

CHAPTER 6
CARDIOVASCULAR PROBLEMS

- 1. You are working in the emergency department (ED) when a patient arrives, complaining of substernal and left arm discomfort that has been going on for 3 hours. All of these baseline laboratory tests are drawn. Which one will be most useful in determining whether you should anticipate implementing the acute coronary syndrome (ACS) standard orders?**
 - a. Creatine kinase-MB
 - b. Troponin I
 - c. Myoglobin
 - d. C-reactive protein

- 2. You are monitoring a 53-year-old patient who is receiving a stress test using a treadmill. Which of these patient symptoms will require most immediate action?**
 - a. Blood pressure 152/88
 - b. Sinus tachycardia, rate 134
 - c. Oxygen saturation 91%
 - d. Chest pain level 3 (0-10 scale)

- 3. You are teamed with an LPN/LVN in caring for a group of patients on the cardiac unit. Which action by the LPN/LVN indicates you need to intervene immediately?**
 - a. The LPN/LVN assists the patient to the bathroom 30 minutes after the patient has returned from a coronary arteriogram.
 - b. The LPN/LVN checks a patient's blood pressure before administering nitroglycerin (Nitro-Stat) 0.4 mg SL.
 - c. The LPN/LVN returns a patient to bed after the patient's heart rate increases from 72 to 96 while ambulating in the hall.
 - d. The LPN/LVN brings breakfast to a patient who is scheduled for an echocardiogram later in the morning.

- 4. An otherwise healthy 28-year-old woman has just been diagnosed with stage 1 hypertension. The patient is 5'6" tall and weighs 115 pounds. She says she has a glass of wine once or twice a week and eats "fast food" frequently because of her busy schedule. Which topic will you plan on including in the patient teaching plan?**
 - a. Benefits and adverse effects of beta-blockers
 - b. Adverse effects of alcohol on blood pressure
 - c. Methods for decreasing dietary caloric intake
 - d. Low-sodium food choices when eating out

- 5. You make a home visit to evaluate a hypertensive patient who has been taking enalapril (Vasotec) for 3 weeks. Which information indicates that you need to contact the physician about a change in the drug therapy?**
 - a. Patient complains of frequent urination.
 - b. Patient's blood pressure is 138/86.
 - c. Patient coughs often during the visit.

- d. Patient complains of occasional dizziness.
6. **While completing a nursing admission history, you obtain this information about the patient's cardiovascular risk factors: patient's mother and two siblings have had myocardial infarctions. Patient smokes and has a 20 pack/year history of cigarette use. Her work as a mail carrier involves a lot of walking. She takes metoprolol (Lopressor) for hypertension and her blood pressure has been in the range of 130/60 to 140/85. Which intervention will be most important to include in the discharge plan for this patient? (Choose all that apply.)**
- a. Refer to community programs that assist in smoking cessation.
 - b. Teach about the impact of family history on cardiovascular risk.
 - c. Educate about the need for a change in antihypertensive therapy.
 - d. Assist in reducing the stress associated with her cardiovascular risk.
7. **You are the charge nurse for the coronary care step-down unit. Which patient is best to assign to an RN who has floated for the day from the general medical-surgical unit?**
- a. Patient requiring discharge teaching about the coronary artery stenting prior to going home with spouse today
 - b. Patient receiving IV furosemide (Lasix) to treat acute left ventricular failure.
 - c. Patient just transferred from the radiology department after a coronary angioplasty.
 - d. Patient just admitted with unstable angina and who has orders for a heparin infusion and aspirin
8. **At 9:00 PM, you admit a 63-year-old with a diagnosis of acute myocardial infarction (AMI) to the ED. The physician is considering the use of fibrinolytic therapy with tissue plasminogen activator (tPA, alteplase [Activase]). Which information is most important to communicate to the physician?**
- a. The patient was treated with alteplase about 8 months ago.
 - b. The patient takes famotidine (Pepcid) for esophageal reflux.
 - c. The patient has T wave inversions on the 12-lead ECG.
 - d. The patient has had continuous chest pain since 1:00PM.
9. **You are working with an experienced nursing assistant and LPN/LVN in caring for a group of patients. You have developed a nursing diagnosis of Activity Intolerance related to fatigue and chest pain for a patient who had an acute myocardial infarction 3 days ago. Which of these nursing activities included in the care of plan is best delegated to the LPN/LVN?**
- a. Administer nitroglycerin (Nitro-Stat) if chest discomfort occurs during patient activities.
 - b. Monitor pulse, blood pressure, and oxygen saturation before and after patient ambulation.
 - c. Teach the patient energy conservation techniques to decrease myocardial oxygen demand.
 - d. Explain the rationale for alternating rest periods with exercise to the patient and family.

- 10. You are working in the ED caring for a patient who was just admitted with left anterior chest pain, possible unstable angina or myocardial infarction. Which nursing activity will you accomplish first?**
- Auscultate heart sounds.
 - Administer sublingual nitroglycerin.
 - Insert an IV catheter.
 - Obtain a brief patient health history.
- 11. An elderly patient on the coronary step-down unit tells you that he does not want to take the ordered Docusate sodium (Colace) because he does not have any problems with constipation. Which intervention is most appropriate?**
- Document the medication on the patient's chart as "refused".
 - Mix the medication with food and administer it.
 - Explain that his decreased activity level may cause constipation.
 - Reinforce that the physician has ordered the Colace for a reason.
- 12. You have given morphine sulfate 4 mg IV to a patient who is having an AMI. When evaluating the response 5 minutes after giving the medication, which of these data indicate a need for immediate further action?**
- The blood pressure decreases from 114/65 to 106/58.
 - The respiratory rate drops from 18 to 12 breaths/minute.
 - The patient complains of feeling lightheaded and dizzy.
 - The patient still has chest pain at a level 1 (0-10 scale).
- 13. You are preparing to implement discharge teaching about heart healthy diet and activity levels for a patient who has had a myocardial infarction and her husband. The patient says, "I don't see why I need to listen to this information. I don't think that I will need to make any changes right now in my lifestyle." Which response is most appropriate?**
- "Do you think your family may want you to make some lifestyle changes?"
 - "Can you tell me why you don't feel like you need to make any changes?"
 - "You are still in the stage of denial, but you will want this information later on."
 - "Even if you don't want to change, it's important that you have this teaching."
- 14. You are caring for a hospitalized patient with heart failure who is receiving captopril (Capoten) and spironolactone (Aldactone). Which laboratory value will be most important to monitor?**
- Sodium
 - Blood urea nitrogen (BUN)
 - Potassium
 - Alkaline phosphatase (ALP)
- 15. A patient with atrial fibrillation is ambulating in the hallway on the coronary step-down unit and suddenly tells you, "I feel dizzy." Which action should you take first?**
- Help the patient to sit down.

- b. Check the patient's apical pulse.
- c. Take the patient's blood pressure.
- d. Have the patient breathe deeply.

16. At 10:00 AM, a patient receives a new order for transesophageal echocardiography (TEE) as soon as possible. Which action will you take first?

- a. Make the patient NPO.
- b. Teach the patient about the procedure.
- c. Start an intravenous line.
- d. Attach the patient to a cardiac monitor

17. You assess a patient who has just returned to the recovery area after having a coronary arteriogram. Which of these data is of most concern?

- a. Blood pressure is 144/78.
- b. Pedal pulses are palpable at +1.
- c. Left groin has a 3-cm ecchymotic area.
- d. Apical pulse is 122 and regular.

18. You are working in an outpatient clinic where many vascular diagnostic tests are performed. Which of these tasks associated with vascular testing will be most appropriate to delegate to an experienced nursing assistant?

- a. Measure ankle and brachial pressures for a patient having the ankle-brachial index calculated.
- b. Check blood pressure and pulse every 10 minutes for a patient who is having exercise testing.
- c. Take an allergy history for a patient who is scheduled for left leg contrast venography.
- d. Provide brief patient teaching for a patient who will have a right subclavian vein Doppler study.

19. While working on the cardiac step-down unit, you are precepting a new graduate RN who has been in a 6-week orientation program. Which of these patients will be best to assign to the new graduate?

- a. A 19-year-old admitted with a rheumatic fever who needs discharge teaching prior to going home with a roommate today.
- b. A 33-year-old admitted a week ago with endocarditis who will be having ceftizoxime (Cefizox) 2 g IV
- c. A 50-year-old with newly diagnosed stable angina who has many questions about medications and nursing care
- d. A 75-year-old who has just been transferred to the unit after having coronary artery bypass grafting yesterday.

20. You are observing the cardiac rhythms for patients in the coronary care unit. Which of these patients will need immediate intervention?

- a. A patient admitted with heart failure who has atrial fibrillation with a rate of 88 while at rest
- b. A patient with a newly implanted demand ventricular pacemaker, who has occasional periods of sinus rhythm, rate 90 to 100
- c. A patient who has just arrived on the unit with an acute MI and has sinus rhythm, rate 76, with frequent premature ventricular contractions

- d. A patient who recently started taking atenolol (Tenormin) and has a first-degree heart block, rate 58
- 21. A diagnosis of ventricular fibrillation is identified for an unresponsive 50-year-old patient who has just arrived in the ED. Which action will you take first?**
- Defibrillate at 200 Joules.
 - Start cardiopulmonary resuscitation (CPR).
 - Administer epinephrine (Adrenalin) 1 mg IV.
 - Intubate and manually ventilate.
- 22. Two weeks ago, a 63-year-old patient with heart failure received a new prescription for carvedilol (Coreg) 3.125 mg orally. Upon evaluation in the outpatient clinic you find these symptoms. Which is of most concern?**
- Complaints of increased fatigue and dyspnea
 - Weight increase of 0.5 kg in 2 weeks
 - Bibasilar crackles audible in the posterior chest
 - Sinus bradycardia, rate 50, as evidenced by ECG
- 23. You have just received change-of-shift report about these patients on the coronary step down unit. Which one will you assess first?**
- A 26-year-old with heart failure caused by congenital mitral stenosis who is scheduled for balloon valvuloplasty later today
 - A 45-year-old with constrictive cardiomyopathy who developed acute dyspnea and agitation about 1 hour before the shift change
 - A 56-year-old who had a coronary angioplasty and stent placement yesterday and has complained of occasional chest pain since the procedure
 - A 44-year-old who transferred from intensive care 2 days ago after coronary artery bypass grafting and has a temperature of 100.6° F
- 24. As the charge nurse in a long-term-care (LTC) facility that has RN, LPN/LVN, and nursing assistant staff members, you have developed a plan for ongoing assessment of all residents with a diagnosis of heart failure. Which of these activities included in the plan is most appropriate to delegate to an LPN/LVN team leader?**
- Weigh all residents with heart failure each morning.
 - Listen to lung sounds and check for edema weekly.
 - Review all heart failure medications with residents every month.
 - Update activity plans for residents with heart failure every quarter.
- 25. During a home visit to an 88-year-old patient who is taking digoxin (Lanoxin) 0.25 mg daily to help control the rate of atrial fibrillation, you obtain this assessment information. Which assessment indicates that you need to notify the physician?**
- The patient's apical pulse is 68 and very irregular.
 - The patient takes the digoxin with meals.
 - The patient's vision is becoming "fuzzy".
 - The patient has lung crackles that clear after coughing.
- 26. You are ambulating a cardiac surgery patient who has telemetry cardiac monitoring when another staff member tells you that the**

patient has developed a supraventricular tachycardia with a rate of 146 beats per minute. In which order will you take these actions?

- a. Call the patient's physician.
- b. Have the patient sit down.
- c. Check the patient's blood pressure.
- d. Administer oxygen by nasal cannula.

27. The echocardiogram indicates a large thrombus in the left atrium of a patient admitted with heart failure. During the night, the patient complains of severe, sudden onset left foot pain. You note that no pulse is palpable in the left foot and that this it is cold and pale. Which action should you take next?

- a. Lower the patient's left foot below heart level.
- b. Administer oxygen at 4 L/minute to the patient.
- c. Notify the patient's physician about the assessment data.
- d. Check the patient's vital signs and oximetry.

28. A long-term-care resident with venous stasis ulcers is treated with Unna's boot. Which of the nursing activities included in the resident's care is best for you to delegate to a nursing assistant?

- a. Monitor capillary perfusion once every 6 hours.
- b. Teach family members the signs of infection.
- c. Evaluate foot sensation and movement each shift.
- d. Assist patient with cleaning around Unna's boot.

29. During the initial post-operative assessment of a patient who has just transferred to the post-anesthesia care unit (PACU) after repair of an abdominal aortic aneurysm, you obtain all of these data. Which has the most immediate implications for the patient's care?

- a. The arterial line indicates a blood pressure of 190/112.
- b. The monitor shows sinus rhythm with frequent PACs.
- c. The patient does not respond to verbal stimulation
- d. The patient's urine output is 100 mL of amber urine.

30. As the manager of a cardiac surgery unit, you are responsible for developing a standardized care plan for the post-operative care of patients having cardiac surgery. Which of these nursing activities included in the care plan will need to be done by an RN?

- a. Remove chest and leg dressings on the second post-operative day and clean the incisions with antibacterial swabs.
- b. Reinforce patient and family teaching about the need to deep breathe and cough at least every 2 hours while awake.
- c. Develop individual plan for discharge teaching based on discharge medications and needed lifestyle changes.
- d. Administer oral analgesic medications as needed prior to assisting patient out of bed on first post-operative day.

RATIONALE

CARDIOVASCULAR PROBLEMS

- 1. ANSWER B** – Cardiac troponins are elevated 3 hours after the onset of ACS (Unstable angina or myocardial infarction) and are very specific to cardiac muscle injury or infarction. Although level of creatine kinase-MB and myoglobin also increase with myocardial infarction, the increases occur later and/or not as specific to myocardial damage as troponins. Elevated C-reactive protein levels are a risk factor for coronary artery disease, but are not useful in detecting acute injury or infarction. **Focus:** Prioritization
- 2. ANSWER D** – Chest pain in a patient having a stress test indicates myocardial ischemia and is an indication to stop the testing to avoid ongoing ischemia, injury or infarction. Moderate elevations in blood pressure, heart rate, and respiratory rate are a normal response to exercise and are expected during stress testing. **Focus:** Prioritization
- 3. ANSWER A** – Because the femoral artery is usually used as the access site during a coronary arteriogram, patients are required to remain on bedrest (with the head only slightly elevated) for several hours after the procedure to avoid arterial bleeding at the site. Even if another arterial site is used, getting patients out of bed only 30 minutes after the procedure would be avoided. The other patient care provided by the LPN/LVN is appropriate. Blood pressure should be checked prior to administration of nitroglycerin. A heart rate increase of more than 20 beats/minute indicates poor cardiac compensation for exercise. Since echocardiography is noninvasive, there is no need to withhold meals before this procedure. **Focus:** Prioritization
- 4. ANSWER D** – Lifestyle management, including sodium reduction, is appropriate initial therapy for a patient with stage 1 hypertension and no cardiovascular disease or risk factors. Antihypertensive medications would not be prescribed unless lifestyle changes were attempted for several months without a decrease in blood pressure. This patient's assessment data indicate that she is not overweight and does not drink excessive alcohol, so discussing changes in these factors would not be appropriate. **Focus:** Prioritization
- 5. ANSWER C** – A persistent and irritating cough (caused by accumulation of bradykinin) is a possible adverse effect of angiotensin-converting enzyme inhibitors such as enalapril and is a common reason for changing to another medication category such as the angiotensin II receptor blockers. The other assessment data indicate a need for more patient teaching and ongoing monitoring, but would not require a change in therapy. **Focus:** Prioritization
- 6. ANSWER A** – The patient's major modifiable risk factor is her ongoing smoking. The family history is significant, but changes in behavior will not impact this risk factor. The goal when treating hypertension which medications is reduction of the blood pressure that stress is a risk factor for this patient. **Focus:** Prioritization
- 7. ANSWER B** – An RN who worked on a medical-surgical unit would be familiar with left ventricular failure, the administration of IV medications, and the ongoing monitoring for therapeutic and adverse effects of furosemide. The other patients need to be cared for by RNs who are more familiar with the care of patients with

acute coronary syndrome and with collaborative treatments such as coronary angioplasty and coronary artery stenting. **Focus:** Assignment

8. **ANSWER D** – Because continuous chest pain lasting for more than 6 hours indicates that reversible myocardial injury has progressed to irreversible myocardial necrosis, fibrinolytic therapy is usually not utilized for patients with chest pain that has lasted for more than 6 hours (in some centers, 12 hours). The other information is also important to communicate, but would not impact the decision about alteplase use. **Focus:** Prioritization
9. **ANSWER A** – Administration of nitroglycerin and appropriate patient monitoring for therapeutic and adverse effects are included in LPN/LVN education and scope of practice. Monitoring of blood pressure, pulse, and oxygen saturation should be delegated to the nursing assistant. Patient teaching requires RN-level education and scope of practice. **Focus:** Delegation
10. **ANSWER B** – The priority for a patient with unstable angina or myocardial infarction is treatment of pain. It is important to remember to assess vital signs prior to administering sublingual nitroglycerin. The other activities also should be accomplished rapidly, but are not as high a priority. **Focus:** Prioritization
11. **ANSWER C** – The best option in this situation is to educate the patient about the purpose of the Docusate sodium (to counteract the negative effects of immobility and narcotic use on peristalsis.) Charting the medication as “refused” or telling the patient that he should take the Docusate sodium simply because it was ordered are possible actions, but not as appropriate as patient education. It is illegal to administer a medication to a patient who is unwilling to take it, unless someone else has health care power of attorney and has authorized the medication.
12. **ANSWER D** – The goal in pain management for the patient who is having an AMI is to completely eliminate the pain. Even pain rated at a level 1/10 should be treated with additional morphine sulfate (although possibly a lower dose). The other data indicate a need for ongoing assessment for the possible adverse effects of hypotension, respiratory depression, and dizziness, but do not require further action at this time. **Focus:** Prioritization
13. **ANSWER B** – For behavior to change, the patient must be aware of the need to make changes. This response acknowledges the patient’s feelings, current diet, and activity levels and may increase the willingness to learn. The other responses (while possibly accurate) indicate an intention to teach whether the patient is ready or not and are not likely to lead to changes in patient lifestyle. **Focus:** Prioritization
14. **ANSWER C** – Hyperkalemia is a common adverse effect of both angiotensin-converting enzyme inhibitors and potassium-sparing diuretics. The other laboratory values may be affected by these medications, but are not as likely or as potentially life-threatening. **Focus:** Prioritization
15. **ANSWER A** – The first priority for an ambulating patient who is dizzy is to prevent falls, which could lead to serious injury. The other actions are also appropriate, but not as high a priority. **Focus:** Prioritization

- 16.ANSWER A** – Because TEE is performed after the throat is numbed using a topical anesthetic and possibly intravenous sedation, it is important that the patient be NPO for at least 4 to 6 hours prior to the test. The other actions also will need to be accomplished for the TEE, but will not affect how quickly the examination can be scheduled. **Focus:** Prioritization
- 17.ANSWER D** – The most common complication after coronary arteriogram is hemorrhage and the earliest indication of hemorrhage is an increase in heart rate. The other data may also indicate a need for ongoing assessment, but the increase in heart rate is of most concern. **Focus:** Prioritization
- 18.ANSWER A** – Measurement of ankle and brachial blood pressures for ankle-brachial index calculation is within the nursing assistant's scope of practice. Calculation of the ankle-brachial index and any referrals or discussion with the patient are the responsibility of the supervising RN. The other examinations require more complex assessment or patient teaching, which should be done by an experienced RN. **Focus:** Delegation
- 19.ANSWER B** – The new RN's education and hospital orientation would have included safe administration of IV medications. The preceptor will be responsible for supervision of the new graduate in assessments and patient care. The other patients require more complex assessment or patient teaching by an RN with experience in caring for patients with these diagnoses. **Focus:** Assignment
- 20.ANSWER C** – Premature ventricular contractions (PVCs) occurring in the setting of acute myocardial injury or infarction can lead to ventricular tachycardia and/or ventricular fibrillation (cardiac arrest), so rapid treatment is necessary. The other patients also have dysrhythmias, which will require further assessment but are not as immediately life-threatening as the PVCs in the setting of myocardial infarction. **Focus:** Prioritization
- 21.ANSWER A** – The only effective treatment for ventricular fibrillation is defibrillation. If defibrillation is unsuccessful at converting the patient into a perfusing rhythm, CPR should be initiated. Administration of medications and intubation are later interventions. Determination of which of these interventions will be used first depends on other factors, such as whether an IV line is available. **Focus:** Prioritization
- 22.ANSWER D** – When therapy with carvedilol is started for patients with heart failure, it is expected that their heart failure symptoms will initially become worse for a few weeks, so the increased fatigue, dyspnea, weight gain, and crackles do not indicate a need to discontinue the medication at this time. However, the slow heart rate does require further follow-up, since bradycardia may progress to more serious dysrhythmias such as heart block. **Focus:** Prioritization
- 23.ANSWER B** – The patient's symptoms indicate acute hypoxia, so immediate further assessments (such as oxygen saturation, neurologic status monitoring, and breath sounds) are indicated. The other patients also should be assessed soon, because they are likely to require nursing actions such as medication administration and teaching but are not as acutely ill as the dyspneic patient. **Focus:** Prioritization

- 24.ANSWER B** – LPN/LVN education and scope of practice include data collection such as listening to lung sounds and checking for peripheral edema. Weighing the residents should be delegated to nursing assistants. Reviewing medications with residents and planning appropriate activity levels are nursing actions that require RN-level education and scope of practice. **Focus:** Delegation
- 25.ANSWER C** – The patient’s visual disturbances may be a sign of digoxin toxicity. The nurse should notify the physician and obtain an order for a digoxin level. An irregular pulse is expected with atrial fibrillation; there are no contraindications to taking digoxin with food; and crackles that clear with coughing are indicative of atelectasis, not worsening heart failure. **Focus:** Prioritization
- 26.ANSWER B, D, C, A-** The primary goal is to decrease the cardiac ischemia that is the likely cause of the patient’s tachycardia. This would be most rapidly accomplished by decreasing the workload of the heart and administering supplement oxygen. Changes in blood pressure indicate the impact of the tachycardia on cardiac output and tissue perfusion. Finally, the physician should be notified about the patient’s response to activity since changes in therapy may be indicated. **Focus:** Prioritization
- 27.ANSWER C** – The patient’s symptoms indicate that acute arterial occlusion has occurred. Because it is important to return blood flow to the foot rapidly, the physician should be notified immediately so that interventions such as fibrinolytic therapy, balloon angioplasty, or surgery can be initiated. Changing the position of the foot and improving blood oxygen saturation will not improve oxygen delivery to the foot. The patient’s vital signs are not **Focus:** Prioritization
- 28.ANSWER D** – Assisting with hygiene is included in the role and education for nursing assistants. Data collection or assessment about perfusion to the foot and patient teaching are appropriate activities for licensed nursing staff members. **Focus:** Delegation
- 29.ANSWER A** – Elevated blood pressure in the immediate post-operative period puts stress on the graft rupture and/or hemorrhage, so it is important to lower the blood pressure quickly. The other data also indicate the need for ongoing assessments and possible interventions, but do not pose an immediate threat to patient’s hemodynamic stability. **Focus:** Prioritization
- 30.ANSWER C** – Development of plans for patient care or teaching requires RN level education and is the responsibility of the RN. Wound care, medication administration, assisting with ambulation, and reinforcing previously taught information are activities that can be delegated to other nursing personnel, under the supervision of the RN. **Focus:** Delegation