

TMC Respiratory Care Boards Practice Exam (Sample)

Study Guide



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SAMPLE

Questions

- 1. What is the purpose of a lateral decubitus chest x-ray?**
 - A. To assess lung capacity**
 - B. To diagnose pneumonia**
 - C. To identify pleural effusions**
 - D. To evaluate heart size**
- 2. What is the effect of diaphragmatic paralysis on the respiratory system?**
 - A. Increased respiratory efficiency**
 - B. Narrower airway resistance**
 - C. Impaired normal ventilation**
 - D. Improved gas exchange**
- 3. Which chamber of the heart pumps blood to the lungs?**
 - A. Right atrium**
 - B. Right ventricle**
 - C. Left atrium**
 - D. Left ventricle**
- 4. Which condition is NOT a cause of diaphoresis?**
 - A. Anxiety**
 - B. Heart failure**
 - C. Cold exposure**
 - D. Fever**
- 5. What is the first step in verifying the position of an endotracheal tube after intubation?**
 - A. Immediate chest x-ray**
 - B. Observation of chest rise**
 - C. Auscultation of lung sounds**
 - D. Checking end-tidal CO2 levels**

- 6. A decrease in which lab value might suggest metabolic alkalosis?**
- A. Potassium**
 - B. Chloride**
 - C. Bicarbonate**
 - D. Creatinine**
- 7. Which type of imaging technique uses fluoroscopy?**
- A. CT scan**
 - B. X-ray**
 - C. Bronchography**
 - D. MRI**
- 8. What is the Dubowitz score for a full-term infant?**
- A. Score of 30**
 - B. Score of 35**
 - C. Score of 40**
 - D. Score of 45**
- 9. Where should a central venous catheter be placed according to chest x-ray findings?**
- A. In the aorta or left ventricle**
 - B. In right or left subclavian or jugular vein**
 - C. In the thoracic vena cava only**
 - D. In the brachiocephalic vein**
- 10. Which type of spinal curvature leads to a hunched posture?**
- A. Lordosis**
 - B. Scoliosis**
 - C. Kyphosis**
 - D. Normal alignment**

Answers

SAMPLE

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

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Explanations

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1. What is the purpose of a lateral decubitus chest x-ray?

- A. To assess lung capacity
- B. To diagnose pneumonia
- C. To identify pleural effusions**
- D. To evaluate heart size

A lateral decubitus chest X-ray is specifically designed to identify pleural effusions, which are abnormal accumulations of fluid in the pleural space surrounding the lungs. When a patient is positioned on their side, any fluid present in the pleural cavity will gravitate towards the dependent part of the thorax, making it easier to visualize and assess the presence of fluid on the X-ray. This positioning helps distinguish between fluid and other types of lung findings, allowing for more accurate diagnosis and management of pleural conditions. While other imaging procedures or views might be used to assess lung capacity, diagnose pneumonia, or evaluate heart size, the lateral decubitus position is particularly valuable for identifying and quantifying pleural effusions. This technique provides specific insight that helps clinicians formulate an appropriate treatment plan or consider further diagnostic steps, making it an essential tool in respiratory care and diagnostics.

2. What is the effect of diaphragmatic paralysis on the respiratory system?

- A. Increased respiratory efficiency
- B. Narrower airway resistance
- C. Impaired normal ventilation**
- D. Improved gas exchange

Diaphragmatic paralysis has a significant impact on the respiratory system, primarily leading to impaired normal ventilation. The diaphragm is the primary muscle responsible for breathing, particularly during inhalation. When it is paralyzed, it cannot contract effectively, which diminishes the ability to generate negative pressure in the thoracic cavity necessary for normal inhalation. This results in reduced lung expansion and ultimately impaired ventilation—the process of moving air in and out of the lungs. With compromised diaphragm function, patients may rely more on accessory muscles for breathing, which are less efficient. This can lead to inadequate gas exchange due to reduced air movement into the lungs and ventilation-perfusion mismatches. Overall, the inability of the diaphragm to function properly creates difficulties in maintaining adequate ventilation and oxygenation, impacting overall respiratory efficiency and leading to potential hypoxemia and hypercapnia. This understanding underscores the critical role of the diaphragm in the respiratory process and highlights why its paralysis affects ventilation so severely.

3. Which chamber of the heart pumps blood to the lungs?

- A. Right atrium
- B. Right ventricle**
- C. Left atrium
- D. Left ventricle

The right ventricle is the chamber of the heart that pumps deoxygenated blood to the lungs. This process is part of the pulmonary circulation. When blood returns from the body, it enters the right atrium, moves into the right ventricle, and is then pumped through the pulmonary arteries to the lungs. In the lungs, carbon dioxide is exchanged for oxygen, resulting in oxygenated blood that returns to the heart, specifically to the left atrium. This function of the right ventricle is critical for ensuring that the blood is oxygenated, allowing for efficient gas exchange essential for bodily functions. Understanding the flow of blood through the heart is fundamental to grasping the circulatory system's operation, particularly how the right ventricle plays a key role in transferring blood to the pulmonary system.

4. Which condition is NOT a cause of diaphoresis?

- A. Anxiety
- B. Heart failure
- C. Cold exposure**
- D. Fever

Diaphoresis refers to excessive sweating, which can occur due to various physiological and psychological conditions. Cold exposure typically leads to the body's efforts to maintain core temperature, often resulting in reduced sweating rather than increased sweating. In cold environments, the body's response is to conserve heat, causing blood vessels to constrict and sweat production to decrease, which is contrary to what is seen in conditions like anxiety, heart failure, or fever where diaphoresis is a common response due to increased metabolic demands or stress on the body. Anxiety can trigger the "fight or flight" response, leading to increased sweating. Heart failure can cause diaphoresis as a result of poor circulation and increased stress on the heart. Fever, which results from infection or inflammation, typically leads to increased body temperature, prompting the body to sweat in order to cool down. Therefore, cold exposure is the condition that does not typically contribute to diaphoresis, making it the correct choice in this context.

5. What is the first step in verifying the position of an endotracheal tube after intubation?

- A. Immediate chest x-ray**
- B. Observation of chest rise**
- C. Auscultation of lung sounds**
- D. Checking end-tidal CO2 levels**

The first step in verifying the position of an endotracheal tube after intubation focuses on the immediate assessment of physiological signs that indicate successful placement. Observing chest rise is crucial because it provides real-time confirmation that the tube is correctly positioned in the trachea. When the tube is in the right place, both sides of the chest should expand symmetrically with each breath, signifying proper ventilation. This initial visual assessment is essential because it can detect immediate complications associated with endotracheal intubation, such as accidental placement in the esophagus or in a bronchus. It is a quick and non-invasive method for ensuring the patient is receiving adequate ventilation. Following this, other verification methods such as auscultation of lung sounds, checking end-tidal CO2 levels, and, if necessary, obtaining a chest x-ray can provide additional confirmation of tube placement, but they are typically performed after the initial observation of chest rise. This sequential approach allows for an efficient and effective verification process to ensure patient safety.

6. A decrease in which lab value might suggest metabolic alkalosis?

- A. Potassium**
- B. Chloride**
- C. Bicarbonate**
- D. Creatinine**

Metabolic alkalosis is characterized by an increase in blood pH and often involves an elevation in bicarbonate levels. However, a decrease in chloride can be indicative of this condition due to the body's compensatory mechanisms. In metabolic alkalosis, the loss of hydrogen ions can lead to a compensatory decrease in chloride levels, especially in cases where conditions such as vomiting or diuretic use are involved, which results in the loss of both chloride and hydrogen ions. Chloride ions play a significant role in maintaining the body's acid-base balance, and a decrease in chloride (hypochloremia) can occur as the body attempts to compensate for the alkalotic state. This understanding gives insight into the interrelation of these electrolytes during instances of metabolic imbalances, where monitoring chloride alongside other values becomes critical in diagnosing and treating metabolic alkalosis effectively. While potassium and bicarbonate levels do play significant roles in differentiating metabolic conditions, the specific choice regarding chloride directly correlates with the physiological changes observed in metabolic alkalosis, making it the most relevant indicator among the provided options. Creatinine, on the other hand, is primarily used to assess kidney function and does not directly relate to acid-base disturbances.

7. Which type of imaging technique uses fluoroscopy?

- A. CT scan
- B. X-ray
- C. Bronchography**
- D. MRI

Fluoroscopy is an imaging technique that allows real-time visualization of internal structures and functions, which is essential for certain diagnostic procedures. In this context, bronchography utilizes fluoroscopy to visualize the bronchial tree and assess for abnormalities. This technique involves the use of a contrast agent, which highlights the airways, and the dynamic images produced help clinicians observe the movement and function of these structures during respiration. The other imaging techniques listed, such as CT scans and MRI, use different methods for capturing images. CT scans rely on computed tomography to create detailed cross-sectional images of the body, while MRI employs magnetic fields and radio waves to generate images of soft tissues. X-rays, although they contribute to the field of medical imaging, do not provide real-time visualization as fluoroscopy does. Therefore, bronchography stands out as the correct choice regarding the use of fluoroscopy in imaging techniques.

8. What is the Dubowitz score for a full-term infant?

- A. Score of 30
- B. Score of 35
- C. Score of 40**
- D. Score of 45

The Dubowitz score is a clinical assessment tool used to evaluate gestational age in newborns. It ranges from 20 to 50, with higher scores indicating a higher gestational age. A full-term infant typically has a gestational age of around 37 to 42 weeks, correlating with a Dubowitz score that falls closer to the upper end of the scale. A score of 40 is consistent with a full-term infant, as it reflects the expected physical and neurological maturity present at this stage of development. This score encompasses various factors, including reflexes, physical characteristics, and gestational age indicators, all aligning with developmental milestones for full-term infants. The other scores are either lower or higher than the expected range for a full-term newborn, making them less appropriate in this context. A score of 30 would indicate a younger gestational age, while scores of 35 and 45 could indicate either near term or post-term status, but do not represent the typical assessment of a full-term infant as accurately as a score of 40 does.

9. Where should a central venous catheter be placed according to chest x-ray findings?

- A. In the aorta or left ventricle**
- B. In right or left subclavian or jugular vein**
- C. In the thoracic vena cava only**
- D. In the brachiocephalic vein**

The correct answer is that a central venous catheter should be placed in the right or left subclavian or jugular vein, as indicated by chest x-ray findings. The placement of a central venous catheter requires careful consideration of the anatomy of the central venous system to ensure proper function and reduce complications. When a chest x-ray is evaluated, it should show the catheter tip ideally positioned at the junction of the superior vena cava and right atrium, which is typically accessible through either the subclavian or internal jugular veins. This location ensures optimal venous access for administering medications, fluids, or for monitoring central venous pressure, while also minimizing the risk of complications such as pneumothorax, which can occur with incorrect placement. Other areas identified in the choices do not represent ideal or safe locations for catheter placement. The aorta and left ventricle are not suitable sites for central venous catheters as they can lead to significant complications, including cardiac injury. Additionally, while the thoracic vena cava is a large vein that might seem like a potential placement site, the correct positioning is more about ensuring access through the appropriate entry points earlier in the vascular system. The brachiocephalic vein is less commonly chosen as

10. Which type of spinal curvature leads to a hunched posture?

- A. Lordosis**
- B. Scoliosis**
- C. Kyphosis**
- D. Normal alignment**

Kyphosis is the type of spinal curvature that leads to a hunched posture. This condition is characterized by an excessive outward curvature of the thoracic spine, which can create a rounded or hunchback appearance. In kyphosis, the vertebrae in the upper back become more angled than normal, which causes the back to round forward. This can result from various factors, including developmental issues, degenerative diseases, osteoporosis, or poor posture over time. Understanding kyphosis is essential for recognizing its implications on posture and overall spinal health. In contrast, lordosis refers to an excessive inward curvature of the lumbar spine, typically resulting in a swayback posture. Scoliosis involves a lateral curvature of the spine, which does not typically manifest as a hunched posture but rather gives a "C" or "S" shape to the spine. Normal alignment denotes a typical spinal curvature where none of these abnormalities exist. Each of these conditions affects posture differently, but kyphosis is specifically associated with the hunched appearance.