# *Clayton's Basic Pharmacology for Nurses 20th edition Willihnganz Test Bank*

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# Test Bank - Chapter 01

**Q1:** Which name identifies a drug listed by the US Food and Drug Administration (FDA) before it becomes official?

A. Brand
B. Nonproprietary
**C. Generic (Correct)**
D. Trademark

*Rationale: A generic name or common name is given before a drug becomes official. The brand name, or trademark, is the name given to a drug by its manufacturer. Nonproprietary is not a term used in this situation.*

**Q2:** Which source contains information specific to nutritional supplements?

A. USP Dictionary of USAN & International Drug Names
B. Natural Medicines Comprehensive Database
**C. United States Pharmacopoeia/National Formulary (USP NF) (Correct)**
D. Drug Interaction Facts

*Rationale: United States Pharmacopoeia/National Formulary contains information specific to nutritional supplements. USP Dictionary of USAN & International Drug Names is a compilation of drug names, pronunciation guide, and possible future FDA approved drugs; it does not include nutritional supplements. Natural Medicines Comprehensive Database contains evidence-based information on herbal medicines and herbal combination products; it does not include information specific to nutritional supplements. Drug Interaction Facts contains comprehensive information on drug interaction facts; it does not include nutritional supplements.*

**Q3:** Which online drug reference makes available to healthcare providers and the public a standard, comprehensive, up-to-date look up and downloadable resource about medicines?

A. American Drug Index
B. American Hospital Formulary
**C. DailyMed (Correct)**
D. Drug Reference

*Rationale: DailyMed makes available to healthcare providers and the public a standard, comprehensive, up-to-date look up and downloadable resource about medicines. The American Drug Index is not appropriate for patient use. The American Hospital Formulary is not appropriate for patient use. The drug reference is not appropriate for patient use.*

**Q4:** Which legislation authorizes the Food and Drug Administration (FDA) to determine the safety of a drug before its marketing?

**A. Federal Food, Drug, and Cosmetic Act (1938) (Correct)**
B. Durham Humphrey Amendment (1952)

C. Controlled Substances Act (1970)
D. Kefauver Harris Drug Amendment (1962)

*Rationale: The Federal Food, Drug, and Cosmetic Act of 1938 authorized the FDA to determine the safety of all drugs before marketing. Later amendments and acts helped tighten FDA control and ensure drug safety. The Durham Humphrey Amendment defines the kinds of drugs that cannot be used safely without medical supervision and restricts their sale to prescription by a licensed practitioner. The Controlled Substances Act addresses only controlled substances and their categorization. The Kefauver Harris Drug Amendment ensures drug efficacy and greater drug safety. Drug manufacturers are required to prove to the FDA the effectiveness of their products before marketing them.*

**Q5:** Which drug schedule does morphine fall under?

A. I
**B. II (Correct)**
C. III
D. IV

*Rationale: Morphine is a Schedule II drug; it has a high potential for abuse and may lead to severe psychological and physical dependence. Schedule I drugs have high potential for abuse and no recognized medical use. Schedule III drugs have some potential for abuse. Use may lead to low to moderate physical dependence or high psychological dependence. Schedule IV drugs have low potential for abuse. Use may lead to limited physical or psychological dependence.*

**Q6:** Which action would the Food and Drug Administration (FDA) take to expedite drug development and approval for an outbreak of smallpox?

A. List smallpox as a health orphan disease.
B. Omit the preclinical research phase.
C. Extend the clinical research phase.
**D. Fast track the investigational drug. (Correct)**

*Rationale: Once the Investigational New Drug Application has been approved, the drug can receive highest priority within the agency, which is called fast tracking. A smallpox outbreak would become a priority concern in the world. Orphan diseases are not researched in a priority manner. Preclinical research is not omitted. Extending any phase of the research would mean a longer time to develop a vaccine. The FDA must ensure that all phases of the preclinical and clinical research phase have been completed in a safe manner.*

**Q7:** Which statement is true about over-the-counter (OTC) drugs?

A. They are not listed in the USP NF.
B. A prescription from a healthcare provider is needed.
**C. They are sold without a prescription. (Correct)**
D. They are known only by their brand names.

*Rationale: OTC medications do not require a prescription. A variety of names, both generic and trade, can be used for individual drugs sold OTC. OTC drugs are listed in the USP NF. Prescription drugs require an order by a health professional who is licensed to prescribe, such as a physician, nurse practitioner, physician assistant, or dentist.*

**Q8:** Which statement is true about Lomotil?

**A. Abuse potential for this drug is low. (Correct)**

B. Psychological dependency is likely.

C. There is a high potential for abuse.

D. This drug is not a controlled substance.

*Rationale: Lomotil, a Schedule V drug, has an abuse potential of limited physical or psychological dependence liability compared with drugs in Schedule IV. Because abuse potential is low with a Schedule V drug, a prescription may not be required. Psychological dependency is not likely with a Schedule V drug. Schedule V drugs are classified as controlled substances.*

**Q9:** Which medication ordered for a patient with a substance abuse history has the greatest risk for abuse?

A. Lomotil

B. Diazepam

C. Phenobarbital

**D. Carisoprodol/aspirin/codeine (Correct)**

*Rationale: Carisoprodol/aspirin/codeine is a Schedule III drug with a high potential for abuse but less so than drugs in Schedules I and II. Lomotil is a Schedule V drug with a low potential for abuse compared with those in Schedule V. Diazepam is a Schedule IV drug with a low potential for abuse compared with those in schedule III. Phenobarbital is a Schedule IV drug with a low potential for abuse compared with those in Schedule III.*

**Q10:** Which priority action should be implemented when hives are assessed on a patient started on a new medication?

**A. Notify physician of allergic reaction. (Correct)**

B. Notify physician of idiosyncratic reaction.

C. Notify physician of potential teratogenicity.

D. Notify physician of potential tolerance.

*Rationale: An allergic reaction is indicative of hypersensitivity and manifests with hives and/or urticaria, which are easily identified. An idiosyncratic reaction occurs when something unusual or abnormal happens when a drug is first administered. A teratogenic reaction refers to the occurrence of birth defects related to administration of the drug. Tolerance refers to the body's requirement for increasing dosages to achieve the same effects that a lower dose once did.*

**Q11:** The nurse administers an initial dose of a steroid to a patient diagnosed with asthma. Thirty minutes after administration, the nurse finds the patient agitated and stating that "everyone is out to get me." Which term is used for this unusual reaction?

A. Desired action
B. Adverse effect
**C. Idiosyncratic reaction (Correct)**
D. Allergic reaction

*Rationale: Idiosyncratic reactions are unusual, abnormal reactions that occur when a drug is first administered. Patients typically exhibit an over-responsiveness to a medication related to diminished metabolism. These reactions are believed to be related to genetic enzyme deficiencies. Desired actions are expected responses to a medication. Adverse effects are reactions that occur in another system of the body; they are usually predictable. Allergic reactions appear after repeated medication dosages.*

**Q12:** Which is the best description of when drug interactions occur?

A. On administration of toxic dosages of a drug
B. On an increase in the pharmacodynamics of bound drugs
**C. On the alteration of the effect of one drug by another drug (Correct)**
D. On increase of drug excretion

*Rationale: Drug interactions may be characterized by an increase or decrease in the effectiveness of one or both of the drugs. Toxicity of one drug may or may not affect the metabolism of another one. Drug interactions may result from either increased or decreased pharmacodynamics. Drug interactions may result from either increased or decreased excretion.*

**Q13:** Which term describes when two drugs compete for the same receptor site, resulting in increased activity of the first drug?

A. Desired action
B. Synergistic effect
C. Carcinogenicity
**D. Displacement (Correct)**

*Rationale: The displacement of the first drug from receptor sites by a second drug increases the amount of the first drug because more unbound drug is available. An expected response of a drug is the desired action. A synergistic effect is the effect of two drugs being greater than the effect of each chemical individually or the sum of the individual effects. Carcinogenicity is the ability of a drug to cause cells to mutate and become cancerous.*

**Q14:** What do drug blood levels indicate?

A. They confirm if the patient is taking a generic form of a drug.
B. They determine if the patient has sufficient body fat to metabolize the drug.
C. They verify if the patient is taking someone else's medications.
**D. They determine if the amount of drug in the body is in a therapeutic range. (Correct)**

*Rationale: The amount of drug present may vary over time and the blood level must remain in a therapeutic range in order to obtain the desired result. Generic drugs do not necessarily produce a different drug blood level than proprietary medications. Body fat is not measured by drug blood*

*levels. Drug blood levels only measure the amount of drug in the body; they do not determine the source of the medication.*

**Q15:** What is the process by which a drug is transported by circulating body fluids to receptor sites?

A. Osmosis
**B. Distribution (Correct)**
C. Absorption
D. Biotransformation

*Rationale: Distribution refers to the ways in which drugs are transported by the circulating body fluids to the sites of action (receptors), metabolism, and excretion. Osmosis is the process of moving solution across a semipermeable membrane to equalize the dilution on each side. Absorption is the process by which a drug is transferred from its site of entry into the body to the circulating fluids for distribution. Biotransformation, also called metabolism, is the process by which the body inactivates drugs.*

**Q16:** The nurse administers 50 mg of a drug at 6:00 AM that has a half-life of 8 hours. What time will it be when 25 mg of the drug has been eliminated from the body?

A. 8:00 AM
B. 11:00 AM
**C. 2:00 PM (Correct)**
D. 6:00 PM

*Rationale: Fifty percent of the medication, or 25 mg, will be eliminated in 8 hours, or at 2:00 PM. 8:00 AM is 2 hours after administration; the half-life is 8 hours. 11:00 AM is 4 hours after administration; the half-life is 8 hours. 6:00 PM is 12 hours after administration; the half-life is 8 hours.*

**Q17:** What will the nurse need to determine first in order to mix two drugs in the same syringe?

A. Absorption rate of the drugs
**B. Compatibility of the drugs (Correct)**
C. Drug blood level of each drug
D. Medication adverse effects

*Rationale: Knowledge of absorption is important but not in order to mix drugs. In order to mix two drugs, compatibility is determined so there is no deterioration when the drugs are mixed in the same syringe. Drug level does not indicate if it is acceptable to mix medications in the same syringe. Adverse effects are important for the nurse to know but not in order to mix drugs.*

**Q18:** A patient developed hives and itching after receiving a drug for the first time. Which instruction by the nurse is accurate?

**A. Stop the medication and encourage the patient to wear a medical alert bracelet that explains the allergy. (Correct)**

B. Explain to the patient that these are signs and symptoms of an anaphylactic reaction.

C. Emphasize to the patient the importance to inform medical personnel that in the future a lower dosage of this drug is necessary.

D. Instruct the patient that it would be safe to take the drug again because this instance was a mild reaction.

*Rationale: This initial allergic reaction is mild, and the patient is more likely to have an anaphylactic reaction at the next exposure; a medical alert bracelet is necessary to explain the reaction. Signs and symptoms of an anaphylactic reaction are respiratory distress and cardiovascular collapse. A more severe reaction will occur at the next exposure, and the patient should not receive the drug again.*

**Q19:** Which assessment data would the nurse identify as having the most effect on drug metabolism?

**A. History of liver disease (Correct)**

B. Intake of a vegetarian diet

C. Sedentary lifestyle

D. Teacher as an occupation

*Rationale: Liver enzyme systems are the primary site for metabolism of drugs. Intake of a vegetarian diet may affect absorption but not metabolism. Sedentary lifestyle and occupations could affect metabolism (exposure to environmental pollutants), but these do not have the most significant effect on metabolism.*

**Q20:** A provider orders administer a medication to the patient via the percutaneous route. Which route will the nurse anticipate the patient will receive this medication?

A. Intramuscularly

B. Subcutaneously

**C. Topically (Correct)**

D. Rectally

*Rationale: The percutaneous route refers to drugs that are absorbed through the skin and mucous membranes. Methods of the percutaneous route include inhalation, sublingual (under the tongue), or topical (on the skin) administration. The parenteral route bypasses the gastrointestinal (GI) tract by using subcutaneous (subcut), intramuscular (IM), or intravenous (IV) injection. The parenteral route bypasses the GI tract by using subcut, IM, or IV injections. In the enteral route, the drug is administered directly into the GI tract by the oral, rectal, or nasogastric route.*

**Q21:** Which medication should not be administered with tetracycline?

A. Ativan

B. Tylenol

C. Colace

**D. Mylanta (Correct)**

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*Rationale: Administering tetracycline with Mylanta, an aluminum-containing antacid, can provide an antagonistic effect that will result in decreased absorption of the tetracycline. Ativan, Tylenol, and Colace are not contraindicated to administer with tetracycline.*

**Q22:** Which statement(s) will be included when planning patient teaching regarding drug names? (Select all that apply.) *(Select all that apply.)*

A. Most drug companies place their products on the market under generic names.
**B. The official name is the name under which the drug is listed by the US Food and Drug Administration (FDA). (Correct)**
**C. Brand names are easier to pronounce, spell, and remember. (Correct)**
**D. The first letter of the generic name is not capitalized. (Correct)**
E. The chemical name is most meaningful to the patient.

*Rationale: The official name is the name under which the drug is listed by the FDA. Brand names are easier to pronounce, spell, and remember. The first letter of the generic name is not capitalized. Most drug companies place their products on the market under brand names instead of generic names. The chemical name is most meaningful to the chemist.*

**Q23:** Which drug(s) would be considered to be in the category Schedule II? (Select all that apply.) *(Select all that apply.)*

A. Marijuana
**B. Methylphenidate (Correct)**
**C. Amphetamines (Correct)**
D. Fiorinal
E. Flurazepam

*Rationale: Schedule II drugs have a high potential for abuse, they are currently accepted in the United States, and use may lead to severe psychological or physical dependence. Methylphenidate and amphetamines are considered Schedule II drugs. Marijuana is a Schedule I drug. Fiorinal is a Schedule III drug. Flurazepam is a Schedule IV drug.*

**Q24:** Which statement(s) about liberation of drugs is/are true? (Select all that apply.) *(Select all that apply.)*

**A. A drug must be dissolved in body fluids before it can be absorbed into body tissues. (Correct)**
**B. A solid drug taken orally must disintegrate and dissolve in GI fluids to allow for absorption into the bloodstream for transport to the site of action. (Correct)**
**C. The process of converting the drug into a soluble form can be controlled to a certain degree by the dosage form. (Correct)**
**D. Converting the drug to a soluble form can be influenced by administering the drug with or without food in the patient's stomach. (Correct)**
E. Elixirs take longer to be liberated from the dosage form.

*Rationale: Regardless of the route of administration, a drug must be dissolved in body fluids before it can be absorbed into body tissues. Before a solid drug taken orally can be absorbed into the bloodstream for transport to the site of action, it must disintegrate and dissolve in the GI fluids and be transported across the stomach or intestinal lining into the blood. The process of converting a drug into a soluble form can be partially controlled by the pharmaceutical dosage form used (e.g., solution, suspension, capsules, and tablets with various coatings). The conversion process can also be influenced by administering the drug with or without food in the patient's stomach. Elixirs are already drugs dissolved in a liquid and do not need to be liberated from the dosage form.*

**Q25:** Which are routes of drug excretion? (Select all that apply.) *(Select all that apply.)*

**A. GI tract, feces (Correct)**
**B. Genitourinary (GU) tract, urine (Correct)**
C. Lymphatic system
D. Circulatory system, blood/plasma
**E. Respiratory system, exhalation (Correct)**

*Rationale: The GI system is a primary route for drug excretion. The GU and the respiratory systems do function in the excretion of drugs. The lymphatic and circulatory systems are involved with drug distribution, not drug excretion.*

**Q26:** Which route(s) enable(s) drug absorption more rapidly than the subcut route? (Select all that apply.) *(Select all that apply.)*

**A. IV route (Correct)**
**B. IM route (Correct)**
**C. Inhalation/sublingual (Correct)**
D. Intradermal route
E. Enteral route

*Rationale: IV route of administration enables drug absorption more rapidly than the subcut route. IM route of administration enables drug absorption more rapidly because of greater blood flow per unit weight of muscle. Inhalation/sublingual route of administration enables drug absorption more rapidly than the subcut route. Intradermally administered drugs are absorbed more slowly because of the limited available blood supply in the dermis. Enterally administered drugs are absorbed more slowly because of the biotransformation process.*

**Q27:** A patient receives 200 mg of a medication that has a half-life of 12 hours. How many mg of the drug would remain in the patient's body after 24 hours? __ *(Fill in the blank)*

*Answer: 50*

*Rationale: Half-life is defined as the amount of time required for 50% of the drug to be eliminated from the body. If a patient is given 200 mg of a drug that has a half-life of 12 hours, then 50 mg of the drug would remain in the body after 24 hours.*

# Review Questions - Chapter 01

**Q1:** Which description best defines a medication?

A. Chemical substance that requires a prescription by a health professional
**B. Drug used for a therapeutic effect to treat or prevent an illness (Correct)**
C. Pharmacologic preparation used to reverse disease
D. Plant, animal, or mineral substance that prevents disease

*Rationale: Medications are drugs used for their therapeutic effects. A therapeutic effect can be the prevention or treatment of disease. All medications do not require a prescription. Specifying a certain action is not the best definition of a medication because it is incomplete.*

**Q2:** Which definition is accurate for the trade name of a drug?

A. The name under which the drug is listed in the United States Pharmacopeia.
B. The name given to the drug by the US Food and Drug Administration (FDA).
**C. The proprietary name of the drug given by a manufacturer. (Correct)**
D. The chemical name of the drug given by its developer.

*Rationale: The trade or brand name is the proprietary name given to the drug by its manufacturer. The same drug produced by different companies has one generic name but may have many trade names. The trade name is trademark protected and can be used only by its manufacturer. The drug may be listed under more than one name in the Pharmacopeia. The book is used to provide standards for identity, quality, strength, and purity of substances used in healthcare practice. The trade name is not given to a drug by the FDA. The chemical name is the exact chemical constitution of the drug and the exact placing of its atoms or molecular groupings.*

**Q3:** Which use does the MedWatch form serve?

A. Tracking numbers of prescriptions written for a specific drug
B. Determining the therapeutic effectiveness of the drug
C. Assessing the acceptability of the drug to individual patients
**D. Identifying adverse effects of a drug in the general population (Correct)**

*Rationale: Healthcare practitioners make a significant contribution to the knowledge of drug safety by reporting adverse effects to the FDA using the MedWatch program for the voluntary reporting of adverse events and product problems. This method of identifying adverse effects of a drug in the general population is part of the postmarketing surveillance phase of drug development. More than 200,000 MedWatch forms are filed with the FDA annually. MedWatch is not designed to track the numbers of prescriptions written for a specific drug; is not a program involved in determining the therapeutic effectiveness of a drug; and is not involved in assessing the acceptability of a drug to individual patients.*

**Q4:** Which statement correctly describes the difference between Schedule II drugs and Schedule V drugs?

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A. Schedule II drugs have less potential for abuse.

B. Schedule V drugs lack accepted safety measures for use.

**C. Schedule II drugs are more likely to cause dependence. (Correct)**

D. Schedule V drugs have greater risk for toxicity.

*Rationale: Schedule II drugs have a high potential for abuse that may lead to severe psychological or physical dependence. Schedule II drugs have more, not less, potential for abuse than Schedule V drugs. Schedule II and Schedule V drugs have accepted guidelines for safe use. Drugs in both schedules are not differentiated based on toxicity. There may be drugs in each schedule that have high or low toxicity.*

**Q5:** Which legislation was written to require companies to determine the safety of medications before marketing?

**A. The Federal Food, Drug, and Cosmetic Act of 1938 (Correct)**

B. Durham Humphrey Amendment of 1952

C. The Kefauver Harris Drug Amendment of 1962

D. Controlled Substance Act of 1970

*Rationale: The Federal Food, Drug, and Cosmetic Act of 1938 (passed on June 25, 1938, and amended in 1952 and 1962) requires the FDA to determine the safety of drugs before marketing and to ensure that certain labeling specifications and standards in advertising are met in the marketing of products. Manufacturers are required to submit new drug applications to the FDA for review of safety studies before products can be released. The Durham Humphrey Amendment of 1952 was passed to tighten control over prescription drugs by restricting the refilling of prescriptions. The Kefauver Harris Drug Amendment of 1962 was brought about by the thalidomide tragedy. The amendment provides greater control and surveillance of the distribution and clinical testing of investigational drugs, and requires that a product be proven safe and effective before release for sale. The Controlled Substance Act of 1970 was passed by Congress to improve the administration and regulation of manufacturing, distributing, and dispensing of drugs that have been found necessary to be controlled.*

**Q6:** Which legislation was enacted to stimulate development and availability of drugs to treat rare diseases?

A. The Food and Drug Act of 1979

B. The Fast Tracking rules

**C. The Orphan Drug Act (Correct)**

D. The Controlled Drugs and Substance Act of 1997

*Rationale: The medicines that are developed for rare conditions are known as orphan drugs, because the manufacturers have been unable to recover the costs of the research due to the very limited use of the final product. Because no companies were willing to "adopt" the disease to complete extensive research to develop products for treatment, the diseases became known as health orphans. In 1983, Congress passed the Orphan Drug Act to stimulate the development and market availability of products that are used for the treatment of rare diseases. The Orphan Drug Act provides research grants, protocol development assistance by the FDA, special tax credits for the cost of clinical trials, and 7 years of exclusive marketing rights after the product has been*

*approved. The Food and Drug Act of 1979 empowered Health Canada to protect the public from foreseeable risks relating to the manufacture and sale of drugs. The Fast Tracking rules allow investigational drugs to receive highest priority for review with the FDA. The Controlled Drugs and Substance Act of 1997 established the requirements for control and sale of narcotics and substances of abuse in Canada.*

**Q7:** Which stage of new drug development involves giving the medication to large numbers of individuals with the disorder that the medication intends to treat?

A. Developmental stage—Phase 1
B. Developmental stage—Phase 2
**C. Developmental stage—Phase 3 (Correct)**
D. Post-marketing surveillance stage

*Rationale: If phase 1 trials are successful, the drug is moved to phase 2, which involves a smaller population of patients who have the condition that the drug is designed to treat. Studies at various dosages are conducted to determine the success rate and safety of a drug for its intended use. If successful, the drug is advanced to phase 3 trials, in which larger patient populations are used to ensure the statistical significance of the results. Studies in this phase also provide additional information on proper dosing and safety. Phase 1 studies are done to determine an experimental drug's pharmacologic properties, safe dosage range, potential for toxicity at a certain dosage, and safe routes of administration. The study population consists of either normal volunteers or the intended treatment population, such as those patients who have failed standard treatments of certain cancers or dysrhythmias. Phase 2 studies usually require 20 to 100 subjects, who are treated for 4 to 6 weeks. Studies in this phase are done to determine the success rate of a drug for its intended use. After the manufacturer decides to market the medication, there is ongoing review of adverse effects of the new drug, as well as periodic inspections of the manufacturing facilities and products.*

**Q8:** Which governmental body was organized to gather intelligence, train, conduct research in the area of dangerous drugs and drug abuse, and enforce the Controlled Substances Act?

A. Food and Drug Administration (FDA)
**B. Drug Enforcement Administration (DEA) (Correct)**
C. Federal Bureau of Investigation (FBI)
D. Central Intelligence Agency (CIA)

*Rationale: The DEA was organized to enforce the Controlled Substances Act, gather intelligence, train its officers, and conduct research in the area of dangerous drugs and drug abuse. The DEA is a bureau of the Department of Justice, and the director of the DEA reports to the Attorney General of the United States. The US Attorney General, after public hearings, has the authority to reschedule a drug, to bring an unscheduled drug under control, or to remove controls on scheduled drugs. The FDA was designed to monitor medications, not to enforce the Controlled Substances Act. The FBI and CIA were not specifically set up to enforce the Controlled Substances Act.*

**Q9:** Which difference in pharmacokinetics does the nurse expect in the obese patient as compared with the thin patient with administration of a highly lipid soluble drug?

A. Drug distribution will be more rapid.
B. Drug absorption will be impaired.
C. Drug metabolism will be incomplete.
**D. Drug elimination will be slowed. (Correct)**

*Rationale: Lipid soluble drugs have an affinity for adipose tissue (fat), where they tend to accumulate. Because of the relatively low blood circulation of adipose tissue, lipid soluble drugs tend to linger in the body. Thus, excretion of a highly lipid soluble drug will be slower in an obese person (who has more adipose tissue) than in a thin person. Distribution is determined by circulation of body fluids. Absorption of a drug varies depending on the route of administration and local conditions. It is not affected by whether the person is thin or obese. Liver functioning affects drug metabolism. Whether a person is thin or obese does not have a direct effect on the metabolism of a drug.*

**Q10:** Which action should be implemented next when a patient states they are allergic to the medication the nurse is ready to administer?

A. Give the medication as ordered and record the patient's statements in the nurse's notes.
B. Give the medication and monitor the patient at regular intervals for adverse effects.
**C. Withhold the medication and notify the prescriber of the situation. (Correct)**
D. Withhold the medication and check the drug insert for information on reactions to the drug.

*Rationale: Allergic or hypersensitivity reactions to drugs can be severe and life-threatening. Therefore, the drug is held and the prescriber is notified. Because of the possible seriousness of an allergic reaction, the drug would not be given. If a patient has a mild reaction, it should be understood as a warning to not take the medication again. The patient is much more likely to have an anaphylactic reaction during his or her next exposure to the drug; however, it is also very important to seek clarification with the patient of what type of reaction occurred. It may have been a "side effect" and not an allergy. This should be reported to the prescriber to determine if it is appropriate to administer the medication. Allergic or hypersensitivity reactions to drugs can be severe and life-threatening, so the medication should not be given to someone with a documented allergy. Checking the drug insert for information is not the best course of action.*

**Q11:** A patient takes two medications. Drug A is taken once per day; drug B is taken every 8 hours. Which conclusion about drug A is correct?

A. It is less toxic than drug B.
**B. It has a longer half-life than drug B. (Correct)**
C. It has a higher rate of protein binding than drug B.
D. It has a wider therapeutic range than drug B.

*Rationale: The half-life is determined by an individual's ability to metabolize and excrete a particular drug. Drugs with long half-lives need to be administered only once daily, whereas drugs with short half-lives need to be administered more often to maintain therapeutic activity. Drug A is taken once a day, which means it has a longer half-life than drug B. The shorter the half-life, the more frequently a drug should be administered. Drug A may be more or less toxic than drug B; there is no way to know based on the information provided. Protein binding affects drug activity; the bound drug is pharmacologically inactive and the unbound drug is active. Frequency of administration*

*does not reflect the extent of protein binding. Therapeutic range refers to the range of plasma drug levels between the minimum effective concentration and the toxic concentration. No conclusion regarding the therapeutic range is possible based on the information provided.*

**Q12:** Which aspect of pharmacokinetics should the nurse be most concerned with when caring for a patient with abnormal functioning of hepatic enzymes?

A. Absorption
B. Distribution
**C. Metabolism (Correct)**
D. Excretion

*Rationale: Metabolism is the process whereby the body inactivates drugs. Hepatic enzyme systems are the primary site for metabolism or biotransformation of drugs in the body. If levels of hepatic enzymes are high, drug metabolism may occur more rapidly than normal. Conversely, if hepatic enzyme activity is low, drug metabolism is slowed and there is risk of drug accumulation. Absorption is not affected by the level of hepatic enzymes. Distribution of a drug is affected by blood flow, not by the level of hepatic enzymes. The kidneys are the primary area of drug excretion. Hepatic enzymes are not directly involved in drug excretion.*

**Q13:** Which effect of protein binding on drugs in the bloodstream is accurate?

A. Accumulation of the drug
B. Increased risk of allergic reaction
**C. Inactivation of the drug (Correct)**
D. Precipitation of an idiosyncratic reaction

*Rationale: Drugs bound to plasma proteins are pharmacologically inactive because the large size of the complex keeps them in the bloodstream and prevents them from reaching the sites of action, metabolism, and excretion. Only the free or unbound portion of a drug is able to diffuse into tissues, interact with receptors, and produce physiologic effects; it is also only this portion that can be metabolized and excreted. Protein binding is not associated with accumulation of a drug in the bloodstream, not involved in an allergic reaction to a drug, and not associated with an idiosyncratic reaction to a drug.*

**Q14:** A patient is receiving a medication to increase urine output. The patient's urinary output increases significantly and the blood pressure decreases slightly. Which type of side effect is a decrease in blood pressure?

A. Therapeutic
B. Desired
**C. Common (Correct)**
D. Toxic

*Rationale: A side effect is any result of a drug or therapy that occurs in addition to the intended effect, regardless of whether it is beneficial or undesirable. The decrease in blood pressure is a common adverse effect. An increase in urinary output is the desired or therapeutic effect. Although the decrease in blood pressure may not be a bad effect, it is not the reason the drug was given and*

*therefore is not the therapeutic effect, nor the desired effect. A toxic effect is defined as a severe adverse effect, so the slight decrease in blood pressure is not a toxic effect.*

**Q15:** Which symptom is the most common with a hypersensitivity reaction to a medication?

A. Wheezing
**B. Urticaria (Correct)**
C. Anaphylaxis
D. Vomiting

*Rationale: Allergic reactions, also known as hypersensitivity reactions, occur among patients who have previously been exposed to a drug and whose immune systems have developed antibodies to the drug. Upon re-exposure to the drug, the antibodies cause a reaction; this reaction is most commonly seen as raised, irregularly shaped patches on the skin known as hives, which cause severe itching, known as urticaria. Urticaria, or hives, is the most common type of hypersensitivity reaction to medications. This should be taken as a warning that a second exposure to the drug could result in a life-threatening anaphylactic reaction. Although wheezing is a hypersensitivity reaction to a medication, it is not the most common reaction. Although anaphylaxis is a life-threatening reaction to a medication, it is not the most common hypersensitivity reaction. Although vomiting is a side effect of taking a medication, it is not the most common hypersensitivity reaction.*

**Q16:** Which aspect of genetic makeup is most likely to alter a person's response to medication?

A. Absorption
B. Distribution
**C. Metabolism (Correct)**
D. Excretion

*Rationale: Metabolism or biotransformation is the process by which the body inactivates drugs. Liver enzyme systems are primarily responsible for drug metabolism. These enzyme systems are genetically determined and are subject to individual variation. Genetic, environmental, and physiologic factors are involved in the regulation of drug metabolism reactions. The most important factors for the conversion of drugs to their metabolites are genetic variations of enzyme systems, the concurrent use of other drugs, exposure to environmental pollutants, concurrent illnesses, and age. Although drug absorption is genetically determined, there is not a great variation from individual to individual. Although drug distribution may be genetically determined, drug distribution is not as likely to alter a person's response to a medication. Although drug excretion may be genetically determined, drug excretion is affected more by an illness affecting the kidneys than by genetics.*

**Q17:** A patient is taking an antacid concurrently with ketoconazole. The antacid inhibits the dissolution of ketoconazole. Which term accurately describes this result?

A. Displacement
B. Accumulation
**C. Drug interaction (Correct)**
D. Allergic reaction

*Rationale: A drug interaction occurs when the action of one drug is altered by the action of another drug. Drug interactions are elicited in two ways when agents are combined: (1) increase the actions of one or both drugs, or (2) decrease the effectiveness of one or both of the drugs. In this case, the antacid blocks the dissolution of the ketoconazole, thus decreasing its effectiveness. Displacement is the replacement of one drug by another drug, which increases the activity of the first drug. A cumulative effect occurs when the next dose of a drug has been administered before the previously administered dose has been metabolized or excreted. An allergic reaction to a medication is a hypersensitivity reaction, not the reaction described in this question.*

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