

## CARDIOVASCULAR DISORDER

1. **A**

Rationale: Cardiogenic shock occurs with severe damage (more than 40%) to the left ventricle. Classic signs include hypotension, a rapid pulse that becomes weaker, decreased urine output, and cool, clammy skin. Respiratory rate increases as the body develops metabolic acidosis from shock. Cardiac tamponade is accompanied by distant, muffled heart sounds and prominent neck vessels. Pulmonary embolism presents suddenly with severe dyspnea accompanying the chest pain. Dissecting aortic aneurysms usually are accompanied by back pain.

2. **D**

Rationale: Metformin (Glucophage) needs to be withheld 48 hours before and after cardiac catheterization because of the injection of contrast medium during the procedure. If the contrast medium affects kidney function, with metformin in the system, the client would be at increased risk for lactic acidosis. The medications in options 1, 2, and 3 do not need to be withheld 48 hours before or after cardiac catheterization.

3. **B**

Rationale: Pulmonary edema is characterized by extreme breathlessness, dyspnea, air hunger, and the production of frothy, pink-tinged sputum. Auscultation of the lungs reveals crackles. Rhonchi and diminished breath sounds are not associated with pulmonary edema. Stridor is a crowing sound associated with laryngospasm or edema of the upper airway.

4. **B**

Rationale: The client who undergoes cardiac surgery is at risk for renal injury from poor perfusion, hemolysis, low cardiac output, or vasopressor medication therapy. Renal insult is signaled by decreased urine output and increased blood urea nitrogen and creatinine levels. The client may need medications to increase renal perfusion and possibly could need peritoneal dialysis or hemodialysis. No data in the question indicate the presence of hypovolemia, urinary tract infection, or glomerulonephritis.

5. **C**

Rationale: Sudden loss of electrocardiographic complexes indicates ventricular asystole or possibly electrode displacement. Accurate assessment of the client and equipment is necessary to determine the cause and identify the appropriate intervention. Options 1, 2, and 4 are unnecessary.

6. D

Rationale: Premature ventricular contractions can cause hemodynamic compromise. The shortened ventricular filling time with the ectopic beat leads to decreased stroke volume and, if frequent enough, to decreased cardiac output. The client may be asymptomatic or may feel palpitations. Premature ventricular contractions can be caused by cardiac disorders, states of hypoxemia, or by any number of physiological stressors, such as infection, illness, surgery, or trauma, and by intake of caffeine, nicotine, or alcohol.

7. C

Rationale: The client with uncontrolled atrial fibrillation with a ventricular rate more than 100 beats/min is at risk for low cardiac output because of loss of atrial kick. The nurse assesses the client for palpitations, chest pain or discomfort, hypotension, pulse deficit, fatigue, weakness, dizziness, syncope, shortness of breath, and distended neck veins.

8. A

Rationale: An expected outcome of aortoiliac bypass graft surgery is warmth, redness, and edema in the surgical extremity because of increased blood flow. Therefore options 2, 3, and 4 are incorrect interpretations.

9. A

Rationale: Following abdominal aortic aneurysm resection or repair, the nurse monitors the client for signs of renal failure. Renal failure can occur because often much blood is lost during the surgery and, depending on the aneurysm location, the renal arteries may be hypoperfused for a short period during surgery. The nurse monitors hourly intake and output and notes the results of daily blood urea nitrogen and creatinine levels. Urine output lower than 30 to 50 mL/hr is reported to the physician.

10. B

Rationale: Variant angina, or Prinzmetal's angina, is prolonged and severe and occurs at the same time each day, most often at rest. Stable angina is induced by exercise and relieved by rest or nitroglycerin tablets. Unstable angina occurs at lower and lower levels of activity or at rest, is less predictable, and is often a precursor of myocardial infarction.

11. B

Rationale: Common laboratory ranges for activated partial thromboplastin time are 20 to 36 seconds. Because the activated partial thromboplastin time should be 1.5

to 2.5 times the normal value, the client's activated partial thromboplastin time would be considered therapeutic if it was 60 seconds.

12. **D**

Rationale: Ecotrin is an aspirin-containing product and should be avoided. Alcohol consumption should be avoided by a client taking warfarin sodium. Taking prescribed medication at the same time each day increases client compliance. The Medic-Alert bracelet provides health care personnel emergency information.

13. **C**

Rationale: Tissue plasminogen activator is a thrombolytic. Hemorrhage is a complication of any type of thrombolytic medication. The client is monitored for bleeding. Monitoring for renal failure and monitoring the client's psychosocial status are important but are not the most critical interventions. Heparin is given after thrombolytic therapy, but the question is not asking about follow-up medications.

14. **C**

Rationale: Thiazide diuretics such as hydrochlorothiazide are sulfa-based medications, and a client with a sulfa allergy is at risk for an allergic reaction. Also, clients are at risk for hypokalemia, hyperglycemia, hypercalcemia, hyperlipidemia, and hyperuricemia.

15. **D**

Rationale: Nicotinic acid, even an over-the-counter form, should be avoided because it may lead to liver abnormalities. All lipid-lowering medications also can cause liver abnormalities, so a combination of nicotinic acid and cholestyramine resin is to be avoided. Constipation and bloating are the two most common side effects. Walking and the reduction of fats in the diet are therapeutic measures to reduce cholesterol and triglyceride levels.

16. **D**

Rationale: Flushing is a side effect of this medication. Aspirin or a nonsteroidal anti-inflammatory drug can be taken 30 minutes prior to taking the medication to decrease flushing. Alcohol consumption needs to be avoided because it will enhance this side effect. The medication should be taken with meals but this will decrease gastrointestinal upset; taking the medication with meals has no effect on the flushing. Clay-colored stools are a sign of hepatic dysfunction and should be immediately reported to the physician.

17. C

Rationale: Double vision, loss of appetite, and nausea are early signs of digoxin toxicity. Additional signs of digoxin toxicity include bradycardia, difficulty reading, other visual alterations such as green and yellow vision or seeing spots or halos, confusion, vomiting, diarrhea, decreased libido, and impotence.

18. A

Rationale: The antidote to heparin is protamine sulfate; it should be readily available for use if excessive bleeding or hemorrhage should occur. Vitamin K is an antidote for warfarin sodium. Aminocaproic acid is the antidote for thrombolytic therapy. Potassium chloride is administered for a potassium deficit.

19. B

Rationale: The client is experiencing an anaphylactic reaction to streptokinase, which is allergenic. The infusion should be stopped, the physician notified, and the client treated with epinephrine, antihistamines, and corticosteroids.

20. C

Rationale: Thrombolytic therapy is contraindicated in a number of preexisting conditions in which there is a risk of uncontrolled bleeding, similar to the case in anticoagulant therapy. Thrombolytic therapy also is contraindicated in severe uncontrolled hypertension because of the risk of cerebral hemorrhage. Therefore the nurse would report the results of the blood pressure to the physician before initiating therapy.

21. B, D, E

Rationale: Digoxin (Lanoxin) is a cardiac glycoside. The risk of toxicity can occur with the use of this medication. Toxicity can lead to life-threatening events and the nurse needs to monitor the client closely for signs of toxicity. Early signs of toxicity include gastrointestinal manifestations such as anorexia, nausea, vomiting, and diarrhea. Subsequent manifestations include headache, visual disturbances such as diplopia, blurred vision, yellow-green halos, photophobia, drowsiness, fatigue, and weakness. Cardiac rhythm abnormalities can also occur. The nurse also monitors the digoxin level. Therapeutic levels for digoxin range from 0.5 to 2 ng/mL.

22. C

Rationale: Chest pain is assessed by using the standard pain assessment parameters (e.g., characteristics, location, intensity, duration, precipitating and alleviating factors, and associated symptoms). Options 1, 2, and 4 may or may not

help discriminate the origin of pain. Pain of pleuropulmonary origin usually worsens on inspiration.

23. B

Rationale: On transfer from the coronary care unit, the client is allowed self-care activities and bathroom privileges. Supervised ambulation in the hall for brief distances is encouraged, with distances gradually increased (50, 100, 200 feet).

24. B

Rationale: Edema, the accumulation of excess fluid in the interstitial spaces, can be measured by intake greater than output and by a sudden increase in weight. Diuretics should be given in the morning whenever possible to avoid nocturia. Strict sodium restrictions are reserved for clients with severe symptoms.

25. C

Rationale: Heart failure is precipitated or exacerbated by physical or emotional stress, dysrhythmias, infections, anemia, thyroid disorders, pregnancy, Paget's disease, nutritional deficiencies (thiamine, alcoholism), pulmonary disease, and hypervolemia.

26. C

Rationale: Pulmonary edema causes the client to be extremely agitated and anxious. The client may complain of a sense of drowning, suffocation, or smothering.

27. D

Rationale: The serum potassium level is measured in the client receiving digoxin and furosemide. Heightened digoxin effect leading to digoxin toxicity can occur in the client with hypokalemia. Hypokalemia also predisposes the client to ventricular dysrhythmias.

28. A

Rationale: Sternotomy incision sites are assessed for signs and symptoms of infection, such as redness, swelling, induration, and drainage. Elevated temperature and white blood cell count after 3 to 4 days postoperatively usually indicate infection.

29. C

Rationale: The nurse should encourage regular use of pain medication for the first 48 to 72 hours after cardiac surgery because analgesia will promote rest, decrease myocardial oxygen consumption resulting from pain, and allow better participation in activities such as coughing, deep breathing, and ambulation. Options 2 and 4 will

not help in tolerating ambulation. Removal of telemetry equipment is contraindicated unless prescribed.

30. B

Rationale: Motion artifact, or "noise," can be caused by frequent client movement, electrode placement on limbs, and insufficient adhesion to the skin, such as placing electrodes over hairy areas of the skin. Electrode placement over bony prominences also should be avoided. Signal interference also can occur with electrode removal and cable disconnection.

31. A

Rationale: Ventricular tachycardia is a life-threatening dysrhythmia that results from an irritable ectopic focus that takes over as the pacemaker for the heart. The low cardiac output that results can lead quickly to cerebral and myocardial ischemia. Clients frequently experience a feeling of impending doom. Ventricular tachycardia is treated with antidysrhythmic medications, cardioversion (client awake), or defibrillation (loss of consciousness). Ventricular tachycardia can deteriorate into ventricular fibrillation at any time.

32. D

Rationale: Cough cardiopulmonary resuscitation (CPR) sometimes is used in the client with unstable ventricular tachycardia. The nurse tells the client to use cough CPR, if prescribed, by inhaling deeply and coughing forcefully every 1 to 3 seconds. Cough CPR may terminate the dysrhythmia or sustain the cerebral and coronary circulation for a short time until other measures can be implemented. Options 1, 2, and 3 will not assist in terminating the dysrhythmia.

33. A

Rationale: Carotid sinus massage is one maneuver used for vagal stimulation to decrease a rapid heart rate and possibly terminate a tachydysrhythmia. The others include inducing the gag reflex and asking the client to strain or bear down. Medication therapy often is needed as an adjunct to keep the rate down or maintain the normal rhythm. Options 2, 3, and 4 are incorrect descriptions of this procedure.

34. B

Rationale: Nursing responsibilities after cardioversion include maintenance first of a patent airway, and then oxygen administration, assessment of vital signs and level of consciousness, and dysrhythmia detection.

35. B

Rationale: The nurse or rescuer puts two large adhesive patch electrodes on the client's chest in the usual defibrillator positions. The nurse stops cardiopulmonary resuscitation and orders anyone near the client to move away and not touch the client. The defibrillator then analyzes the rhythm, which may take up to 30 seconds. The machine then indicates if defibrillation is necessary.

36. C

Rationale: An automatic internal cardioverter-defibrillator (AICD) detects and delivers an electrical shock to terminate life-threatening episodes of ventricular tachycardia and ventricular fibrillation. These devices are implanted in clients who are considered high risk, including those who have survived sudden cardiac death unrelated to myocardial infarction, those who are refractive to medication therapy, and those who have syncope episodes related to ventricular tachycardia.

37. B

Rationale: In the first several hours after insertion of a permanent or a temporary pacemaker, the most common complication is pacing electrode dislodgment. The nurse helps prevent this complication by limiting the client's activities of the arm on the side of the insertion site.

38. C

Rationale: Pulmonary embolism is a life-threatening complication of deep vein thrombosis and thrombophlebitis. Chest pain is the most common symptom, which is sudden in onset, and may be aggravated by breathing. Other signs and symptoms include dyspnea, cough, diaphoresis, and apprehension.

39. B

Rationale: Hypersensitivity or a sensation of "pins and needles" in the surgical limb may indicate temporary or permanent nerve injury following surgery. The saphenous vein and saphenous nerve run close together in the distal third of the leg. Because complications from this surgery are relatively rare, this symptom should be reported.

40. A

Rationale: After inferior vena cava filter insertion, the nurse inspects the surgical site for bleeding and signs and symptoms of infection. Otherwise, care is the same as for any other postoperative client.

41. C

Rationale: A cardiac catheterization requires an informed consent because it involves injection of a radiopaque dye into the blood vessel. The risk of allergic

reaction and possible anaphylaxis is a concern and the presence of allergies must be assessed before the procedure. Although options 1, 2, and 4 are accurate, they are not the most critical preprocedure assessments.

42. **A**

Rationale: An expected outcome of surgery is warmth, redness, and edema in the surgical extremity because of increased blood flow. Therefore, options 2, 3, and 4 are incorrect interpretations.

43. **D**

Rationale: Following pericardiocentesis, a rise in blood pressure and a fall in central venous pressure are expected. The client usually expresses immediate relief. Heart sounds are no longer muffled or distant.

44. **B**

Rationale: Not all clients with abdominal aortic aneurysm exhibit symptoms. Those who do may describe a feeling of the "heart beating" in the abdomen when supine or being able to feel the mass throbbing. A pulsatile mass may be palpated in the middle and upper abdomen. A systolic bruit may be auscultated over the mass. Hyperactive bowel sounds are not related specifically to an abdominal aortic aneurysm.

45. **A**

Rationale: The magnetic fields used for magnetic resonance imaging (MRI) can deactivate the pacemaker. Options 2, 3, and 4 are not contraindications for an MRI.

46. **D**

Rationale: B-Blockers such as metoprolol slow conduction of impulses through the AV node and decrease the heart rate. In rapid atrial fibrillation, the goal first is to slow the ventricular rate and improve the cardiac output and then attempt to restore normal sinus rhythm.

47. **C**

Rationale: Spironolactone is a potassium-sparing diuretic and competes with aldosterone at receptor sites in the distal tubule, resulting in excretion of sodium, chloride, and water and retention of potassium and phosphate. Use of the medications noted in options 1, 2, and 4 could result in hypokalemia.

48. **A**

Rationale: Therapeutic levels for digoxin range from 0.5 to 2 ng/mL. Therefore, options 2, 3, and 4 are incorrect



49. D

Rationale: Signs of toxicity from procainamide include confusion, dizziness, drowsiness, decreased urination, nausea, vomiting, and tachydysrhythmias. If the client complains of dizziness, the nurse should assess the vital signs first. Although options 2 and 3 may be interventions, these would be done after the vital signs are taken. Nitroglycerin is a vasodilator and will lower the blood pressure.

50. C

Rationale: Tea and coffee are stimulants and mild diuretics. These are a poor choice for hydration. Taking the medication at the same time each day improves compliance. Because furosemide is a diuretic, the morning is the best time to take the medication so as not to interrupt sleep. Notification of the health care provider is appropriate if edema is noticed in the hands, feet, or face or if the client is short of breath. Sitting up slowly prevents postural hypotension.

51. D

Rationale: The prothrombin time will assess for the therapeutic effect of warfarin sodium (Coumadin), and the activated partial thromboplastin time (aPTT) will assess the therapeutic effect of heparin. Hematocrit and hemoglobin values assess red blood cell concentrations. Baseline assessment, including an aPTT value, should be completed, as well as ongoing daily aPTT values while the client is taking heparin. Heparin doses are determined based on the result of the aPTT.

52. B

Rationale: To help prevent tolerance, clients need a 12-hour "no-nitrate" time, sometimes referred to as a pharmacological vacation away from the medication. Options 1, 3, and 4 are incorrect.

53. B

Rationale: This is a therapeutic, nonjudgmental response. The statement reflects the family's concern but remains nonjudgmental. Option 1 dismisses the family's concerns and disempowers the family. Option 3 creates doubt about the physician's practice without actually knowing the circumstances. Option 4 is argumentative and nontherapeutic.

54. C

Rationale: The client receiving dopamine therapy should be assessed for ineffective tissue perfusion related to peripheral vasoconstriction. Options 1, 2, and 4 are not related directly to this medication therapy.

55. B

Rationale: Bumetanide (Bumex) is a diuretic. The paroxysmal nocturnal dyspnea may be due to increased venous return when the client is lying in bed, and the client needs diuresis. Propranolol is a b-blocker, lidocaine is an antiarrhythmic, and streptokinase is a thrombolytic.

56. B

Rationale: The therapeutic range for prothrombin time is 1.5 to 2 times the control for clients at high risk for thrombus. Based on the client's control value, the therapeutic range for this individual would be 16.5 to 22 seconds. Therefore the result is within the therapeutic range.

57. D

Rationale: Enalapril (Vasotec) is an angiotensin-converting enzyme inhibitor. Angioedema is an adverse effect. Swelling of the tongue and lips can result in airway occlusion. Nausea, insomnia, and a cough can occur as side (not adverse) effects of the medication.

58. B

Rationale: Thrombolytic agents dissolve existing clots, and bleeding can occur anywhere in the body. The nurse monitors for any obvious signs of bleeding and also for occult signs of bleeding, which would include hemoglobin and hematocrit values, blood pressure and pulse, neurological signs, assessment of abdominal and back pain, and the presence of blood in the urine or stool.

59. D, E, F

Rationale: The usual guidelines for administering nitroglycerin tablets for chest pain include administering one tablet every 5 minutes PRN for chest pain, for a total dose of three tablets. If the client does not obtain relief after taking a third dose of nitroglycerin, the physician is notified. Because the client is still complaining of chest pain, the nurse would administer a second nitroglycerin tablet. The nurse would assess the client's pain level and check the client's blood pressure before administering each nitroglycerin dose. There are no data in the question that indicate the need to call a Code Blue. Additionally, it is not necessary to contact the client's family unless the client has requested this.

60. B

Rationale: Audible expiratory wheezes may indicate a serious adverse reaction, bronchospasm.  $\beta$ -Blockers may induce this reaction, particularly in clients with chronic obstructive pulmonary disease or asthma. Normal decreases in blood pressure and heart rate are expected. Insomnia is a frequent mild side effect and should be monitored.

