

Pharmacotherapy: A Pathophysiologic Approach 10th Edition TESTBANK

Tenth Edition

by: Joseph T. DiPiro, Robert L. Talbert, Gary C. Yee, Gary R. Matzke, Barbara G. Wells,
L. Michael Posey

Chapter 1: Health Literacy and Medication Use

1. What time will the trough blood level need to be drawn if the nurse administers the intravenous medication dose at 9:00 AM?

- a. 6:30 AM
- b. 8:30 AM
- c. 9:30 AM
- d. 11:30 AM

ANS: B

Trough blood levels measure the lowest blood level of medicine and are obtained just before the dose is administered. In this case, 6:30 AM is too early to obtain the blood level. The other two times occur after the medication is administered.

2. What will the nurse expect the health care providers order to be when starting an older adult patient on thyroid hormone replacement therapy?

- a. Administering a loading dose of the drug
- b. Directions on how to taper the drug
- c. A dosage that is one third to one half of the regular dosage
- d. A dosage that is double the regular dosage

ANS: C

To prevent toxicity, dosages for new medications in older adults should be one third to one half the amount of a standard adult dosage. Loading doses of drugs could cause severe toxicity.

Tapering off is characteristic of discontinuation of medications and is not appropriate for this situation. Older adults generally need a lower medication dosage than younger patients.

DIF: Cognitive Level: Application REF: p. 29 OBJ: 3

TOP: Nursing Process Step: Implementation

MSC: NCLEX Client Needs Category: Physiological Integrity

3. Which drugs cause birth defects?

- a. Teratogens
- b. Carcinogens
- c. Metabolites
- d. Placebos

ANS: A

Teratogens are drugs that cause birth defects. Carcinogens cause cancer. Metabolites are the end product of metabolism. Placebos are drugs that have no pharmacologic activity.

4. Which life threatening illness may occur as a result of aspirin (salicylate) administration during viral illness to patients younger than 20 years of age?

- a. Anaphylactic shock

-
- b. Reyes syndrome
 - c. Chickenpox
 - d. Influenza A
-

ANS: B

Children are susceptible to Reyes syndrome if they ingest aspirin at the time of or shortly after a viral infection of chickenpox or influenza. Anaphylactic shock is caused by a hypersensitivity reaction. Chickenpox is the result of being infected with a virus. Influenza A is caused by a pathogen.

5. Which classification of medications commonly causes allergic reactions in children?

-
- a. Antacids
 - b. Analgesics
 - c. Antibiotics
 - d. Anticonvulsants
-

ANS: C

Antibiotics, especially penicillins, commonly cause allergic reactions in children. Intravenous antibiotics can cause rapid reactions; therefore, the pediatric patients response to a medication should be assessed and monitored closely. Antacids rarely cause allergic reactions. Children are not particularly allergic to analgesics or anticonvulsants.

6. After giving instructions to an expectant mother about taking medications during pregnancy, which patient statement indicates the need for further teaching?

-
- a. I will not take herbal medicines during pregnancy.
 - b. For morning sickness, I will try crackers instead of taking a drug.
 - c. If I get a cold, I will avoid taking nonprescription medications until I check with my physician.
 - d. I will limit my alcohol intake to only one glass of wine weekly.
-

ANS: D

Alcohol needs to be eliminated during pregnancy and for 2 to 3 months prior to conception. Limited studies are available regarding the use of herbal medications in general, and thus they should be avoided during pregnancy. Alternative nonpharmacologic treatments are appropriate to use during morning sickness. The pregnant woman should also avoid using nonprescription drugs because few data are available about safe use in pregnancy. Because few medicines can be considered completely safe for use in pregnancy, the physician needs to approve and recommend the use of nonprescription drugs.

7. When is the ideal time for a nursing mother to take her own medications?

-
- a. Before the infant latches on to begin to breastfeed
 - b. As soon as the mother wakes up in the morning
 - c. Right before the mother goes to sleep at night
 - d. As soon as the infant finishes breastfeeding
-

ANS: D

Taking medications after breastfeeding reduces the amount of the medication that will reach the baby. Medications taken directly before breastfeeding may have a high concentration in the milk and possibly pass on to the baby. The mother must take into consideration when her medications are ordered to be taken, and schedule them around breastfeeding.

8. Which age-related change would affect transdermal drug absorption in geriatric patients the most?

- a. Difficulty swallowing
- b. Diminished kidney function
- c. Changes in pigmentation
- d. Altered circulatory status

ANS: D

The decreased circulation that occurs with aging will affect transdermal drug absorption. Difficulty swallowing would not affect transdermal drugs being absorbed. Kidney function affects drug excretion. Changes in pigmentation would not affect transdermal drug absorption.

9. Which intervention would be considered to reduce accumulation of a drug in a patient who has decreased liver function?

- a. Decreasing the time interval between dosages
- b. Reducing the dosage
- c. Administering the medication intravenously
- d. Changing the drug to one that has a longer half life

ANS: B

Dosages must be reduced to prevent accumulation. Decreasing the time interval between dosages would increase the accumulation of the drug. The intravenous route has the fastest absorption and with liver dysfunction would increase the accumulation of the drug. A similar drug with a longer half life would stay in the system longer; with impaired liver function, the result would be increased accumulation.

10. The nurse is teaching an elderly patient with difficulty swallowing about his medications. Which explanation by the nurse is most helpful?

- a. Enteric coated tablets can be crushed and taken with applesauce.
- b. Tablets that are scored can be broken in half.
- c. Medications labeled SR can be crushed.
- d. Avoid taking medications in liquid form.

ANS: B

It is acceptable to break scored tablets in half to facilitate swallowing of the medication. Enteric coated tablets should never be crushed because of the effect on the absorption rate and potential for toxicity. Medications labeled SR indicate sustained release and should not be crushed because of the effect on the absorption rate. Medication in liquid form may be easier to swallow.

11. The nurse is administering an antibiotic intravenously. Which blood level determines the lowest amount of medication present in the patient?

- a. Peak

-
- b. Serum

 - c. Therapeutic

 - d. Trough

ANS: D

The lowest amount of a medication in the blood is the trough. The peak is the highest amount of medication in the blood. Serum level identifies the amount of medication present. Therapeutic levels identify the range in which a medication is effective.

12. Which patient would the nurse identify as having the lowest rate of absorption of enteral medications?

-
- a. A 5-year-old boy

 - b. An 18-year-old woman

 - c. A 55-year-old man

 - d. An 85-year-old woman

ANS: A

Males stomachs empty more rapidly; children have increased motility, resulting in decreased absorption time. As one gets older, gastrointestinal (GI) motility is decreased, allowing for increased absorption time; women have slower gastric emptying, resulting in more time for absorption. Males stomachs empty more rapidly; however, as one gets older, GI motility is decreased, resulting in an increase in absorption time. As one gets older, GI motility is decreased, allowing for increased absorption time; women have slower gastric emptying, resulting in more time for absorption.

13. What is the definition of cumulative effect of a drug?

-
- a. Drug toxicity related to overmedication

 - b. Drug buildup related to decreased metabolism

 - c. The inability to control the ingestion of drugs

 - d. The need for higher dosage to produce the same effect as previous lower dosages

ANS: B

Cumulative effects are related to diminished metabolism or excretion of a drug that causes it to accumulate. Cumulative effects can lead to drug toxicity. Toxicity occurs when adverse effects are severe. Inability to control the ingestion of drugs is drug dependence. The need for higher dosage to produce the same effect as previous lower dosages is the definition of tolerance.

14. Which patient, when compared with the general population, would require a larger dose or more frequent administration of a drug to attain a therapeutic response?

-
- a. A 29 year old who has been diagnosed with kidney failure

 - b. A 35 year old obese male who is being evaluated for an exercise program

 - c. A 52 year old diagnosed with hypothyroidism and decreased metabolic rate

 - d. A 72 year old with decreased circulatory status

ANS: B

An obese individual would require a larger dose of a drug to attain a therapeutic response. An individual with kidney failure would require less medication because of decreased excretory

ability. Individuals with decreased metabolic rate would metabolize drugs more slowly and require smaller doses or less frequent administration. Individuals with decreased circulation would require less medication.

15. A resident in a long term care facility reports difficulty swallowing enteric coated aspirin and asks the nurse to crush it prior to administration. The most appropriate action for the nurse to take is to:

-
- a. crush the tablet and mix with applesauce.

 - b. encourage the resident to swallow the tablet with a full glass of water.

 - c. hold the medication and notify the physician.

 - d. substitute a regular aspirin for the enteric coated tablet.

ANS: C

The medication should be held and the physician notified. The physician has the authority to determine how to proceed in this situation. Enteric coated tablets should not be crushed because this will increase the absorption rate and the potential for toxicity. Geriatric patients may have difficulty swallowing and are at risk for choking and aspiration. They should not be encouraged to swallow medications if they report difficulty swallowing. The physician must determine if a substitution can be ordered. Prescribing is not in the nurses scope of practice.

Chapter 2: Cultural Competency

1. What are compelling reasons for needing cultural competency in healthcare?

- A. Health disparities are declining and are no longer relevant
- B. The diversity of patients encountered in the U.S. has plateaued
- C. Health professional shortages are no longer present improving provider-patient concordance
- D. Medication errors can be reduced by improving linguistic competency in an organization

2. Based on the cultural competency models addressed in the chapter, which of the following is true?

- A. The LEARN model describes providers as going through distinct stages of change ranging from cultural destructiveness to cultural proficiency
- B. Cultural competency is achieved through experience, skills, knowledge, and a positive attitude
- C. The Purnell model describes providers as progressing through a continuum of cultural consciousness ranging from the unconsciously incompetent to the unconsciously competent
- D. Cultural humility plays a minor role in connecting the skills, encounters, and desire to work across cultures

3. According to the 2000 Executive Order 13166 of Title VI of the Civil Rights Act, which of the following services should a healthcare organization meet to receive federal funding (eg, Medicare)?

A. Recruit, retain, and promote a diverse staff and leadership representative of the service area demographics

B. Offer and provide meaningful access to language services at a nominal cost to patients with limited English proficiency

C. Make easy-to-understand printed materials available in languages used frequently in the population served

D. Using family or minors as interpreters may be used if requested by the patient

4. The Patient Explanatory model includes:

A. Explaining the pathophysiologic process of diseases

B. Identifying potential causes of illness

C. Involving the family and community in deciding the treatment for a patient

D. Navigating between spiritual and family leaders to help the patient improve

5. The "4 Cs" method to elicit patients' understanding of their health and illnesses includes asking patients...

A. What they think will cure their condition

B. When they completed their last course of medication

C. What will the problem cost the patient

D. What concerns they have about their health situation

6. Healthcare providers must be more knowledgeable about CAM therapies, cultural practices, and their choice to use traditional medicine. When inquiring about CAM, the provider should

A. recognize that nearly 75% of the US population document CAM use

B. consider that herbal products from the US must follow current Good Manufacturing Practices

C. ask targeted questions of patients such as "Do you use herbs?" to get a straight-forward answers

D. understand that patients often have low disclosure rates of use of CAM

7. When striving toward cultural competency, which of the following statements about stereotypes, generalizations, and patient care is true?

A. Generalizations can help to provide a framework for understanding how patients may respond to a health-related situation

B. Stereotypes can help to form reasonable assumptions about how patients from different cultures will behave in the healthcare setting

C. Stereotypes and generalizations can be helpful to creating a positive healthcare environment

D. Stereotypes and generalizations are not useful in understanding how a patient may react in a healthcare setting

8. Which of the following is an example of healthcare beliefs or practices that have been found in various racial and ethnic groups in the United States?

A. "Culture-bound syndromes" or folk-illnesses can be found in Western cultures

B. Trust in the U.S. healthcare system exists because of previous efforts for equality (eg, Tuskegee syphilis study)

C. Illness and disease are synonymous

D. Physical signs of bruises or welts on the skin are often signs of physical abuse, particularly in cultures of Asian descent

9. To better understand individual patient health behaviors in the healthcare setting, a healthcare provider can...

A. Rely on chart documentation to learn about the family and cultural health traditions of the patient

B. Understand socioeconomic status and immigration issues faced in the community

C. Explore the social and cultural networks of the community

D. All of the above

E. B and C only

10. Examples of communication styles that work across cultures include:

- A. Shaking hands as a form of respect
- B. Providing ample distance to show respect of interpersonal space
- C. Using the first name to address a patient
- D. Observing patient behaviors and trying to follow them

11. Of the following choices, the most appropriate way to determine how to communicate with a patient from a different culture and language than your own is to:

- A. Provide as much information as possible to demonstrate professional competency
- B. Use a variety of written resources about the culture of the patient before the visit and use only this information to conclude your treatment approach
- C. Talk to the bilingual staff members and ask how they would want to be treated
- D. Treat the patient as they would want to be treated and use a trained interpreter

12. If you do not speak the same language as your patients, what would be the optimal way to conduct the patient visit?

- A. Use a family member to interpret
- B. Ask a bilingual staff person to interpret for you
- C. Use a trained interpreter
- D. All of the above

13. Which of the following best describes social determinants of health and their relationship to cultural competency?

- A. Socioeconomic status, age, race, ethnicity, and communities are factors that influence health
- B. Training in cultural competency has helped to decrease health disparities in healthcare
- C. Communities have little effect on the healthcare outcomes of individuals and families
- D. All of the above

14. Assessment of organizational values and beliefs about diversity and culture are important to providing a positive and open environment for patient care and should be conducted:

- A. When an organization is expecting an accreditation or licensure survey
- B. On an as-needed basis for performance improvement
- C. If patient satisfaction surveys reveal poor outcomes
- D. Periodically, as needed, and with long-term considerations for the organization

15. Steps for organizational self-assessment include:

- A. Involving community collaborations and partnerships after decisions are made at an organizational level
- B. Disseminating positive results to demonstrate the high competency of the organization
- C. Getting "buy-in" from only the organizational personnel
- D. Including personnel and fiscal resources to promote cultural competency in the annual budget

ANSWERS

- 1. D.
- 2. C.
- 3. C.
- 4. B.
- 5. D.
- 6. D.
- 7. A.
- 8. A.
- 9. E.
- 10. D.
- 11. D.
- 12. C.

13. A.

14. D.

15. D.

Chapter 3: Medication Safety Principles and Practices

1. Where would the procedures and treatments directed by the health care provider be found?

- a. Summary sheet
- b. Physicians order form
- c. Physicians progress notes
- d. History and physical examination form

ANS: B

The physicians order form contains all procedures and treatments ordered by the health care provider. A summary sheet provides a brief overview of the hospital course at discharge. Physicians progress notes provide regular observations on the patients course of treatment and response. A history and physical examination form provides information about baseline information from the patient.

2. Which action will the nurse take when it is determined that the narcotic count is incorrect while obtaining a medication from the narcotic area?

- a. Determine the cause of the discrepancy at the end of the shift.
- b. Notify the health care provider stat.
- c. Call the nurse from the previous shift to determine if there was a discrepancy earlier.
- d. Report the discrepancy to the charge nurse immediately.

ANS: D

Reporting the discrepancy to the charge nurse immediately enables the supervisory staff to narrow the time frame during which a medication was taken and not documented. The discrepancy needs to be addressed immediately, and therefore determining the cause of the discrepancy at the end of the shift is not the most appropriate action for the nurse to take. It is not appropriate to contact the health care provider for an incorrect narcotic count. The count would have been verified at shift change; calling the nurse from the previous shift is not an appropriate action for the nurse to take.

3. Which action will the nurse take if a dosage is unclear on a health care providers order?

- a. Ask the patient what dosage was given in the past.
- b. Ask another physician to determine the correct dosage.
- c. Tell the patient that the medication will not be given.
- d. Contact the health care provider to verify the correct dosage.

ANS: D

Any questionable orders should be verified by the health care provider who wrote the orders. The patient is not a reliable source of verification. The physician who wrote the order should verify it. It would be a medication error to withhold the dose instead of verifying it.

4. What is the most reliable method to calculate a pediatric patients medication dosage?

-
- a. Age

 - b. Height

 - c. Body surface area (BSA)

 - d. Placement on a growth scale

ANS: C

The most reliable method is by proportional amount of BSA or body weight. Because of the differences in weight among children, age is not a reliable method. Because of the differences in height among children, this is not a reliable method. Placement on a growth scale identifies how the child corresponds to other children on a percentile. Although it is determined by a specific measurement, the percentile identified would not be a specific measurement; therefore, this is not a reliable method.

5. Which medication route provides the most rapid onset of a medication, but also poses the greatest risk of adverse effects?

-
- a. Intradermal

 - b. Subcutaneous (subcut)

 - c. Intramuscular (IM)

 - d. Intravenous (IV)

ANS: D

IV medications are delivered directly into the bloodstream and avoid the first pass effect of the liver. Intradermal, subcut, and IM administration have a slower absorption rate.

6. Which is known as the fifth vital sign?

-
- a. Temperature

 - b. Respirations

 - c. Pain

 - d. Pulse

ANS: C

Pain is known as the fifth vital sign.

7. Which is true regarding the unit dose drug distribution system?

-
- a. The inventory is delivered to each nursing unit on a regular and recurring basis.

 - b. The system delivers one dose of each medication to be administered until the subsequent delivery of inventory.

 - c. The use of single dose packages of drugs dispensed to fill each dose requirement as it is ordered.

 - d. The amount of inventory needed to dose all patients on the unit for a 24 hour interval.

ANS: C

The unit dose drug distribution system uses single unit packages of drugs dispensed to fill each dose requirement as it is ordered.

8. The nursing assessment identifies that the client is nauseated and cannot take acetaminophen (Tylenol) orally. Which is true regarding the substitution of this medication to suppository form?

-
- a. It is standard practice when the patient is unable to take the ordered medication.

-
- b. It is acceptable if the patient agrees to the altered route form.

 - c. It is preferable to having the patient miss a dose of the medication.

 - d. It is contraindicated without an order from the health care provider.

ANS: D

One dosage form of medication should never be substituted for another unless the prescriber is consulted; there can be a great variation in the absorption rate of the medication through different routes of administration. The substitution of one form for another is not standard practice, and is not acceptable or preferable without the prescribers order.

9. Which medication order requires nursing judgment and means administer if needed?

-
- a. Morphine 4 mg IV stat

 - b. Morphine 4 mg IV prior to procedure

 - c. Morphine 4 mg IV four times a day

 - d. Morphine 4 mg IV every 4 hours PRN

ANS: D

PRN indicates for the nurse to administer morphine every 4 hours if needed and requires nursing judgment. Stat means the dose of morphine would be given immediately, not as needed. The orders for the dose of morphine to be given prior to the patients scheduled procedure and four times a day, do not indicate to give the dose as needed.

10. What is medication reconciliation?

-
- a. Comparing the patients current medication orders to all of the medications actually being taken

 - b. The administration of high alert medications that have been ordered on admission to an acute care facility

 - c. The completion of an incident report following a variance that resulted in a serious complication

 - d. A printout of computerized patient data that identifies the times that all of the ordered medications are to be administered

ANS: A

Medication reconciliation is the process of comparing a patients current medication orders to all of the medications that the patient is actually taking. Administering high alert medications and completing an incident report are not the same as medication reconciliation. A printout of computerized patient data that identifies the times that all of the ordered medications are to be administered is a description of the medication administration record (MAR), not a description of medication reconciliation.

11. Which example best demonstrates safe drug administration by the nurse?

-
- a. Administering an oral medication with the patient sitting upright

 - b. Asking children to say their name before administering the medication

 - c. Leaving the medications on the bedside stand after verifying patient identification

 - d. Returning the unused portion of a medication to a stock supply bottle

ANS: A

Sitting the patient upright for oral medications is safe medication practice. Children should never be asked their names as a means of positive identification. Remaining with a patient until the drug is swallowed is safe practice. Returning an unused portion of medication to the stock supply bottle is not safe medication practice.

12. The nurse determines that a prescribed medication has not been administered as ordered on the previous shift. What action will the nurse take?

- a. Administer the medication immediately.
- b. Complete an incident report.
- c. Notify the nurse responsible for the error.
- d. Record the occurrence in the nurses notes.

ANS: B

An incident report is completed when a medication error occurs. Depending on the medication and frequency of administration, the medication may not be given immediately. It is not the nurses responsibility to notify another nurse of the error. Medication errors are not recorded in the nurses notes.

DIF: Cognitive Level: Application REF: p. 100 OBJ: 6 | 11

TOP: Nursing Process Step: Implementation

MSC: NCLEX Client Needs Category: Physiological Integrity

13. A patients liquid cough medicine has been discontinued with one half of the bottle remaining. The home health nurse is aware that according to the U.S. Food and Drug Administration (FDA) guidelines on prescription medication disposal, the next step should be to:

- a. save the remainder for another patient with the same prescription.
- b. flush the remainder down the toilet.
- c. read the drug label for specific disposal instructions.
- d. pour remaining medication into a hazardous waste container.

ANS: C

The nurse must follow specific disposal instructions on the drug label or in the patient information leaflet that accompanies the medication. Prescription medications should not be shared among patients. Prescription drugs should not be flushed down the toilet unless specifically instructed to do so by the manufacturer. The first action to be taken is to follow disposal instructions on the label. If the drug label indicates it should be emptied into a hazardous waste container, measures should be taken to prevent leaking and/or accidental ingestion.

14. Who defines the standards of care for the practice of nursing? (*Select all that apply.*)

- a. State boards of nursing
- b. Hospital policy and procedures
- c. Federal laws regulating health care facilities
- d. The Joint Commission
- e. Professional nursing associations

ANS: A, C, D, E

Standards of care are defined by state boards of nursing, federal laws regulating health care facilities, The Joint Commission, and professional nursing associations such as the American Nurses Association. Individual hospital policies and procedures incorporate federal and state guidelines into their respective policies and procedures and are often more stringent than state and federal regulations.

15. What must the nurse have before administering any medication? (*Select all that apply.*)

- a. A current license to practice
- b. A medication order signed by a practitioner licensed with prescription privileges
- c. Knowledge of the medication
- d. Consultation with a pharmacist
- e. Knowledge of the clients diagnosis

ANS: A, B, C, E

Physicians must be licensed to prescribe medications; nurses must be licensed to administer medications. Safe medication administration includes knowledge of the medication, pathophysiology of patient diagnoses, and pharmacodynamics of the ordered medication on the pathophysiology. It is not necessary for the nurse to consult with a pharmacist each time medication is to be administered to a patient.

16. Which advantage(s) does the unit dose drug distribution system include? (*Select all that apply.*)

- a. There is decreased participation by the pharmacy.
- b. The pharmacist is able to analyze prescribed medications for each client for drug interactions and contraindications.
- c. There is less waste of medications.
- d. The time spent by nursing personnel preparing these medications is increased.
- e. Credit is given to the patient for unused medications.

ANS: B, C, E

Because the pharmacist has a profile of all medications for each patient, he or she is able to analyze prescribed medications for each patient for drug interactions and contraindications. This is an advantage of the unit dose drug distribution system. Less waste of medications is an advantage of the unit dose drug distribution system. Because each dose is individually packaged, credit can be given to the patient for unused medications. There is increased pharmacist involvement and better use of his or her extensive drug knowledge and nursing personnel time is decreased with this method.

17. Which statement(s) is/are true regarding the types of medication orders? (*Select all that apply.*)

- a. Stat orders are the same as single dose orders.
- b. Standing orders indicate the number of specified doses of a medication to be given.
- c. Renewal orders facilitate physician review before continuance of high risk medications.
- d. PRN medications will designate a mandatory number of times the medication is to be administered.

-
- e. Verbal orders should be used as much as possible.

ANS: B, C

Standing orders state the frequency of medication dosages to be administered or indicate the time frame of administration. Renewal orders require the physician to review medications that have expired orders, as determined by facility policy. Renewal policies facilitate physician verification of the necessity to continue a medication beyond a usual time frame and help ensure patient safety. Single dose and stat orders are not the same. PRN medications are not ordered a mandatory number of times, although a maximum number might be specified. Verbal orders should be avoided whenever possible.

18. Which statement(s) is/are true regarding computerized prescriber order entry (CPOE)? (Select all that apply.)

-
- a. Integrates the ordering system with the pharmacy, laboratory, and nurses stations
-
- b. Provides instant access to online information to facilitate patient care needs
-
- c. Facilitates review of ordered medications for potential drug interactions
-
- d. Facilitates review of drugs for appropriateness of dosages
-
- e. Alleviates the need to perform mathematical computations

ANS: A, B, C, D

CPOE systems integrate patient information, provide instant access, facilitate review of ordered medications for potential drug interactions, and facilitate review of drugs for appropriateness of dosages. Alleviation of the need to perform mathematical computations is not a component of the CPOE system.

Chapter 4: Clinical Pharmacokinetics and Pharmacodynamics

1. Clearance determines

- A. the time to reach steady-state
- B. the loading dose required to achieve the desired steady-state concentration
- C. the maintenance dose required to achieve the desired steady state concentration
- D. the dosage interval
- E. a and d

2. Volume of distribution determines

- A. the time to reach steady-state
- B. the loading dose required to achieve the desired steady-state concentration
- C. the maintenance dose required to achieve the desired steady state concentration
- D. the dosage interval

E. a and d

3. Half-life determines

A. the time to reach steady-state

B. the loading dose required to achieve the desired steady-state concentration

C. the maintenance dose required to achieve the desired steady state concentration

D. the dosage interval

E. a and d

4. The clearance is

A. dependent upon the value of volume of distribution

B. dependent upon the value of half-life

C. a function of the blood flow to clearing organs and the efficiency of the organ in extracting the drug

D. a function of the physiologic volume of blood and tissues and how the drug binds in blood and tissues

E. a and b

5. The volume of distribution is

A. dependent upon the value of clearance

B. dependent upon the value of half-life

C. a function of the blood flow to clearing organs and the efficiency of the organ in extracting the drug

D. a function of the physiologic volume of blood and tissues and how the drug binds in blood and tissues

E. a and b

6. The half-life is

A. dependent upon the value of volume of distribution

B. dependent upon the value of clearance

C. a function of the blood flow to clearing organs and the efficiency of the organ in extracting the drug

D. a function of the physiologic volume of blood and tissues and how the drug binds in blood and tissues

E. a and b

7. Linear pharmacokinetics means

A. drug serum concentrations decrease in a straight line when plotted on a concentration-time graph

B. drug serum concentrations decrease in a straight line when plotted on a log concentration-time graph

C. steady-state drug serum concentrations change proportionally to dose

D. steady-state drug serum concentrations change non-proportionally to dose

8. Nonlinear pharmacokinetics means

A. drug serum concentrations decrease in a straight line when plotted on a concentration-time graph

B. drug serum concentrations decrease in a straight line when plotted on a log concentration-time graph

C. steady-state drug serum concentrations change proportionally to dose

D. steady-state drug serum concentrations change non-proportionally to dose

9. Most drugs follow nonlinear pharmacokinetics

A. true

B. false

10. Pharmacokinetic models are useful to

A. describe concentration-time data sets

B. predict drug serum concentrations after several doses or after different routes of administration

C. calculate pharmacokinetic constants (clearance , volume of distribution, half-life)

D. a & c

E. a, b & c

11. Factors to be considered when prescribing the best drug dose of a patient include

A. age

B. gender

C. weight

D. other concurrent disease states and drug therapies

E. all of the above

12. Clinicians should begin considering dosage adjustment of renally eliminated drugs at what creatinine clearance value:

A. 90 mL/min (1.5 mL/s)

B. 60 mL/min (1 mL/s)

C. 30 mL/min (0.5 mL/s)

D. 15 mL/min (0.25 mL/s)

13. Clinicians should begin considering dosage adjustment of hepatically eliminated drugs at what Child-Pugh score value:

A. 1

B. 3

C. 5

D. 8

E. 10

14. The enzyme system responsible for the metabolism of most drugs is

- A. P-glycoprotein
- B. alkaline phosphatase
- C. creatine kinase
- D. cytochrome P450
- E. HMG-CoA

15. If pharmacologic effect is plotted versus drug concentration for most agents, the shape of the graph is

- A. linear
- B. hyperbolic
- C. parabolic
- D. trapezoidal

ANSWERS

- 1. C.
- 2. B.
- 3. E.
- 4. C.
- 5. D.
- 6. E.
- 7. C.
- 8. D.
- 9. B.
- 10. E.
- 11. E.
- 12. B.

13. D.

14. D.

15. B.

Chapter 5: Pharmacogenetics

1. The site(s) for genetic variations that may affect drug pharmacodynamics include:

A. drug metabolizing enzymes

B. drug target proteins

C. drug transporter proteins

D. a and b

E. a and c

2. The most commonly occurring variant in the human genome is:

A. single nucleotide polymorphism

B. tandem repeat polymorphism

C. nucleotide base deletion

D. nucleotide base insertion

E. frameshift mutation

3. CYP2D6 polymorphism can affect:

A. drug toxicity

B. drug interaction potential

C. drug delivery

D. a and b

E. b and c

4. Which CYP2D6 phenotype is associated with reduced analgesic response to codeine?

A. Ultra-rapid metabolizer

- B. Extensive metabolizer
 - C. Poor metabolizer
 - D. Intermediate metabolizer
 - E. None of the above
5. Which of the following is an example of a drug target gene?
- A. TPMT
 - B. CYP1A2
 - C. SLCO1B1
 - D. UGT1A1
 - E. VKORC1
6. Which gene is predictive of clopidogrel effectiveness?
- A. CYP2C9
 - B. CYP2C19
 - C. CYP2D6
 - D. CYP3A4
 - E. CYP4F2
7. A patient with newly diagnosed atrial fibrillation will be starting warfarin. A rapid SNP test is done and reveals the CYP2C9*2/*3 and VKORC1 AA genotypes. Which of the following responses to warfarin would be predicted based on this genotype?
- A. Increased metabolism; use lower dose
 - B. Decreased metabolism; use higher dose
 - C. Decreased metabolism and increased sensitivity; use lower dose
 - D. Increased metabolism and decreased sensitivity; use higher dose
 - E. Increased metabolism and increased sensitivity; avoid warfarin

8. Genetic variations in drug targets may contribute to which drug property:

- A. bioavailability
- B. half-life
- C. peak dose area under the curve
- D. ethnic differences in response
- E. entry into the central nervous system

9. Screening for which of the following polymorphisms is indicated prior to carbamazepine use in a person of Southeast Asian descent?

- A. CYP2D6*2
- B. HLA-B*15:02
- C. CYP2C9*2
- D. TPMT*2
- E. UGT1A1*28

10. Which gene predicts risk for muscle toxicity with simvastatin use?

- A. SLCO1B1
- B. HLA-B
- C. HMG-CoA
- D. LDLR
- E. ABCB1

11. Mutations in which of the following genes increases the risk for thrombosis with oral contraceptives?

- A. Prothrombin
- B. CYP2C9
- C. ADRB1

D. SCN5A

E. ABCB1

12. Which drug is recommended to reduce tumor progression in a patient with breast cancer who overexpresses the HER2 gene?

A. Mercaptopurine

B. Tamoxifen

C. Trastuzumab

D. Voriconazole

E. Irinotecan

13. An obstacle to successful gene therapy is:

A. an inability to identify genetic defects

B. inefficient gene delivery

C. difficulty identifying eligible patients

D. lack of research efforts

E. all of the above

14. Which of the following gene therapy techniques has prompted the most ethical concern?

A. Naked DNA transfer

B. Adeno-associated viral gene delivery

C. Retroviral-mediated gene therapy

D. Electroporation

E. Germ line manipulation

ANSWERS

1. B.

2. A.

3. D.
4. C.
5. E.
6. B.
7. C.
8. D.
9. B.
10. A.
11. A.
12. C.
13. B.
14. E.

Chapter 6: Pediatrics

1. Which should the nurse use to prepare liquid medication in volumes less than 5 milliliters?

- a. Calibrated syringe
- b. Paper measuring cup
- c. Plastic measuring cup
- d. Household teaspoon

ANS: A

To ensure accuracy, a calibrated syringe without a needle should be used to prepare a liquid dosage less than 5 milliliters. Paper and plastic measuring cups are not calibrated for liquid volumes less than 5 milliliters. A household teaspoon is not accurate enough to measure small amounts of medication.

2. Which food choice is appropriate to mix with medication?

- a. Formula or milk
- b. Applesauce
- c. Syrup
- d. Orange juice

ANS: B

To prevent the child from developing a negative association with an essential food, a nonessential food such as applesauce is best for mixing with medications. Formula and milk are essential foods in a child's diet. Medications may alter their flavor and cause the child to avoid them in the future. Syrup is not used to mix with medications because of its high sugar content. Orange juice is considered an essential food; therefore, the nurse should not mix medications with it.

3. Which physiological difference would affect the absorption of oral medications administered to a 3-month-old infant?

- a. More rapid peristaltic activity
- b. More acidic gastric secretions
- c. Usually more rapid gastric emptying
- d. Variable pancreatic enzyme activity

ANS: D

Pancreatic enzyme activity is variable in infants for the first 3 months of life as the gastrointestinal system matures. Medications that require specific enzymes for dissolution and absorption might not be digested to a form suitable for intestinal action. Infants up to 8 months of age tend to have prolonged motility. The longer the intestinal transit time, the more medication is absorbed. The gastric secretions of infants are less acidic than in older children or adults. Gastric emptying is usually slower in infants.

4. Which factor should the nurse remember when administering topical medication to an infant?

- a. Infants require a larger dosage because of a greater body surface area.
- b. Infants have a thinner stratum corneum that absorbs more medication.
- c. Infants have a smaller percentage of muscle mass compared with adults.
- d. The skin of infants is less sensitive to allergic reactions.

ANS: B

Infants and young children have a thinner outer skin layer (stratum corneum), which increases the absorption of topical medication. A similar dose of a topical medication administered to an infant compared with an adult is approximately three times greater in the infant because of the greater body surface area. The smaller muscle mass in infants affects site selection for injected medications. The young child's skin is more prone to irritation, making contact dermatitis and other allergic reactions more common.

5. What is the appropriate nursing response to a parent who asks, What should I do if my child cannot take a tablet?

- a. You can crush the tablet and put it in some food.
- b. Find out if the medication is available in a liquid form.
- c. If the child can't swallow the tablet, tell the child to chew it.
- d. Let me show you how to get your child to swallow tablets.

ANS: B

A tablet should not be crushed without knowing whether it will alter the absorption, effectiveness, release time, or taste. Therefore telling the parent to find out whether the medication is available in liquid form is the most appropriate response. A chewed tablet may

have an offensive taste, and chewing it may alter its absorption, effectiveness, or release time. Forcing a child, or anyone, to swallow a tablet is not acceptable and may be dangerous.

6. What is the maximum safe volume that an infant (aged 1 to 12 months) can receive in an intramuscular injection?

- a. 0.25 milliliter
- b. 0.5 milliliter
- c. 1 milliliter
- d. 1.5 milliliters

ANS: C

The maximum volume of medication for an intramuscular injection to an infant is 1 mL. The neonate should receive no more than 0.5 mL per intramuscular injection. 1.5 milliliters is not appropriate for an infant. It is appropriate for an intramuscular injection to a child 3 to 14 years of age.

7. Which muscle would the nurse select to give a 6-month-old infant an intramuscular injection?

- a. Deltoid
- b. Ventrogluteal
- c. Dorsogluteal
- d. Vastus lateralis

ANS: D

The vastus lateralis is not located near any vital nerves or blood vessels. It is the best choice for intramuscular injections for children younger than 3 years of age. The deltoid muscle is not used for intramuscular injections in young children. The ventrogluteal muscle is safe for intramuscular injections for children older than 18 months. The dorsogluteal muscle does not develop until a child has been walking for at least 1 year.

8. The nurse is planning to administer an intramuscular injection to a 13-year-old child. What is the maximum volume of medication that can be injected into the ventrogluteal site?

- a. 0.5 to 1 milliliter
- b. 1 to 1.5 milliliters
- c. 1.5 to 2 milliliters
- d. 2 to 2.5 milliliters

ANS: C

The maximum volume of medication for an intramuscular injection to an older child (6 to 14 years) is 1.5 to 2.0 milliliters. 0.5 to 1.4 milliliters are acceptable volumes to inject, but they are not the maximum. 2 to 2.5 milliliters exceeds the amount that can be safely injected into one site for a 13-year-old child.

9. Which parameter should guide the nurse when administering a subcutaneous injection?

- a. Do not give injections in edematous areas.
- b. Attach a clean 1-inch needle to the syringe.
- c. The maximum volume injected into one site is 2 milliliters.
- d. Do not pinch up tissue before inserting the needle.

ANS: A

Subcutaneous injections should never be given in areas of edema because absorption is unreliable. A short (no more than 5/8inch) needle should be used to deposit medication into subcutaneous tissue. Volumes for subcutaneous injections are small, usually averaging 0.5 milliliters. The skin is pinched up for a subcutaneous injection to raise the fatty tissue away from the muscle.

10. Which action is correct when administering ear drops to a 2-year-old child?

- a. Administer the ear drops straight from the refrigerator.
- b. Pull the pinna of the ear back and down.
- c. Massage the pinna after administering the medication.
- d. Pull the pinna of the ear back and up.

ANS: B

For children younger than 3 years, the pinna, or lower lobe, of the ear should be pulled back and down to straighten the ear canal. Medication should be at room temperature because cold solutions in the ear will cause pain. The tragus of the ear should be massaged to ensure the drops reach the tympanic membrane. For a child 3 years or older, the pinna is pulled up and back.

11. A nurse is preparing to start a continuous IV infusion on a child. The nurse selects a Buretrol (volume-control) attachment as part of the IV tubing set-up. The main purpose for selecting a Buretrol attachment is to:

- a. avoid fluid overload.
- b. aid in measuring intake.
- c. administer antibiotics.
- d. ensure adequate intravenous fluid intake.

ANS: A

A volume-control device such as a Buretrol or an infusion pump allows the nurse to set a specific volume of fluid to be given in a specific period of time (usually 1 hour) and decreases the risk of inadvertently administering a large amount of fluid. Although the use of a volume-control device allows for accurate measurement of intake, the primary purpose for using this equipment is to prevent fluid overload. Medications such as antibiotics can be administered with a volume-control device; however, this is not the primary purpose.

12. Which is the most important nursing action before discharge for a mother who is apprehensive about giving her child insulin?

- a. Review the side effects of insulin with the mother.
- b. Have the mother verbalize that she knows the importance of follow-up care.
- c. Observe the mother while she administers an insulin injection.
- d. Help the mother devise a rotation schedule for injections.

ANS: C

It is important that the nurse evaluate the mother's ability to give the insulin injection prior to discharge. Watching her give the injection to the child will give the nurse an opportunity to offer assistance and correct any errors. Although reviewing side effects is important, this could be done over the phone or by the pharmacist when the medication is picked up. Having the mother verbalize her knowledge of the importance of follow-up care is important but not directly

relevant to the mother's concern. Helping the mother devise a rotation schedule for injections is important but not as important as having the mother demonstrate the procedure.

13. A nurse has just initiated an intravenous piggyback of gentamicin (Garamycin). What is the best time for a trough serum level to be measured?

- a. Just before the next dose
- b. When the infusion is finished
- c. One hour after the medication is administered
- d. Depends on the specific medication

ANS: A

The medication trough is the level at which the serum concentration is lowest. Trough levels are usually obtained just before the next medication dose. The serum concentration would be increasing as the infusion finishes. This is not the concentration trough. The peak concentration, or the concentration after the medication has been distributed, varies according to the specific medication. Trough is always the lowest just before the next medication dose.

14. A nurse should routinely ask a colleague to double-check a medication calculation and the actual medication before administering which medications?

- a. Antibiotics
- b. Acetaminophen
- c. Anticonvulsants
- d. Anticoagulants

ANS: D

The nurse should ask another nurse to check the dosage calculation and the medication before administering anticoagulants. The nurse always double-checks a dosage calculation, but it is not necessary to have a second nurse check the medication before administering antibiotics, acetaminophen, or anticonvulsant medications.

15. Which nursing action is correct when administering heparin subcutaneously?

- a. Insert the needle with the bevel up at a 15-degree angle.
- b. Insert the needle into the skin at a 45-degree angle.
- c. Inject the needle into the tissue on the upper back.
- d. Massage the injection site when the injection is complete.

ANS: B

For a subcutaneous injection, the nurse would pinch the skin and inject at a 45-degree angle. Inserting the needle with the bevel up at a 15-degree angle is the technique used for an intradermal injection. The upper back is used for intradermal injections. The nurse would not massage the site after administering heparin.

16. Which indicates that a school-age child is using a metered-dose inhaler correctly?

- a. The child uses his inhaled steroid before the bronchodilator.
- b. The child exhales forcefully as he squeezes the inhaler.
- c. The child holds his breath for 10 seconds after the first puff.
- d. The child waits 10 minutes before taking a second puff.

ANS: C

After a puff, the child should hold his breath for about 10 seconds or until he counts slowly to 5. If one of the child's medications is an inhaled steroid, it should be administered last. The child should inhale slowly as the inhaler is squeezed or depressed. The child does not need to wait this long to take a second puff of medication. He can take a second puff after holding his breath for 10 seconds.

17. Which step is appropriate when using EMLA cream before intravenous catheter insertion?

- a. Rub a liberal amount of cream into the skin thoroughly.
- b. Cover the skin with a gauze dressing after applying the cream.
- c. Leave the cream on the skin for 1 to 2 hours before the procedure.
- d. Use the smallest amount of cream necessary to numb the skin surface.

ANS: C

The cream should be left in place for a minimum of 1 hour and up to 2 hours. The EMLA cream should not be rubbed into the skin. After the cream is applied to the skin surface, it is covered with a transparent occlusive dressing. The nurse would use a liberal amount of EMLA cream.

18. A child is receiving intravenous fluids. How frequently should the nurse assess and document the condition of the child's intravenous site?

- a. Every hour
- b. Every 2 hours
- c. Every 4 hours
- d. Every shift

ANS: A

The nurse assesses and documents an IV site at least every hour for signs and symptoms of infiltration and phlebitis. The nurse should assess a child's IV site more frequently than every 2 to 4 hours or every shift. Serious complications could occur during this time interval.

19. What is the hourly maintenance fluid rate for an intravenous infusion in a child weighing 19.3 kilograms?

- a. 19 milliliters
- b. 45 milliliters
- c. 61 milliliters
- d. 95 milliliters

ANS: C

The formula for calculating daily fluid requirements is 0 to 10 kg: 100 mL/kg/day; 10 to 20 kg: 1000 mL for the first 10 kg of body weight plus 50 mL/kg/day for each kg between 10 and 20. To determine an hourly rate, divide the total milliliters per day by 24.

20. The nurse administering an IV piggyback medication to a preschool child should take which action?

- a. Dilute the medication in at least 20 milliliters and infuse over at least 15 minutes.
- b. Flush the IV tubing before and after the infusion with normal saline solution.

-
- c. Inject the medication into the IV catheter using the port closest to the child.
 - d. Inject the medication into the IV tubing in the direction away from the child.
-

ANS: A

Medications given by IV piggyback are diluted in at least 20 milliliters of IV solution and administered over at least 15 minutes. When administering medications by IV piggyback, the nurse flushes the tubing after the medication has infused, usually with 16 to 20 milliliters of IV solution. The nurse is using the IV push method when injecting medication into the IV tubing using the port closest to the child. The IV retrograde method involves clamping the IV tubing below the injection port and injecting medication into the tubing in a direction away from the child, causing it to flow into the tubing above the injection port.

21. What nursing action is indicated when a child receiving a unit of packed red blood cells complains of chills, headache, and nausea?

-
- a. Continue the infusion and take the child's vital signs.
 - b. Stop the infusion immediately and notify the physician.
 - c. Slow the infusion and assess for cessation of symptoms.
 - d. Start a dextrose solution and stay with the child.
-

ANS: B

If a reaction is suspected, as in this case, the transfusion is stopped immediately and the physician is notified. If the child is displaying signs of a transfusion reaction, the transfusion cannot continue. Dextrose solutions are never infused with blood products because the dextrose causes hemolysis. This action does not address the blood infusion.

Chapter 7: Geriatrics

1. The nurse is aware that information derived from a pharmaceutical company's drug testing to establish therapeutic dose ranges may not be appropriate for the older adult because testing:

-
- a. is not done long enough.
 - b. does not require adequate follow-up.
 - c. is not well regulated by the U.S. Food and Drug Administration.
 - d. is usually tested on healthy young persons.
-

ANS: D

Long and rigorously regulated drug testing procedures most often use healthy young adults as drug testers.

2. The nurse assesses the older adult patient for evidence of the onset of the effectiveness of an oral preparation because age-related changes in the concentration of gastric acid can:

-
- a. change the chemical composition of the drug.
 - b. increase the distribution.
 - c. decrease the strength of the drug.
 - d. retard absorption.
-

ANS: D

Decreased gastric acid can decrease the speed of absorption.