Dissolves easily in lipids

ANS: D

Drugs that are lipid soluble (dissolve easily in lipids) enter the plasma membranes of all cells more easily than water-soluble drugs. When a lipid-soluble drug enters a lipid environment (e.g., inside a fat cell), it is often sequestered there and takes a much longer time to be eliminated.

PTS: 1 DIF: Cognitive Level: Understanding (Comprehension)
REF: p. 15 TOP: Nursing Process Step: N/A
MSC: Client Needs Category: Physiological Integrity

18. A patient has a deficiency of an enzyme that prepares a specific drug for elimination. When planning care for this patient, the nurse remains alert for which response or issue?
- a. Toxic blood levels of the drug are more likely to occur.
 - b. Higher drug dosages will be needed for the intended action to occur.
 - c. The drug will be eliminated more rapidly in the feces rather than in the urine.
 - d. Delivery of this drug by the parenteral route is more effective than by the enteral route.

ANS: A

When a patient has a deficiency of the enzyme needed for drug elimination, the drug remains in the body much longer. The risk for even “normal” dosages to cause serious side effects is higher, and toxic drug blood levels can occur quickly. If such a drug is prescribed for this patient, the dosage is lowered and the drug is administered less often.

PTS: 1 DIF: Cognitive Level: Applying (Application) or higher
TOP: Nursing Process Step: Planning
MSC: Client Needs Category: Safe and Effective Care Environment

19. A patient has all of the following health problems. Which problem causes the nurse to be alert for an increased risk for drug side effects?
- Asthma
 - Kidney disease
 - GI ulcers
 - Chronic high blood pressure

ANS: B

The liver and kidneys are the organs that are most important for drug metabolism and elimination. A problem that decreases the function of either organ increases active blood drug levels and the length of time a single drug dose remains in the body. Both conditions lead to an increased risk for drug side effects.

PTS: 1 DIF: Cognitive Level: Understanding (Comprehension)
REF: p. 17 TOP: Nursing Process Step: Assessment
MSC: Client Needs Category: Safe and Effective Care Environment

20. The nurse administers orally 400 mg of a drug with a half-life of 2 hours at noon. At which time will the patient's blood drug level first be less than 40 mg?
- 2:00 PM
 - 6:00 PM
 - 8:00 PM
 - Midnight

ANS: C

With a half-life of 2 hours, the amount of drug remaining in the blood decreases by 50% every 2 hours. So, when 400 mg are given at noon, by 2:00 p.m. 200 mg remain; by 4:00 p.m., 100 mg remain; by 6:00 p.m., 50 mg remain; by 8:00 p.m., 25 mg remain; by 10:00 p.m., 12.5 mg remain, and by midnight, 6.25 mg remain.

PTS: 1 DIF: Cognitive Level: Understanding (Comprehension)
REF: p. 17 TOP: Nursing Process Step: N/A
MSC: Client Needs Category: Physiological Integrity

21. A patient is prescribed a drug that has an extremely short half-life for chest pain (angina). Which modification in drug dosage or scheduling does the nurse expect?
- Once-daily dosing
 - More frequent dosing
 - Larger first dose and smaller repeat doses
 - Parenteral doses greater than enteral doses

ANS: B

Drugs that have a short half-life are given more frequently to maintain drug blood levels within the minimum effective concentration.

PTS: 1 DIF: Cognitive Level: Understanding (Comprehension)

REF: p. 17 TOP: Nursing Process Step: N/A

MSC: Client Needs Category: Physiological Integrity

22. Why are antibiotics from the tetracycline drug group seldom prescribed during pregnancy?
- Although the mother may have an infection, the fetus does not; giving these drugs to the mother would expose the fetus to unnecessary drugs.
 - The pregnant woman does not metabolize tetracycline to its active form and excessively high doses are needed for an intended action.
 - These drugs reduce the thickness of the enamel in developing teeth, so the infant would have darkly stained teeth.
 - The fetal liver is too immature to inactivate these drugs and eliminate them; they increase the risk for severe birth defects.

ANS: C

Although avoiding drugs during pregnancy is recommended, when an infection is present it usually must be treated, even though it exposes the fetus to a drug. In the case of tetracycline, it reduces the density of tooth enamel in the teeth that develop during pregnancy (even though the teeth have not erupted by birth). This result gives the “baby” teeth a darkened or stained appearance. Unless the mother has an infection for which no other drug is effective, tetracyclines are not given during pregnancy.

PTS: 1 DIF: Cognitive Level: Understanding (Comprehension)

REF: p. 19 TOP: Nursing Process Step: N/A

MSC: Client Needs Category: Physiological Integrity

23. A patient with severe heart failure asks why the prescriber has lowered the dosages of most of the patient’s daily medications. What is the nurse’s best response?
- “With a weaker heart, the drugs stay in your system longer, so you don’t need as high a dosage.”
 - “Your heart drugs enhance the action of your other drugs, reducing the need for higher dosages.”
 - “Your heart is not strong enough to tolerate these drugs, making the risk for a heart attack higher.”
 - “The drugs are very expensive, and with these heart problems your health is not expected to improve.”

ANS: A

Good heart function is needed to move drugs in the blood to the liver and kidneys. Poor circulation as a result of heart failure can lead to slower drug metabolism and elimination. This can cause toxic buildup of drug blood levels. Commonly, drug dosages are lowered for patients with severe heart failure.

PTS: 1 DIF: Cognitive Level: Applying (Application) or higher
TOP: Nursing Process Step: Implementation
MSC: Client Needs Category: Health Promotion and Maintenance

24. A 25-year-old patient is prescribed a pregnancy category D drug for acne for 6 months. Which precaution is most important for the nurse to teach?
- “Drugs in this category reduce the effectiveness of oral contraceptives and you will need to switch to another form of birth control to prevent pregnancy.”
 - “One side effect of drugs in this category is nausea, which will make morning sickness more severe if you become pregnant while taking this drug.”
 - “Use two reliable forms of birth control during the next 6 months because drugs in this category cause severe birth defects.”
 - “Your risk for sexually transmitted diseases is increased while taking this drug and for 3 months after therapy is completed.”

ANS: C

Drugs in pregnancy category D have been tested and are known to greatly increase the risk for birth defects. These drugs are not to be used during pregnancy unless the health problem is so serious that the potential benefits outweigh the risk for serious fetal harm. When prescribed for a sexually active woman of childbearing age, two different types of reliable birth control methods are recommended.

PTS: 1 DIF: Cognitive Level: Applying (Application) or higher
TOP: Nursing Process Step: Implementation
MSC: Client Needs Category: Health Promotion and Maintenance

25. Which precaution is most important for the nurse to teach parents about giving an over-the-counter (OTC) drug to a child?
- “OTC drugs are only for adults, not children.”
 - “Be sure to crush the tablets or capsules to prevent choking.”
 - “Check with your pediatrician or pharmacist for the proper dosage.”
 - “Only use the liquid form of the drug to make it easier to swallow.”

ANS: C

Some OTC drugs can be given to children; however, the dosage must be carefully calculated and is not the same as dosages for adults. Most dosages are either age based or weight based. The pediatrician and the pharmacist are the most knowledgeable about the correct dosage of an OTC drug for a child.

PTS: 1 DIF: Cognitive Level: Applying (Application) or higher
TOP: Nursing Process Step: Implementation
MSC: Client Needs Category: Health Promotion and Maintenance

MULTIPLE RESPONSE

- Which body tissues or fluids are routes of drug elimination? (Select all that apply.)
 - Bone marrow
 - Heart

- c. Liver
- d. Lungs
- e. Ovary
- f. Saliva
- g. Tears

ANS: C, D, F, G

The liver and kidneys are the main sites of drug metabolism and drug elimination. The lungs are able to eliminate drugs that are easily turned into gases (vaporized). Although only a small amount of any drug can be expected to be in the saliva or tears, they are an excretion and elimination route. The bone marrow, heart, and ovaries are not true excretory organs.

PTS: 1

DIF: Cognitive Level: Remembering (Knowledge)

REF: p. 16
N/A

TOP: Nursing Process Step: N/A

MSC: Client Needs Category:

ESSAY

1. An adult patient weighing 180 lb is prescribed a drug dose of 2 mg/kg. What dose does the nurse prepare for this patient?
_____ mg

ANS:

164 mg

1 kg = 2.2 lb. To obtain the kg weight for this patient: $180 \div 2.2 = 81.8$ kg (rounded up to 82 kg). The correct dose is $2 \text{ mg} \times 82 \text{ kg} = 164 \text{ mg}$.

PTS: 1

DIF: Cognitive Level: Applying (Application) or higher

TOP: Nursing Process Step: Planning

MSC: Client Needs Category: Safe and Effective Care Environment