

Hospital Corpsman Basic (HCB) Test 5 Practice (Sample)

Study Guide



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SAMPLE

Questions

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- 1. What is perfusion in relation to the body's tissues?**
 - A. Supply of oxygen and nutrients to cells**
 - B. Build-up of fluid in tissues**
 - C. Loss of blood volume**
 - D. Abnormal heart rhythm**
- 2. What effects do the valves have on blood flow during the cardiac cycle?**
 - A. They slow down blood flow.**
 - B. They open and close based on heart rate.**
 - C. They respond to pressure changes in the heart.**
 - D. They prevent backflow only during systole.**
- 3. What occurs when there is inadequate tissue perfusion?**
 - A. Hypovolemic shock**
 - B. Arterial bleeding**
 - C. Massive hemorrhage**
 - D. Cardiogenic shock**
- 4. What is a blood collection that uses a lavender top tube typically used for?**
 - A. Prothrombin time testing**
 - B. Complete blood count (CBC)**
 - C. Blood type determination**
 - D. Serum glucose testing**
- 5. True or False: Vacutainers are designed for one-time use only.**
 - A. True**
 - B. False**
 - C. Depends on the situation**
 - D. Not specified**

- 6. What are the two major veins that return blood from the body to the right atrium?**
- A. Jugular veins**
 - B. Coronary veins**
 - C. Subclavian veins**
 - D. Vena cava (superior and inferior)**
- 7. What treatment method is NOT used to control external bleeding?**
- A. Direct pressure**
 - B. Elevation of a limb**
 - C. Application of a splint**
 - D. Tourniquet**
- 8. What symptom might indicate fluid loss?**
- A. Increased appetite**
 - B. Dehydration**
 - C. Weight gain**
 - D. Swelling**
- 9. Which of the following is a sign of shock that might accompany internal bleeding?**
- A. Increased appetite**
 - B. Low blood pressure**
 - C. Fever**
 - D. Dermatitis**
- 10. What immediate action is typically required for a patient experiencing cardiac arrest?**
- A. Intravenous medication administration**
 - B. Defibrillation**
 - C. Cardiopulmonary resuscitation (CPR)**
 - D. Patient transport**

Answers

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

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Explanations

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1. What is perfusion in relation to the body's tissues?

A. Supply of oxygen and nutrients to cells

B. Build-up of fluid in tissues

C. Loss of blood volume

D. Abnormal heart rhythm

Perfusion refers to the process of delivering oxygen and nutrients to the body's tissues through the bloodstream. This is essential for maintaining cellular function and overall health, as it ensures that every cell receives the necessary components to metabolize effectively and sustain life. Adequate perfusion is crucial for the body's tissues to function properly, allowing for processes such as energy production, waste removal, and cellular repair. When tissues are well-perfused, they receive not only oxygen but also essential nutrients like glucose and electrolytes, which are vital for various physiological processes. Impaired perfusion can lead to tissue damage, organ dysfunction, and, if severe and prolonged, can result in conditions like ischemia or necrosis. The other options present different medical concepts but do not accurately describe perfusion. Fluid build-up in tissues indicates issues like edema, loss of blood volume refers to hemorrhagic conditions or shock, and abnormal heart rhythm relates to disruptions in cardiac function. None of these directly pertain to the process of delivering oxygen and nutrients to the tissues, which is the essence of perfusion.

2. What effects do the valves have on blood flow during the cardiac cycle?

A. They slow down blood flow.

B. They open and close based on heart rate.

C. They respond to pressure changes in the heart.

D. They prevent backflow only during systole.

The valves in the heart primarily function to ensure unidirectional blood flow through the cardiac chambers. They respond to pressure changes within the heart, allowing them to open and close at the appropriate times during the cardiac cycle. When the pressure in the atria exceeds that in the ventricles, the atrioventricular (AV) valves open to allow blood to flow from the atria into the ventricles. Conversely, when the ventricles contract and the pressure within them rises, the AV valves close to prevent backflow into the atria, while the semilunar valves open to permit blood to exit the heart. This response to pressure changes is crucial in maintaining efficient circulation and ensuring that blood moves in the correct direction without any leakage. Understanding the role of valves in relation to pressure dynamics is fundamental to grasping how the heart operates during both systole (contraction) and diastole (relaxation). The interplay of pressure changes and valve functions is essential for effective cardiac output and overall cardiovascular health.

3. What occurs when there is inadequate tissue perfusion?

- A. Hypovolemic shock**
- B. Arterial bleeding**
- C. Massive hemorrhage**
- D. Cardiogenic shock**

Inadequate tissue perfusion occurs when there is insufficient blood flow to meet the metabolic demands of tissues, leading to cellular injury and dysfunction. This condition can arise in various clinical scenarios, but hypovolemic shock specifically refers to a significant drop in blood volume, often due to severe dehydration or bleeding, which directly results in inadequate perfusion. In hypovolemic shock, the heart is often unable to supply enough blood to the organs and tissues because there isn't enough volume in the circulatory system. This leads to a cascade of physiological responses, including increased heart rate and vasoconstriction, aimed at preserving blood flow to vital organs. If not addressed promptly, inadequate tissue perfusion can lead to organ failure. While conditions like arterial bleeding and massive hemorrhage can lead to hypovolemic shock, they are not direct equates. Arterial bleeding might contribute to hypovolemic shock by causing significant blood loss, but it describes a specific type of injury rather than the overarching state of insufficient perfusion. Cardiogenic shock arises specifically from the heart's inability to pump effectively, which, while also resulting in inadequate perfusion, differs in cause and mechanism from hypovolemic shock.

4. What is a blood collection that uses a lavender top tube typically used for?

- A. Prothrombin time testing**
- B. Complete blood count (CBC)**
- C. Blood type determination**
- D. Serum glucose testing**

A lavender top tube is commonly used for a complete blood count (CBC) because it contains EDTA (ethylenediaminetetraacetic acid), an anticoagulant that helps preserve the cellular components of blood. This is essential for obtaining accurate results in a CBC, which measures various aspects of blood, including red blood cells, white blood cells, and platelets. The use of EDTA ensures that the blood cells do not clot, allowing for precise enumeration and analysis of these cells. Other tests listed, such as prothrombin time testing, blood type determination, and serum glucose testing, require different types of tubes. Prothrombin time testing typically uses a blue top tube containing sodium citrate, while blood type determination typically uses a red top or lavender top tube but can also depend on the laboratory protocol. Serum glucose testing is usually done using a gray top tube with a specific additive to prevent glycolysis. Thus, the lavender top tube's specific formulation makes it ideal for performing a complete blood count.

5. True or False: Vacutainers are designed for one-time use only.

A. True

B. False

C. Depends on the situation

D. Not specified

Vacutainers are indeed designed for one-time use only because they are specifically manufactured to ensure sterility and prevent contamination of the samples collected. Each vacutainer is sealed and packaged to maintain a controlled environment that is crucial for accurate test results, making it essential that they are not reused. Reusing a vacutainer could introduce contaminants and compromise the integrity of the sample, leading to inaccurate laboratory results. Additionally, the specialized additives present in certain vacutainers, which are crucial for various types of blood tests, would not perform effectively if the container were used multiple times. Thus, the design and function of vacutainers emphasize that they should be utilized only once to ensure the highest standard of medical testing.

6. What are the two major veins that return blood from the body to the right atrium?

A. Jugular veins

B. Coronary veins

C. Subclavian veins

D. Vena cava (superior and inferior)

The two major veins that return blood from the body to the right atrium are the superior vena cava and the inferior vena cava, collectively referred to as the vena cava. The superior vena cava carries deoxygenated blood from the upper body regions, including the head, neck, arms, and upper torso. In contrast, the inferior vena cava transports deoxygenated blood from the lower body, including the abdomen and legs. This dual system of returning blood is essential for maintaining proper circulation, ensuring that all deoxygenated blood drawn from the systemic circulation is delivered back to the heart for re-oxygenation in the lungs. Understanding the function of the vena cava is crucial for anyone studying anatomy and physiology, particularly in a medical context, as it highlights the importance of efficient blood return to support overall cardiovascular health.

7. What treatment method is NOT used to control external bleeding?

- A. Direct pressure**
- B. Elevation of a limb**
- C. Application of a splint**
- D. Tourniquet**

The treatment method that is not specifically used to control external bleeding is the application of a splint. Splints are primarily used to immobilize fractures or dislocations to prevent further injury and to ease pain. While immobilization can assist in managing an injury related to bleeding, the primary objective of splinting is not directly to control blood flow, which is crucial immediately after a traumatic injury. On the other hand, techniques such as direct pressure, limb elevation, and the application of a tourniquet are standardized methods taught to manage external bleeding. Direct pressure is one of the most effective and immediate ways to control bleeding by applying firm pressure over the wound. Elevation of a limb helps reduce blood flow to the area, thereby minimizing blood loss. A tourniquet is a last resort emergency measure that can completely stop blood flow to a limb in severe bleeding situations.

8. What symptom might indicate fluid loss?

- A. Increased appetite**
- B. Dehydration**
- C. Weight gain**
- D. Swelling**

The symptom that indicates fluid loss is dehydration. When the body loses an excessive amount of water, it cannot maintain the necessary fluid balance, leading to dehydration. This condition often presents with various signs, such as dry mouth, thirst, decreased urine output, fatigue, and in more severe cases, confusion or dizziness. Hydration is essential for numerous bodily functions, and when fluid levels drop, it can significantly affect the body's performance and health. Recognizing dehydration as a symptom of fluid loss is crucial for timely intervention and treatment to restore proper hydration levels.

9. Which of the following is a sign of shock that might accompany internal bleeding?

- A. Increased appetite**
- B. Low blood pressure**
- C. Fever**
- D. Dermatitis**

Low blood pressure is a key sign of shock that can occur due to internal bleeding. When internal bleeding occurs, the body loses significant amounts of blood, leading to a decrease in the volume of circulating blood. This reduction in blood volume typically results in lower blood pressure as the heart struggles to pump an adequate amount of blood to the organs and tissues. This physiological response can lead to the body not receiving enough oxygen, which can further exacerbate the state of shock. The other options, such as increased appetite, fever, and dermatitis, do not relate directly to the physiological state of shock from internal bleeding. Increased appetite is generally not a symptom of shock, as the body's focus shifts to responding to the shock rather than processing food. Fever can sometimes be present in infections or other conditions, but it is not a classic sign of shock. Dermatitis also does not connect to shock and internal bleeding, as it pertains more to skin reactions rather than systemic circulation issues. Understanding these distinctions helps in identifying shock and its related symptoms in clinical settings.

10. What immediate action is typically required for a patient experiencing cardiac arrest?

- A. Intravenous medication administration**
- B. Defibrillation**
- C. Cardiopulmonary resuscitation (CPR)**
- D. Patient transport**

In a situation involving a patient experiencing cardiac arrest, the immediate action required is cardiopulmonary resuscitation (CPR). CPR is a critical and life-saving procedure that combines chest compressions and rescue breaths to maintain blood flow and oxygenation to vital organs until advanced medical help can take over. During cardiac arrest, the heart is unable to pump blood effectively, and without prompt CPR, brain and organ damage can occur within minutes. Initiating CPR as quickly as possible increases the chances of survival and can help sustain life until defibrillation or advanced medical interventions, such as medication administration or transport to a medical facility, can be implemented. The American Heart Association emphasizes the importance of high-quality CPR in improving outcomes for patients who have gone into cardiac arrest. While defibrillation is also a critical step in the treatment of cardiac arrest, it is not the first action typically taken; CPR should be started immediately while waiting for a defibrillator or advanced help. Similarly, while medication administration and patient transport are important aspects of emergency care, they are not the immediate priorities in the context of a cardiac arrest situation.