

# Cardiac-Vascular Nursing (CVRN) Practice Exam (Sample)

## Study Guide



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## **Questions**

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- 1. What characterizes the pathophysiology of atherosclerosis?**
  - A. Inflammation of the heart valves**
  - B. Buildup of plaques in the arterial walls**
  - C. Dilation of blood vessels**
  - D. Increased cardiac output**
- 2. What intervention is essential for primary prevention of coronary artery disease?**
  - A. Regular use of aspirin**
  - B. Screening for diabetes**
  - C. Implementing lifestyle changes**
  - D. Invasive surgical procedures**
- 3. When assessing a patient with leg pain and tense calf muscles, why is it important to know when the symptoms began?**
  - A. Irreversible anoxic injury to muscles and nerves can occur in as few as four hours.**
  - B. Compartment syndrome develops days after arterial occlusion.**
  - C. Arterial thrombosis is sudden and emergent, and an embolism develops gradually.**
  - D. Metabolic alkalosis from muscle swelling is cardiotoxic.**
- 4. Which symptom is typical of an aortic dissection?**
  - A. Gradual chest pain**
  - B. Sudden severe chest or back pain**
  - C. Persistent cough**
  - D. Fatigue**
- 5. Name a common pharmacological treatment for heart failure.**
  - A. Anticoagulants**
  - B. Diuretics**
  - C. Beta-blockers**
  - D. ACE inhibitors**

- 6. Which assessment finding could indicate left-sided heart failure?**
- A. Jugular venous distention**
  - B. Peripheral edema**
  - C. Shortness of breath**
  - D. Ascites**
- 7. Why is cholesterol screening important for adults?**
- A. To evaluate kidney function**
  - B. To assess risk for heart disease and determine treatment needs**
  - C. To monitor liver enzymes**
  - D. To detect diabetes**
- 8. What does the presence of distended jugular veins in a supine patient indicate?**
- A. Decreased venous return**
  - B. Increased central venous pressure**
  - C. Increased pulmonary artery capillary pressure**
  - D. Left-sided heart failure**
- 9. Which of the following lifestyle modifications can benefit heart health?**
- A. Increased alcohol consumption**
  - B. Quitting smoking**
  - C. Overeating on high-caloric snacks**
  - D. Decreasing hydration intake**
- 10. What condition is indicated by a stat EKG revealing ST-segment elevation?**
- A. Stable angina**
  - B. Anemia**
  - C. Anterior ST elevation MI**
  - D. Heart failure**

## **Answers**

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1. B
2. C
3. A
4. B
5. B
6. C
7. B
8. B
9. B
10. C

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## **Explanations**

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## 1. What characterizes the pathophysiology of atherosclerosis?

- A. Inflammation of the heart valves
- B. Buildup of plaques in the arterial walls**
- C. Dilation of blood vessels
- D. Increased cardiac output

The pathophysiology of atherosclerosis is characterized by the buildup of plaques in the arterial walls. This process begins with endothelial injury, which can be caused by a variety of factors, including hypertension, hyperlipidemia, smoking, and inflammation. Once the endothelium is damaged, lipids, particularly low-density lipoprotein (LDL) cholesterol, begin to accumulate in the arterial wall. This accumulation incites an inflammatory response, and immune cells such as macrophages are attracted to the site. As these macrophages engulf the oxidized LDL particles, they transform into foam cells, which contribute to the formation of fatty streaks. Over time, the fatty streaks develop into more complex lesions known as atherosclerotic plaques. These plaques consist of a core of lipids and dead cells surrounded by a fibrous cap. As atherosclerosis progresses, the plaques can become unstable and rupture, potentially leading to thrombus formation and acute cardiovascular events such as myocardial infarction or stroke. Understanding this process highlights the importance of managing risk factors to prevent the progression of atherosclerosis and its associated complications.

## 2. What intervention is essential for primary prevention of coronary artery disease?

- A. Regular use of aspirin
- B. Screening for diabetes
- C. Implementing lifestyle changes**
- D. Invasive surgical procedures

Implementing lifestyle changes is essential for the primary prevention of coronary artery disease because it directly addresses the modifiable risk factors associated with the development of this condition. Primary prevention aims to reduce the incidence of coronary artery disease before it occurs, and lifestyle changes such as adopting a heart-healthy diet, engaging in regular physical activity, maintaining a healthy weight, managing stress, and avoiding tobacco use are critical components in lowering risk. These behavioral adjustments can significantly impact factors like high blood pressure, cholesterol levels, and blood sugar—key contributors to the development of coronary artery disease. Establishing such healthy habits early on can help mitigate risks and promote cardiovascular health over a lifetime. While options like regular use of aspirin and screening for diabetes can play roles in secondary prevention or management strategies for those already at risk or diagnosed with the disease, they do not directly address prevention in individuals who have not yet developed coronary artery disease. Invasive surgical procedures are typically reserved for those who already have significant disease and are not a preventive measure.

**3. When assessing a patient with leg pain and tense calf muscles, why is it important to know when the symptoms began?**

**A. Irreversible anoxic injury to muscles and nerves can occur in as few as four hours.**

**B. Compartment syndrome develops days after arterial occlusion.**

**C. Arterial thrombosis is sudden and emergent, and an embolism develops gradually.**

**D. Metabolic alkalosis from muscle swelling is cardiotoxic.**

Understanding when the symptoms began is crucial because irreversible anoxic injury to muscles and nerves can occur in as little as four hours. In cases where there is muscle swelling and tension, such as in compartment syndrome, timely assessment and intervention are essential to prevent permanent damage. If blood flow is reduced or absent due to conditions like arterial occlusion, the affected tissues may not receive adequate oxygen, leading to necrosis if the ischemia continues beyond this critical time frame. Therefore, knowing the onset of symptoms helps healthcare providers gauge the urgency of the situation and decide on prompt treatment options to mitigate the risk of long-term complications.

**4. Which symptom is typical of an aortic dissection?**

**A. Gradual chest pain**

**B. Sudden severe chest or back pain**

**C. Persistent cough**

**D. Fatigue**

The symptom characteristic of an aortic dissection is sudden severe chest or back pain. This pain is typically described as sharp and is often felt as a tearing or stabbing sensation. The pain can occur abruptly and may radiate to the back or between the shoulder blades, reflecting the nature of the aortic injury. This acute onset of pain is a hallmark sign of an aortic dissection, which occurs when there is a tear in the inner layer of the aorta, allowing blood to flow between the layers of the vessel wall and often leading to significant and immediate symptoms. Gradual chest pain is not consistent with the nature of an aortic dissection; such pain usually indicates other cardiac or non-cardiac conditions that develop over time. A persistent cough is also not a typical symptom of an aortic dissection; while it might occur in other contexts such as lung or airway issues, it does not relate to the direct effects of an aortic dissection. Meanwhile, fatigue, while potentially present in many cardiovascular conditions, is too nonspecific and does not indicate the acute and severe pathology seen with an aortic dissection.

**5. Name a common pharmacological treatment for heart failure.**

- A. Anticoagulants**
- B. Diuretics**
- C. Beta-blockers**
- D. ACE inhibitors**

Diuretics are a common pharmacological treatment for heart failure because they help to manage fluid overload, a key issue in this condition. In heart failure, the heart's ability to pump blood effectively can be compromised, leading to congestion and fluid retention in the lungs and other parts of the body. Diuretics promote renal excretion of sodium and water, which reduces blood volume, alleviates symptoms like edema, and improves overall cardiac function. While the other pharmacological treatments listed can also play significant roles in managing heart failure, diuretics are specifically targeted at addressing fluid retention, making them particularly useful in symptom management. Anticoagulants are typically used to prevent thromboembolic events rather than directly managing heart failure. Beta-blockers slow heart rate and reduce cardiac workload, and ACE inhibitors help with vascular resistance and improving heart function; both are beneficial but do not specifically target fluid overload like diuretics do.

**6. Which assessment finding could indicate left-sided heart failure?**

- A. Jugular venous distention**
- B. Peripheral edema**
- C. Shortness of breath**
- D. Ascites**

Shortness of breath is a prominent symptom associated with left-sided heart failure, stemming from the underlying physiological changes in the heart and lungs. In left-sided heart failure, the left ventricle is unable to effectively pump blood to the body, leading to increased pressure in the left atrium and subsequently in the pulmonary circulation. This congestion results in fluid leakage into the alveoli, causing pulmonary edema, which manifests as shortness of breath, particularly when the patient is exerting themselves or lying flat. Recognizing shortness of breath as a key indicator is crucial because it directly points to the compromised function of the left side of the heart. This symptom can range from mild exertional dyspnea to severe respiratory distress, and it highlights the impact that left-sided heart failure has on gas exchange and overall respiratory function. In assessing a patient, the presence of shortness of breath can guide further diagnostic evaluations and interventions.

## 7. Why is cholesterol screening important for adults?

- A. To evaluate kidney function
- B. To assess risk for heart disease and determine treatment needs**
- C. To monitor liver enzymes
- D. To detect diabetes

Cholesterol screening is crucial for adults primarily because it helps assess the risk for heart disease and determine the appropriate treatment needs. Elevated cholesterol levels, particularly low-density lipoprotein (LDL) cholesterol, are strongly associated with an increased risk of cardiovascular events, such as heart attacks and strokes. By screening cholesterol levels, healthcare providers can identify individuals at high risk and implement preventive strategies, such as lifestyle modifications or medication. This preventive approach is important as it allows for early intervention before serious cardiovascular issues arise. Knowing where a patient's cholesterol levels stand can guide healthcare providers in making informed decisions regarding the need for therapeutic lifestyle changes or pharmacologic treatments, which ultimately contributes to better cardiovascular health outcomes. In contrast, while kidney function, liver enzymes, and diabetes monitoring are important aspects of overall health, they do not directly relate to the specific risk factors for heart disease that cholesterol screening addresses. Thus, screening for cholesterol provides targeted information necessary for cardiovascular risk assessment and management.

## 8. What does the presence of distended jugular veins in a supine patient indicate?

- A. Decreased venous return
- B. Increased central venous pressure**
- C. Increased pulmonary artery capillary pressure
- D. Left-sided heart failure

The presence of distended jugular veins in a supine patient is indicative of increased central venous pressure. This phenomenon occurs when there is an accumulation of blood in the venous system, which can be due to various cardiac conditions. When the central venous pressure rises, it reflects increased pressure in the right atrium, preventing effective venous return from the systemic circulation. In a supine position, blood return from the lower extremities, as well as blood volume, can cause distention of the jugular veins due to the unimpeded hydrostatic effects of fluid. This sign is often associated with conditions such as heart failure or fluid overload, where the heart's ability to pump effectively is compromised. Recognizing this clinical sign is critical as it helps inform the healthcare provider about the patient's hemodynamics and possible underlying cardiovascular issues.

**9. Which of the following lifestyle modifications can benefit heart health?**

**A. Increased alcohol consumption**

**B. Quitting smoking**

**C. Overeating on high-caloric snacks**

**D. Decreasing hydration intake**

Quitting smoking is a significant lifestyle modification that can benefit heart health. Smoking is a major risk factor for cardiovascular diseases as it damages blood vessels, reduces oxygen in the blood, and contributes to the development of atherosclerosis (the buildup of plaque in the arteries). When an individual quits smoking, their cardiovascular system begins to recover, leading to improved circulation, lower heart rates, and a decrease in the risk of heart attacks and strokes over time. In contrast, the other options either contribute to poor heart health or have no beneficial effect. Increased alcohol consumption can lead to various cardiovascular issues, including high blood pressure and an increased risk of heart disease. Overeating on high-caloric snacks can result in obesity, which is a significant risk factor for heart disease due to its impact on metabolic health. Decreasing hydration intake is detrimental as dehydration can strain the heart, leading to further complications. Therefore, quitting smoking stands out as a lifestyle change that directly promotes better heart health.

**10. What condition is indicated by a stat EKG revealing ST-segment elevation?**

**A. Stable angina**

**B. Anemia**

**C. Anterior ST elevation MI**

**D. Heart failure**

ST-segment elevation on an EKG is a critical finding commonly associated with acute myocardial infarction (MI), particularly indicating damage to the heart muscle due to inadequate blood supply. When ST-segment elevation occurs, it typically reflects that part of the heart is currently in distress, often signaling that an artery supplying that area is occluded. In the case of an anterior ST elevation MI, this condition means there is significant and acute damage occurring to the anterior wall of the left ventricle, commonly due to a blockage in the left anterior descending artery. The elevation of the ST segment is due to the injury currents that reflect myocardial ischemia or injury, highlighting the urgency of intervention to restore blood flow. Other conditions listed do not typically produce ST-segment elevation. For instance, stable angina is characterized by transient chest pain with normal EKG findings between episodes. Anemia can lead to complications affecting the heart but does not cause characteristic EKG changes like ST-segment elevation. Heart failure is a broader condition associated with a range of symptoms and EKG findings but does not specifically manifest as ST-segment elevation unless accompanied by myocardial ischemia. Thus, the correct identification of an anterior ST elevation MI serves as a critical diagnostic marker for cardiac emergencies needing