Chapter 02: Basic Principles of Drug Action and Drug Interactions

Clayton/Willihnganz: Basic Pharmacology for Nurses, 17th Edition

MULTIPLE CHOICE

1. The nurse assesses hives in a patient started on a new medication. What is the nurse’s priority action?

   a. Notify physician of allergic reaction.
   b. Notify physician of idiosyncratic reaction.
   c. Notify physician of potential teratogenicity.
   d. Notify physician of potential tolerance.

   ANS: A

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.

DIF: Cognitive Level: Application REF: Page 17 OBJ: 4

TOP:Nursing Process Step: Assessment

MSC:NCLEX Client Needs Category: Physiological Integrity

NOT:CONCEPT(S): Clinical Judgment; Safety

2. The nurse administers an initial dose of a steroid to a patient with asthma. Thirty minutes after administration, the nurse finds the patient agitated and stating that “everyone is out to get me.” What is the term for this unusual reaction?

a. Desired action
b. Adverse effect
c. Idiosyncratic reaction
d. Allergic reaction

ANS: C

Idiosyncratic reactions are unusual, abnormal reactions that occur when a drug is first administered. Patients typically exhibit an overresponsiveness 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.

DIF: Cognitive Level: Knowledge REF: Page 18 OBJ: 4

TOP:Nursing Process Step: Evaluation

MSC:NCLEX Client Needs Category: Physiological Integrity

NOT: CONCEPT(S): Patient Education; Clinical Judgment; Caregiving; Safety; Sensory Perception

3. 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

d. On increase of drug excretion

ANS: C

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.

DIF: Cognitive Level: Comprehension REF: Page 18 OBJ: 5

TOP: Nursing Process Step: Assessment

MSC: NCLEX Client Needs Category: Physiological Integrity

NOT: CONCEPT(S): Safety; Patient Education; Clinical Judgment

4. What occurs 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

ANS: D

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.

DIF: Cognitive Level: Comprehension REF: Page 19 OBJ: 6

TOP: Nursing Process Step: Implementation
5. 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.

ANS: D

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.

DIF: Cognitive Level: Comprehension REF: Page 17 OBJ: 4

TOP: Nursing Process Step: Evaluation

6. What is the process by which a drug is transported by circulating body fluids to receptor sites?

a. Osmosis
b. Distribution
c. Absorption
d. Biotransformation

ANS: B

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.

DIF: Cognitive Level: Comprehension REF: Page 15 OBJ: 3

TOP:Nursing Process Step: Planning

MSC:NCLEX Client Needs Category: Physiological Integrity

NOT:CONCEPT(S): Patient Education; Clinical Judgment; Safety

7. The nurse assesses which blood level to determine the amount of circulating medication in a patient?

a. Peak  
b. Trough  
c. Drug  
d. Therapeutic  

ANS: C

When a drug is circulating in the blood, a blood sample may be drawn and assayed to determine the amount of drug present; this is known as the drug blood level. Peak levels are only those drug blood levels that are at their maximum before metabolism starts to decrease the amount of circulating drug. Trough levels are only those drug blood levels that are at their minimum when metabolism has decreased the amount of circulating drug and before an increase caused by a subsequent dose of the medication. Therapeutic levels are only those within a prescribed range of blood levels determined to bring about effective action of the medication.

DIF: Cognitive Level: Comprehension REF: Page 17 OBJ: 3

TOP:Nursing Process Step: Evaluation

MSC:NCLEX Client Needs Category: Physiological Integrity

NOT:CONCEPT(S): Patient Education; Clinical Judgment; Safety
8. 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  
d. 6:00 PM  

ANS: C

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.

DIF: Cognitive Level: Analysis REF: Page 15 OBJ: 2

TOP: Nursing Process Step: Evaluation

MSC: NCLEX Client Needs Category: Physiological Integrity

NOT: CONCEPT(S): Clinical Judgment; Safety; Elimination; Health Promotion

9. 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  
c. Drug blood level of each drug  
d. Medication adverse effects  

ANS: B

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.

DIF: Cognitive Level: Application REF: Page 19 OBJ: 6
10. 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.
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.

ANS: A

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.

DIF: Cognitive Level: Application REF: Page 18 OBJ: 4

11. When obtaining a patient’s health history, which assessment data would the nurse identify as having the most effect on drug metabolism?

a. History of liver disease
b. Intake of a vegetarian diet
c. Sedentary lifestyle
d. Teacher as an occupation
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.

DIF: Cognitive Level: Application REF: Page 16 OBJ: 3
TOP:Nursing Process Step: Assessment
MSC:NCLEX Client Needs Category: Physiological Integrity
NOT:CONCEPT(S): Patient Education; Clinical Judgment; Safety

12. A physician’s order indicates to administer a medication to the patient via the percutaneous route. The nurse can anticipate that the patient will receive this medication
   a. intramuscularly.
   b. subcutaneously.
   c. topically.
   d. rectally.

ANS: C

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 injection. In the enteral route, the drug is administered directly into the GI tract by the oral, rectal, or nasogastric route.

DIF: Cognitive Level: Application REF: Page 14 OBJ: 1
TOP:Nursing Process Step: Implementation
MSC:NCLEX Client Needs Category: Physiological Integrity
13. A nurse is preparing to administer tetracycline to a patient diagnosed with an infection. Which medication should not be administered with tetracycline?

a. Ativan  
b. Tylenol  
c. Colace  
d. Mylanta  

ANS: D

Administering tetracycline with Mylanta 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.

DIF: Cognitive Level: Application REF: Page 18 OBJ: 5 | 6

TOP: Nursing Process Step: Implementation

MSC: NCLEX Client Needs Category: Physiological Integrity

MULTIPLE RESPONSE

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

a. A drug must be dissolved in body fluids before it can be absorbed into body tissues.  
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.  
c. The process of converting the drug into a soluble form can be controlled to a certain degree by the dosage form.  
d. Converting the drug to a soluble form can be influenced by administering the drug with or without food in the patient’s stomach.  
e. Elixirs take longer to be liberated from the dosage form.

ANS: A, B, C, D
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.

DIF: Cognitive Level: Comprehension REF: Page 14 OBJ: 3

TOP: Nursing Process Step: Implementation

MSC: NCLEX Client Needs Category: Physiological Integrity

NOT: CONCEPT(S): Patient Education; Clinical Judgment; Safety

2. Which are routes of drug excretion? (Select all that apply.)

a. GI tract; feces
b. Genitourinary (GU) tract; urine
c. Lymphatic system
d. Circulatory system; blood/plasma
e. Respiratory system; exhalation

ANS: A, B, E

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.

DIF: Cognitive Level: Knowledge REF: Page 15 OBJ: 3

TOP: Nursing Process Step: Assessment

MSC: NCLEX Client Needs Category: Physiological Integrity

NOT: CONCEPT(S): Patient Education; Clinical Judgment; Safety; Elimination
3. Which route(s) enable(s) drug absorption more rapidly than the subcut route? 
(Select all that apply.)

a. IV route 
b. IM route 
c. Inhalation/sublingual 
d. Intradermal route 
e. Enteral route 

ANS: A, B, C

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.

DIF: Cognitive Level: Comprehension REF: Page 14 OBJ: 1 | 3

TOP: Nursing Process Step: Evaluation

MSC: NCLEX Client Needs Category: Physiological Integrity

NOT: CONCEPT(S): Patient Education; Clinical Judgment; Safety

4. The nurse recognizes that which factor(s) would contribute to digoxin toxicity in a 92-year-old patient? (Select all that apply.)

a. Taking the medication with meals 
b. Prolonged half-life of the drug digoxin 
c. Impaired renal function 
d. Diminished mental capacity 

ANS: B, C

Impaired renal and hepatic function in older adults impairs metabolism and excretion of drugs, thus prolonging the half-life of a medication. Food would decrease the absorption of the drug. Diminished mental capacity does not contribute to drug toxicity unless it is due to administration errors.
5. Which statement(s) about variables that influence drug action is/are true? (*Select all that apply.*)

a. An older adult will require increased dosage of a drug to achieve the same therapeutic effect as that seen in a younger person.
b. Body weight can affect the therapeutic response of a medication.
c. Chronic smokers may metabolize drugs more rapidly than nonsmokers.
d. A patient’s attitude and expectations affect the response to medication.
e. Reduced circulation causes drugs to absorb more rapidly.

ANS: B, C, D

Body weight can affect response to medications; typically, obese patients require an increase in dosage and underweight patients a decrease in dosage. Chronic smoking enhances metabolism of drugs. Attitudes and expectations play a major role in an individual’s response to drugs. Older adults require decreased dosages of drugs to achieve a therapeutic effect. Decreased circulation causes drugs to absorb more slowly.

6. Which factor(s) affect(s) drug actions? (*Select all that apply.*)

a. Teratogenicity
b. Age
c. Body weight
d. Metabolic rate
e. Illness

ANS: B, C, D, E

Age, body weight, metabolic rate, and illness may contribute to a variable response to a medication. Teratogenicity does not contribute to a variable response to a medication.

DIF: Cognitive Level: Comprehension REF: Page 16 | Page 17

OBJ: 7 TOP: Nursing Process Step: Assessment

MSC: NCLEX Client Needs Category: Physiological Integrity

NOT: CONCEPT(S): Patient Education; Clinical Judgment; Safety

COMPLETION

1. 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?

ANS:

50

The 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.

DIF: Cognitive Level: Analysis REF: Page 15 OBJ: 2 | 3

TOP: Nursing Process Step: Evaluation

MSC: NCLEX Client Needs Category: Physiological Integrity

NOT: CONCEPT(S): Clinical Judgment; Safety

Chapter 03: Drug Action Across the Life Span

Clayton/Willihnganz: Basic Pharmacology for Nurses, 17th Edition
MULTIPLE CHOICE

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.

DIF: Cognitive Level: Application REF: Page 27 OBJ: 2

TOP: Nursing Process Step: Implementation

MSC: NCLEX Client Needs Category: Physiological Integrity

NOT: CONCEPT(S): Clinical Judgment; Safety

2. What will the nurse expect the health care provider’s 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: Page 29 OBJ: 3
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.

   DIF: Cognitive Level: Knowledge REF: Page 30 OBJ: 6

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. Reye’s syndrome
   c. Chickenpox
   d. Influenza A

   ANS: B

   Children are susceptible to Reye’s 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 patient’s 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.

DIF: Cognitive Level: Application REF: Page 31 | Page 32

OBJ: 6 TOP: Nursing Process Step: Implementation

MSC: NCLEX Client Needs Category: Health Promotion and Maintenance

NOT: CONCEPT(S): Clinical Judgment; Safety; Patient Education

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.

DIF: Cognitive Level: Comprehension REF: Page 32 OBJ: 6

TOP: Nursing Process Step: Implementation

MSC: NCLEX Client Needs Category: Health Promotion and Maintenance

NOT: CONCEPT(S): Clinical Judgment; Safety; Patient Education
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.  

DIF: Cognitive Level: Application REF: Page 23 OBJ: 3  
TOP: Nursing Process Step: Assessment  
MSC: NCLEX Client Needs Category: Physiological Integrity  
NOT: CONCEPT(S): Clinical Judgment; Safety; Patient Education; Development  

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.  

DIF: Cognitive Level: Comprehension REF: Page 24 | Page 25
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 tables 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.

DIF: Cognitive Level: Application REF: Page 30 OBJ: 3

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.

DIF: Cognitive Level: Knowledge REF: Page 27 OBJ: 2

TOP: Nursing Process Step: Assessment

MSC: NCLEX Client Needs Category: Physiological Integrity

NOT: CONCEPT(S): Clinical Judgment; Safety

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.

DIF: Cognitive Level: Application REF: Page 21 | Page 24 | Page 21

OBJ: 3 | 4 TOP: Nursing Process Step: Assessment

MSC: NCLEX Client Needs Category: Physiological Integrity

NOT: CONCEPT(S): Clinical Judgment; Safety; Development

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.

DIF: Cognitive Level: Knowledge REF: Page 23 OBJ: 2

TOP: Nursing Process Step: Assessment

MSC: NCLEX Client Needs Category: Physiological Integrity

NOT: CONCEPT(S): Clinical Judgment; Safety

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.

DIF: Cognitive Level: Application REF: Page 21 | Page 22
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 nurse’s scope of practice.

DIF: Cognitive Level: Analysis REF: Page 23 OBJ: 3

MULTIPLE RESPONSE

1. One of the prescribed medications for a 36-week gestational age baby girl is a topical water soluble medication to be applied to the perineum daily to treat an inflammatory rash. What considerations is the nurse aware of before medication administration? (Select all that apply.)

a. Age of the client
b. Location of topical application

c. Increased intestinal transit rate

d. Condition of the skin

e. Gastric pH of 8

ANS: A, B, D

The premature infant’s outer layer of skin is not fully developed, although it is more hydrated, which will enhance the absorption of the topical water soluble medication. Neonates often wear diapers, which will act as an occlusive dressing, thereby increasing absorption. The client’s inflammatory condition will increase the absorption of medication. The intestinal transit rate increases as the newborn matures. This is irrelevant when a medication is applied topically. Gastric pH would not factor into metabolism of a medication that is applied topically.

DIF: Cognitive Level: Application REF: Pages 21-22 OBJ: 3

TOP: Nursing Process Step: Implementation

MSC: NCLEX Client Needs Category: Physiological Integrity

NOT: CONCEPT(S): Clinical Judgment; Safety; Development

2. The nurse is caring for a 4-month-old child who is on a water soluble medication for seizures. The child’s mother voices concern that the dosage seems “too much” for the child’s age and would like the dosage verified. What actions will the nurse take? (Select all that apply.)

   a. Verify dosage requirements in the *Physicians’ Desk Reference (PDR)* in mg/kg.
   b. Compare the water composition requirements of adults and children.
   c. Evaluate lean body mass and total fat content in adults and infants.
   d. Chart “refused per mother” on the MAR and do not administer.
   e. Compare transportation in the circulation of plasma bound proteins between adults and children.

ANS: A, B

The *PDR* lists the recommended dosages for all age groups. Because dilution may vary among age groups, the water concentration should be verified prior to administration. As we age, lean body mass and total body water decrease while total fat content increases; however, this drug is not fat soluble. The nurse is
responsible for administering the medication as ordered after verifying that it is correct; the mother is asking for verification, not refusal of administration. Drugs that are relatively insoluble are transported in the circulation by being bound to plasma proteins; however, this drug is water soluble.

DIF: Cognitive Level: Application REF: Page 28 | Page 29

OBJ: 3 TOP: Nursing Process Step: Implementation

MSC: NCLEX Client Needs Category: Physiological Integrity

NOT: CONCEPT(S): Clinical Judgment; Safety; Patient Education; Development

3. For which reason(s) is/are elderly patients at increased risk for drug interactions and toxicity? (Select all that apply.)

a. They have a higher incidence of malnourishment.
b. Their renal function is enhanced.
c. They have increased use of multiple medications.
d. Hepatic function is reduced.
e. There are often issues with swallowing.

ANS: A, C, D

Older adult patients have an increased incidence of malnourishment, are often on multiple medications, and have reduced hepatic function, all of which put them at increased risk for drug interactions and toxicity. Renal function diminishes in the elderly as a result of decreased renal blood flow, reduced cardiac output, loss of glomeruli, and diminished tubular function and concentrating ability. Older adults have swallowing difficulties, leading to compliance issues, but taking drugs less often would not result in toxicity.

DIF: Cognitive Level: Comprehension REF: Page 29 | Page 30

OBJ: 3 TOP: Nursing Process Step: Assessment

MSC: NCLEX Client Needs Category: Physiological Integrity

NOT: CONCEPT(S): Clinical Judgment; Safety; Patient Education; Development
4. Which patient(s) require(s) special considerations for medication administration? 
(Select all that apply.)

a. A 29-year-old pregnant woman  
b. A 2-month-old baby  
c. An 18-year-old college student  
d. A 45-year-old farmer  
e. An 82-year-old retired nurse

ANS: A, B, E

Drug therapy during pregnancy should be avoided. Recommendations by the provider are necessary during any stage of pregnancy. Pediatric and elderly patients are affected by differences in muscle mass and blood flow to muscles, as well as other physiological systems. Teenagers and adult patients do not typically require special considerations for medication administration.

DIF: Cognitive Level: Application REF: Page 21 | Page 24

OBJ: 3 | 4 | 5 | 6 TOP: Nursing Process Step: Planning

MSC: NCLEX Client Needs Category: Physiological Integrity

NOT: CONCEPT(S): Clinical Judgment; Safety; Development

5. Which factor(s) in a patient would influence GI absorption of medications? 
(Select all that apply.)

a. Stomach pH  
b. Level of consciousness  
c. Fever  
d. Blood flow to gastric mucosa  
e. Weight  
f. Body surface area

ANS: A, D

Absorption by passive diffusion across the membranes depends on the pH of the environment. Increased blood flow to gastric mucosa increases absorption of medication and decreases time of absorption. Drug absorption does not depend on the mental status of the patient. Fever does not affect drug absorption. The
patient’s absolute weight and body surface area do not affect drug absorption, although problems associated with weight greater than or less than normal may be a factor in the process.

6. When receiving a report on a new admission from the emergency room, the nurse learns that the patient is newly diagnosed with renal failure. Which medication(s) in the patient’s medication history will require dosage adjustment by the physician? (Select all that apply.)

a. Lithium  
b. Tobramycin  
c. Atenolol  
d. Quinidine  
e. Ampicillin  

ANS: A, B, C, D, E

Lithium, tobramycin, atenolol, quinidine, and ampicillin are all select medications that require dosage adjustment in renal failure.

7. Prenatal education is being provided by the nurse at a maternal family child clinic. What information should be relayed? (Select all that apply.)

a. Herbal medicines are considered safe.  
b. Limit tobacco consumption to less than two cigarettes per day.  
c. Encourage a folic acid supplement.
d. One alcoholic beverage per day is acceptable in the last trimester.
e. Encourage nonpharmacologic treatments for symptoms such as nausea.

ANS: C, E

Good nutrition with appropriate ingestion of vitamins (especially folic acid) is particularly important during pregnancy to prevent birth defects. Before using medicines, pregnant women should be encouraged to try nonpharmacologic treatments. Herbal medicines that have not been scientifically tested in women during pregnancy should be avoided. Advise against the use of tobacco. Mothers who smoke have a higher frequency of miscarriage, stillbirths, premature births, and low birth weight infants. Consumption of alcohol should be eliminated 2 to 3 months before planned conception, as well as during pregnancy.

DIF: Cognitive Level: Application
REF: Page 30 | Page 32

OBJ: 6
TOP: Nursing Process Step: Planning

MSC: NCLEX Client Needs Category: Health Promotion and Maintenance

NOT: CONCEPT(S): Clinical Judgment; Safety; Patient Education