Chapter 37, Cardiotonic and Antiarrhythmic Drugs

1. A client has been admitted to a health care center with reports of dyspnea. The nurse suspects left-sided heart failure based on which assessment finding?
   A) Nocturia
   B) Pitting edema
   C) Weight gain
   D) Orthopnea

   Answer: D

   Rationale: The nurse should assess for orthopnea in clients with left-sided heart failure. Orthopnea is a condition where the client has difficulty breathing when lying down. The other features of left ventricular failure include a hacking cough or wheezing, restlessness, and anxiety. Nocturia, pitting edema, and weight gain are associated with right-sided heart failure.
   Question format: Multiple Choice
   Chapter: 37
   Learning Objective: 1
   Cognitive Level: Apply
   Client Needs: Physiological Integrity: Physiological Adaptation
   Integrated Process: Clinical Problem-solving Process (Nursing Process)
   Reference: p. 474, Heart Failure

2. A nurse is assessing the serum digoxin level of a client who is receiving treatment for atrial fibrillation. Which result should the nurse **prioritize** and report to the primary health care provider?
   A) 1.6 ng/mL
   B) 1.8 ng/mL
   C) 2.0 ng/mL
   D) 2.2 ng/mL

   Answer: D

   Rationale: A serum digoxin level of more than 2 ng/mL would require the nurse to report to the primary health care provider; therefore, serum digitalis levels of 2.2 ng/mL indicate digoxin toxicity. The therapeutic levels range from 0.5 to 2 ng/mL.
   Question format: Multiple Choice
   Chapter: 37
   Learning Objective: 8
   Cognitive Level: Apply
   Client Needs: Physiological Integrity: Reduction of Risk Potential

Integrated Process: Communication and Documentation
Reference: p. 482, Promoting an Optimal Response to Therapy

3. A nurse is preparing to administer ivabradine to a client with heart failure. Which preadministration assessment should the nurse **prioritize** for this client?
   A) Inspect joints for swelling.
   B) Check for jugular vein distention.
   C) Inspect skin for rash.
   D) Obtain blood glucose levels.

   Answer: B

   Rationale: The nurse should check for jugular vein distention as part of the preadministration assessment for the client prescribed a cardiotonic. Inspecting the joints for swelling should occur on the ongoing assessment to evaluate for possible adverse reactions, especially if the client is also receiving a diuretic. Inspecting the skin would be necessary if there were any indications of a possible adverse reaction, but this would also occur after the drug's administration. Obtaining blood glucose levels is not necessary for heart failure but would be indicated if the client also had diabetes.
   Question format: Multiple Choice
   Chapter: 37
   Learning Objective: 5
   Cognitive Level: Apply
   Client Needs: Physiological Integrity: Pharmacological Therapies
   Integrated Process: Clinical Problem-solving Process (Nursing Process)
   Reference: p. 481, Preadministration Assessment

4. The nurse is completing a teaching session with a client with heart failure. The nurse determines that additional teaching is needed about the cardiotonic drug therapy when the client makes which comment?
   A) "I will take the drug at the same time each day."
   B) "I can crush the tablet and mix it with food."
   C) "I should call if my pulse rate is below 80 beats per minute."
   D) "I need to notify my health care provider if I have blurred vision."

   Answer: C

   Rationale: Cardiotonics normally should be withheld if the pulse rate is below 60 bpm or above 100 bpm. The client should take the drug at the same time each day, crush the tablet and mix with food, and notify the primary health care provider if blurred vision occurs.
   Question format: Multiple Choice
   Chapter: 37
   Learning Objective: 8

Cognitive Level: Analyze
Client Needs: Physiological Integrity: Reduction of Risk Potential
Integrated Process: Teaching/Learning
Reference: p. 482, Ongoing Assessment

5. A client with arrhythmias is prescribed an antiarrhythmic. About which finding on the ongoing assessment should the nurse instruct the client to immediately notify the primary health care provider?
   A) Sudden change in mental state
   B) A pulse rate of 90 bpm
   C) Dry mouth and gums
   D) Increased restlessness

   Answer: A

   Rationale: The nurse should report any sudden change in mental status to the health care provider as a decrease in dosage may be necessary. A pulse rate above 100 bpm or below 60 bpm should be immediately reported to the health care provider. Dry mouth and gums are expected adverse reactions for which the nurse should recommend the client take frequent sips of water or chew sugarless gum. Somnolence—not restlessness—is a possible adverse reaction to antiarrhythmic drugs.
   Question format: Multiple Choice
   Chapter: 37
   Learning Objective: 8
   Cognitive Level: Apply
   Client Needs: Physiological Integrity: Reduction of Risk Potential
   Integrated Process: Teaching/Learning
   Reference: p. 484, Monitoring Pulse Rate

6. The nurse is teaching a client with arrhythmia about the prescribed verapamil. Which potential adverse reaction should the nurse point out to the client?
   A) Diarrhea
   B) Hyperactivity
   C) Peripheral edema
   D) Hypertension

   Answer: C

   Rationale: The nurse should inform the client that peripheral edema could be an adverse reaction to verapamil therapy. Other adverse reactions include constipation (not diarrhea), dizziness, lightheadedness, headache, asthenia, nausea, vomiting, hypotension (not hypertension), mental depression (not hyperactivity), agranulocytosis, and proarrhythmic effect.
   Question format: Multiple Choice

Chapter: 37
Learning Objective: 8
Cognitive Level: Apply
Client Needs: Physiological Integrity: Pharmacological Therapies
Integrated Process: Teaching/Learning
Reference: p. 485, Summary Drug Table

7. A client on antiarrhythmic drug therapy reports nausea, vomiting, abdominal pain, diarrhea, and a ringing sensation in the ears. Which drug should the nurse investigate **first** to determine possible cause?
   A) Lidocaine
   B) Quinidine
   C) Flecainide
   D) Procainamide

Answer: B

Rationale: The nurse should consider the drug quinidine as the cause for these adverse reactions. Some of the symptoms of toxicity include ringing in the ears (tinnitus), hearing loss, headache, nausea, vomiting, abdominal pain, dizziness, vertigo, and lightheadedness. Lidocaine, flecainide, and procainamide do not cause tinnitus or hearing loss.
Question format: Multiple Choice
Chapter: 37
Learning Objective: 5
Cognitive Level: Apply
Client Needs: Physiological Integrity: Pharmacological Therapies
Integrated Process: Clinical Problem-solving Process (Nursing Process)
Reference: p. 485, Summary Drug Table

8. A client admitted to a health care facility with cardiac arrhythmia is prescribed propranolol. Which signs should the nurse **prioritize** on the ongoing assessment?
   A) Pulse rate
   B) Tendon reflexes
   C) Hydration
   D) Visual acuity

Answer: A

Rationale: During antiarrhythmic drug therapy, the nurse should closely monitor the client's pulse rate. A change in the pulse rate and rhythm will help the nurse assess a response to drug therapy, the development of signs of heart failure, the development of a new cardiac arrhythmia, or worsening of the arrhythmia being treated. It is not necessary to monitor the tendon reflexes, hydration, or visual acuity when administering an antiarrhythmic drug to the client.

Question format: Multiple Choice
Chapter: 37
Learning Objective: 5
Cognitive Level: Apply
Client Needs: Physiological Integrity: Pharmacological Therapies
Integrated Process: Clinical Problem-solving Process (Nursing Process)
Reference: p. 482, Ongoing Assessment

9. A nursing instructor is teaching a group of students about cardiotonics. The instructor determines the session is successful when the students correctly identify which as an action(s) of the cardiotonics? Select all that apply.
   A) Improves myocardial contractility
   B) Increases myocardial efficiency
   C) Increases blood pressure
   D) Increases peripheral edema
   E) Improves profusion to all body tissues

   Answer: A, B, E

   Rationale: Cardiotonics are drugs used to increase the efficiency and improve the contraction of the heart muscle, which leads to improved blood flow to all tissues of the body. An increased blood pressure and peripheral edema may be contributing causes for the need of cardiotonics.
   Question format: Multiple Select
   Chapter: 37
   Learning Objective: 4
   Cognitive Level: Understand
   Client Needs: Physiological Integrity: Pharmacological Therapies
   Integrated Process: Clinical Problem-solving Process (Nursing Process)
   Reference: p. 475, Cardiotonics

10. The nurse is assessing a client diagnosed with left ventricular dysfunction. Which symptom(s) would the nurse **most likely** assess? Select all that apply.
   A) Dyspnea
   B) Moist cough
   C) Insomnia
   D) Peripheral edema
   E) Neck vein distention

   Answer: A, B

   Rationale: The symptoms of left ventricular dysfunction include dyspnea and moist cough with the production of frothy, pink (blood-tinged) sputum. Right-sided failure (right ventricular dysfunction) can be seen with fluid backup in the body such as distended neck veins, peripheral edema, and hepatic engorgement. Restlessness (not insomnia) can be seen with either right or left heart failure.

Question format: Multiple Select
Chapter: 37
Learning Objective: 1
Cognitive Level: Apply
Client Needs: Physiological Integrity: Physiological Adaptation
Integrated Process: Clinical Problem-solving Process (Nursing Process)
Reference: p. 474, Heart Failure

11. A nurse is preparing to administer the prescribed digoxin. After appraising the morning laboratory results, the nurse determines caution is warranted with which result(s)? Select all that apply.
    A) Potassium 3 mEq/L
    B) Magnesium 3 mEq/L
    C) Calcium 4.3 mEq/L
    D) Calcium 5.5 mEq/L
    E) Magnesium 1.0 mEq/L

    Answer: A, C, E

    Rationale: The cardiotonic drugs are given cautiously to clients with electrolyte imbalances (especially hypokalemia, hypocalcemia, and hypomagnesemia). The normal range for potassium is 3.5–5 mEq/L; for calcium is 4.5–5.3 mEq/L; and for magnesium is 1.5–2.5 mEq/L.
    Question format: Multiple Select
    Chapter: 37
    Learning Objective: 2
    Cognitive Level: Apply
    Client Needs: Physiological Integrity: Reduction of Risk Potential
    Integrated Process: Clinical Problem-solving Process (Nursing Process)
    Reference: p. 476, Contraindications and Precautions

12. The nurse is preparing to administer digoxin to a client. Which physical assessment(s) should the nurse **prioritize** before administering this drug? Select all that apply.
    A) Apical–radial pulse rate
    B) Respiratory rate
    C) Urinalysis
    D) Weight measurement
    E) Blood pressure

    Answer: A, B, D, E

Rationale: Preadministration physical assessment should include assessment of the apical–radial pulse rate, respiratory rate, weight, and blood pressure to establish a baseline for comparison. Assessing the client's urine is not a priority; however, the primary health care provider may order renal function tests to evaluate because diminished renal function could affect the prescribed dosage of digoxin.
Question format: Multiple Select
Chapter: 37
Learning Objective: 5
Cognitive Level: Apply

Client Needs: Physiological Integrity: Pharmacological Therapies
Integrated Process: Clinical Problem-solving Process (Nursing Process)
Reference: p. 481, Preadministration Assessment

13. After teaching a group of nursing students about digoxin, the instructor determines that the teaching was successful when the students correctly choose which factor(s) as necessary to monitor serum digoxin levels? Select all that apply.
A) Draw blood immediately after the dose.
B) Draw immediately before the next dose.
C) Draw 6–8 hours after the last dose.
D) A toxic level is greater than 2 ng/mL.
E) A level between 0.5 and 1.5 ng/mL is therapeutic.

Answer: B, C, D

Rationale: Digoxin serum level measurements should be drawn immediately before the next dose or 6–8 hours after the last dose regardless of route. Therapeutic digoxin levels are between 0.8 and 2 ng/mL. Serum digoxin levels greater than 2 ng/mL are considered toxic and are reported to the health care provider.
Question format: Multiple Select
Chapter: 37
Learning Objective: 4
Cognitive Level: Apply
Client Needs: Physiological Integrity: Pharmacological Therapies
Integrated Process: Clinical Problem-solving Process (Nursing Process)
Reference: p. 481, Preadministration Assessment

14. A nurse is studying a journal article about propranolol. Which factor(s) would the nurse expect to find explained? Select all that apply.
A) Is a class III antiarrhythmic
B) Acts by blocking β-adrenergic receptors of the heart and kidney
C) Reduces the release of renin
D) Increases excitability of the heart
E) Has membrane-stabilizing effects

Answer: B, C, E

Rationale: Propranolol is a class II antiarrhythmic that acts by blocking β-adrenergic receptors of the heart and kidney, reducing the influence of the sympathetic nervous system on these areas, and decreasing the excitability of the heart and the release of renin. Propranolol also has membrane-stabilizing effects.
Question format: Multiple Select
Chapter: 37
Learning Objective: 3
Cognitive Level: Understand
Client Needs: Physiological Integrity: Pharmacological Therapies
Integrated Process: Clinical Problem-solving Process (Nursing Process)
Reference: p. 479, Class II—β-Adrenergic Blockers

15. A nursing student is preparing a presentation detailing verapamil. The student should be prepared to explain which effect(s) verapamil has on the cardiovascular system? Select all that apply.
    A) Reduces the release of renin
    B) Dilates coronary arteries
    C) Dilates peripheral arteries
    D) Slows conduction through the SA and AV nodes
    E) Membrane-stabilizing effects

    Answer: B, C, D

    Rationale: Verapamil is a calcium channel blocker. These drugs inhibit the movement of calcium through channels across the myocardial cell membranes and vascular smooth muscle. Cardiac and vascular smooth muscles depend on the movement of calcium ions into the muscle cells through specific ion channels. When this movement is inhibited, the coronary and peripheral arteries dilate, thereby decreasing the force of cardiac contraction. This drug also reduces heart rate by slowing conduction through the SA and AV nodes.
    Question format: Multiple Select
    Chapter: 37
    Learning Objective: 3
    Cognitive Level: Apply
    Client Needs: Physiological Integrity: Pharmacological Therapies
    Integrated Process: Clinical Problem-solving Process (Nursing Process)
    Reference: p. 479, Class IV—Calcium Channel Blockers

16. A nurse is preparing to administer disopyramide to a client. The nurse will exercise caution if which condition(s) is noted in the client's medical history? Select all that apply.
    A) Myasthenia gravis
    B) Diabetes
    C) Glaucoma
    D) Urinary retention
    E) Hypothyroidism

Answer: A, C, D

Rationale: Disopyramide is used cautiously in clients with myasthenia gravis, urinary retention, or glaucoma and in men with prostate enlargement. Individuals with diabetes should be cautious when taking propranolol as the blood glucose levels may elevate. Thyroid dysfunction is not noted to be a concern with antiarrhythmic medications.
Question format: Multiple Select
Chapter: 37
Learning Objective: 2
Cognitive Level: Apply
Client Needs: Physiological Integrity: Pharmacological Therapies
Integrated Process: Clinical Problem-solving Process (Nursing Process)
Reference: p. 480, Precautions

17. The nurse is preparing to administer flecainide. Which preadministration assessment(s) should the nurse **prioritize**? Select all that apply.
    A) Skin color
    B) Blood glucose
    C) Input and output
    D) Lung auscultation
    E) Jugular venous distention

Answer: A, D, E

Rationale: The preadministration assessment of the client's general condition should include observations such as skin color, JVD, and chest auscultation. Blood glucose is not normally necessary. Evaluating the intake and output would be vital if the client is acutely ill or receiving an antiarrhythmic parenterally.
Question format: Multiple Select
Chapter: 37
Learning Objective: 5
Cognitive Level: Apply
Client Needs: Physiological Integrity: Pharmacological Therapies
Integrated Process: Clinical Problem-solving Process (Nursing Process)
Reference: p. 481, Preadministration Assessment

18. The nurse is conducting an ongoing assessment of a client who has been administered lidocaine IV. Which finding(s) upon assessment should the nurse **prioritize**? Select all that apply.
    A) Heartburn
    B) Nervousness
    C) Hypotension
    D) Auditory changes
    E) Bradycardia

Answer: B, C, E

Rationale: The nurse must observe the client closely for signs of nervousness, hypotension, bradycardia, lightheadedness, nervousness, drowsiness, and proarrhythmic effect. Auditory changes are seen with quinidine, not lidocaine. Heartburn is associated with mexiletine.
Question format: Multiple Select
Chapter: 37
Learning Objective: 3
Cognitive Level: Apply
Client Needs: Physiological Integrity: Pharmacological Therapies
Integrated Process: Clinical Problem-solving Process (Nursing Process)
Reference: p. 485, Summary Drug Table

19. A nursing instructor is teaching a class illustrating the effects of class IB antiarrhythmics. The instructor will determine the class is successful when the students correctly choose which effect(s)? Select all that apply.
    A) Shortening of the action potential duration
    B) Depression of cardiac conduction
    C) Prolongation of the action potential
    D) Slowing of repolarization
    E) Increase in cardiac conduction

Answer: A, B

Rationale: Class IB antiarrhythmics shorten the action potential and selectively depress (rather than increase) cardiac conduction. Class III potassium channel blockers act by prolonging the action potential. Class III potassium channel blockers and class IV calcium channel blockers work by slowing repolarization.
Question format: Multiple Select
Chapter: 37
Learning Objective: 2
Cognitive Level: Apply
Client Needs: Physiological Integrity: Pharmacological Therapies
Integrated Process: Clinical Problem-solving Process (Nursing Process)
Reference: p. 478, Class IB Drugs

20. A nurse is assessing a client after treatment for arrhythmias who is now reporting fever, chills, and a sore throat. The nurse analyzes the laboratory results and notes a decrease in white cells. The nurse suspects which prescribed drug(s) is the source of the client's concerns? Select all that apply.
    A) Verapamil
    B) Lidocaine
    C) Sotalol
    D) Propafenone

E) Mexiletine

Answer: A, D, E

Rationale: Agranulocytosis has been reported with the use of verapamil, propafenone, and mexiletine. Signs of agranulocytosis include fever, chills, sore throat, and unusual bleeding or bruising. These are not reported adverse reactions to lidocaine or sotalol.
Question format: Multiple Select
Chapter: 37
Learning Objective: 5
Cognitive Level: Apply
Client Needs: Physiological Integrity: Reduction of Risk Potential
Integrated Process: Clinical Problem-solving Process (Nursing Process)
Reference: p. 485, Summary Drug Table

21. After teaching a group of nursing students about antiarrhythmics, the instructor determines that the teaching was successful when the students correctly choose which drug(s) as a class IA antiarrhythmic? Select all that apply.
A) Quinidine
B) Lidocaine
C) Propafenone
D) Disopyramide
E) Flecainide

Answer: A, D

Rationale: Class IA antiarrhythmics include disopyramide and quinidine. Lidocaine is a class IB drug. Propafenone and flecainide are class IC drugs.
Question format: Multiple Select
Chapter: 37
Learning Objective: 4
Cognitive Level: Understand
Client Needs: Physiological Integrity: Pharmacological Therapies
Integrated Process: Teaching/Learning
Reference: p. 485, Summary Drug Table

22. The nurse is preparing to administer disopyramide to a client. The nurse predicts the client may experience an increased serum level of disopyramide related to the previous administration of which drug(s)? Select all that apply.
A) Amiodarone
B) Quinidine
C) Rifampin
D) Cimetidine
E) Erythromycin

Answer: B, E

Rationale: Increased serum disopyramide levels occur when quinidine or erythromycin is given with disopyramide. Amiodarone and cimetidine increase serum flecainide levels. Rifampin decreases serum disopyramide levels.
Question format: Multiple Select
Chapter: 37
Learning Objective: 3
Cognitive Level: Apply
Client Needs: Physiological Integrity: Pharmacological Therapies
Integrated Process: Clinical Problem-solving Process (Nursing Process)
Reference: p. 481, Table 37.2 Interactions of Antiarrhythmics with Other Agents

23. The nurse identifies a nursing diagnosis of *malnutrition risk related to nausea* after the administration of antiarrhythmic therapy. Which instruction(s) would the nurse **prioritize** in the client's plan of care? Select all that apply.
A) Administering the drug with food
B) Having the client lie flat for 2 hours after eating
C) Scanning the client's bladder for distention
D) Offering small, frequent meals
E) Encouraging gradual position changes

Answer: A, D

Rationale: To combat nausea, the nurse would administer the drug with food and offer the client small, frequent meals. The nurse would encourage the client to keep their head at least 4 inches higher than feet when resting or reclining. Scanning for bladder distention would be appropriate if the client experienced urinary retention. Encouraging gradual position changes would be appropriate for the client at risk for injury from dizziness or lightheadedness.
Question format: Multiple Select
Chapter: 37
Learning Objective: 6
Cognitive Level: Apply
Client Needs: Physiological Integrity: Reduction of Risk Potential
Integrated Process: Clinical Problem-solving Process (Nursing Process)
Reference: p. 483, Malnutrition Risk

24. The nurse is caring for a client admitted to the telemetry unit with atrial fibrillation on the electrocardiogram (ECG) monitor. The nurse should perform which assessment(s) for safe administration of the first dose of quinidine? Select all that apply.
A) Obtain a history of allergies to medications and specific reactions.
B) Assess if the client has systemic lupus erythematosus or myasthenia gravis.
C) Check baseline renal and hepatic function before administering drug.
D) After administration, assess for tinnitus, hearing loss, headache, vertigo.

E) Determine if the client has had grapefruit or grapefruit juice recently.

Answer: A, B, C, D

Rationale: Before administering the first dose of quinidine, the nurse should assess baseline vitals with apical pulse, and baseline focused respiratory and cardiac assessments. The nurse should obtain a history of allergies to medications, and what symptoms occurred for a specific reaction. Asking if the client has lupus or myasthenia gravis, both contraindications to the drug, is important because quinidine will increase the symptoms of the diseases through its indirect anticholinergic effects. Assessing baseline renal function helps to make sure that the kidneys may sufficiently clear the medication through excretion. The liver function needs to be normal to sufficiently metabolize the drug. Grapefruit does not cause a proarrhythmic condition as seen when clients take amiodarone or calcium channel blockers. It is not a food contraindication for quinidine.
Question format: Multiple Select
Chapter: 37
Learning Objective: 5
Cognitive Level: Apply
Client Needs: Physiological Integrity: Pharmacological Therapies
Integrated Process: Clinical Problem-solving Process (Nursing Process)
Reference: p. 481, Preadministration Assessment

25. A group of nursing students are analyzing the various triggers for arrhythmias. The instructor concludes that the students grasp the information by correctly choosing which factor(s) as a potential trigger for an arrhythmia? Select all that apply.
A) Emotional stress
B) Heart disease
C) Electrolyte imbalance
D) Diabetes
E) Hypoxia

Answer: A, B, C, E

Rationale: Arrhythmias may occur as a result of heart disease, a disorder that affects cardiovascular function, emotional stress, hypoxia, and electrolyte imbalances. Diabetes is not recognized as a trigger for an arrhythmia.
Question format: Multiple Select
Chapter: 37
Learning Objective: 2
Cognitive Level: Understand
Client Needs: Physiological Integrity: Physiological Adaptation
Integrated Process: Teaching/Learning
Reference: p. 477, Antiarrhythmic agents

MULTI