EMT Airway and Breathing Practice Exam (Sample)

Study Guide

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Questions

1. **Which of the following can be a complication of improper ventilations in a patient?**
   - **A. Hypercapnia**
   - **B. Improved oxygen saturation**
   - **C. Decreased heart rate**
   - **D. Increased lung compliance**

2. **An unresponsive 60-year-old male is apneic with a weak pulse and an oxygen saturation of 79%. What should you do?**
   - **A. Deliver one breath over 1 second every 5 to 6 seconds**
   - **B. Start chest compressions immediately**
   - **C. Provide supplemental oxygen**
   - **D. Check for a pulse again after 30 seconds**

3. **In the case of a young woman who is unresponsive and begins to gag after an oropharyngeal airway insertion, what should you do?**
   - **A. Continue with ventilation**
   - **B. Remove the airway and prepare to suction**
   - **C. Administer naloxone**
   - **D. Insert a nasopharyngeal airway instead**

4. **What is the primary goal of administering high-flow oxygen to a patient in respiratory distress?**
   - **A. Increase blood pressure**
   - **B. Reduce anxiety**
   - **C. Improve oxygen saturation**
   - **D. Facilitate airway management**

5. **What is the expected oxygen saturation level for a severely hypoxic patient?**
   - **A. 92% to 100%**
   - **B. 85% to 90%**
   - **C. 75% to 84%**
   - **D. Below 75%**

6. Continuous positive airway pressure (CPAP) therapy works by reopening collapsed alveoli when the patient:

A. Inhales deeply against positive pressure

B. Exhales against positive pressure

C. Receives supplemental oxygen

D. Is placed in a supine position

7. Which of the following patients is the best candidate for an oropharyngeal airway?

A. An elderly woman with COPD who is semiconscious

B. An unresponsive trauma patient with blood draining from the nose

C. A conscious adult suffering from a severe allergic reaction

D. A child with a mild respiratory infection

8. Which technique is essential for ensuring proper mask ventilation in an unresponsive patient?

A. Firm pressure on the mask

B. Using a bag with a larger volume

C. Proper head positioning to maintain airway patency

D. Multiple rescuers to operate the bag

9. What is the primary concern when dealing with a patient experiencing severe asthma?

A. Heat exhaustion.

B. Respiratory distress and inadequate ventilation.

C. Cardiac arrest.

D. Hyperventilation syndrome.

10. What is the appropriate intervention for a middle-aged male in respiratory distress with a history of emphysema?

A. Administer supplemental oxygen via nasal cannula

B. Ventilate him with a bag-valve-mask device

C. Initiate chest compressions immediately

D. Provide a bronchodilator via nebulizer

Answers

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

Explanations

1. Which of the following can be a complication of improper ventilations in a patient?

A. Hypercapnia

B. Improved oxygen saturation

C. Decreased heart rate

D. Increased lung compliance

Hypercapnia refers to an elevated level of carbon dioxide (CO_2) in the blood, which can occur when ventilations are not delivered properly. When the ventilation is inadequate, patients may not effectively expel CO_2 during the exhalation phase. This can arise from factors such as overly forceful ventilations that do not allow for adequate expiration or insufficient breaths that do not adequately clear CO_2. Proper ventilation is crucial for maintaining the balance of gases in the body. When ventilation is compromised, CO_2 levels can rise, leading to hypercapnia. This condition can result in respiratory acidosis and lead to a series of physiological changes, including altered levels of consciousness, dysrhythmias, and other complications stemming from the body's inability to rid itself of CO_2 effectively. Hence, recognizing and addressing issues with ventilation is essential to prevent complications like hypercapnia.

2. An unresponsive 60-year-old male is apneic with a weak pulse and an oxygen saturation of 79%. What should you do?

A. Deliver one breath over 1 second every 5 to 6 seconds

B. Start chest compressions immediately

C. Provide supplemental oxygen

D. Check for a pulse again after 30 seconds

In this scenario, the patient is unresponsive, apneic, has a weak pulse, and a dangerously low oxygen saturation of 79%, indicating inadequate breathing and oxygenation. Given these circumstances, the most immediate and appropriate intervention is to deliver breaths to the patient. Delivering one breath every 5 to 6 seconds is consistent with the practice of providing positive pressure ventilation (PPV) to a patient who is not breathing effectively. Maintaining a rate of 10 to 12 breaths per minute allows for adequate ventilation without causing excessive pressure in the lungs and can help improve oxygenation. This practice is essential for addressing the hypoxia reflected in the low oxygen saturation. Other options, while important in their respective contexts, do not directly address the immediate need for ventilation. Starting chest compressions would be appropriate if there were no pulse; however, since a weak pulse is present, this is not the immediate step required. Providing supplemental oxygen alone, without ensuring adequate ventilation, would not effectively treat the low oxygen saturation. Checking for a pulse again after 30 seconds does not adequately address the urgent need for ventilation in a patient who is apneic and has a high risk of further deterioration. In essence, providing ventilatory support is the key first step

3. In the case of a young woman who is unresponsive and begins to gag after an oropharyngeal airway insertion, what should you do?

A. Continue with ventilation

B. Remove the airway and prepare to suction

C. Administer naloxone

D. Insert a nasopharyngeal airway instead

The situation with an unresponsive young woman who begins to gag after the insertion of an oropharyngeal airway indicates that the airway may not be positioned correctly or that the patient has a gag reflex. Gagging is a sign that the body is reacting to irritation, which can lead to airway obstruction or aspiration if not addressed promptly. Removing the oropharyngeal airway and preparing to suction is the most appropriate response in this scenario. This action allows any potential secretions or obstructions to be cleared from the airway, thereby improving the patient's ability to breathe and reducing the risk of aspiration. Suctioning helps ensure that the airway remains patent and safe, particularly if the patient is unresponsive and unable to protect their own airway. The other options may not effectively address the immediate concern of airway compromise and patient safety. For instance, continuing ventilation without first addressing the gagging could lead to further complications and inadequate ventilation. Administering naloxone would be indicated if there were signs of opioid overdose, but it is not directly relevant to the gag reflex during the airway management in this context. Inserting a nasopharyngeal airway may provide an alternative airway option; however, it could also potentially provoke further gagging or discomfort.

4. What is the primary goal of administering high-flow oxygen to a patient in respiratory distress?

A. Increase blood pressure

B. Reduce anxiety

C. Improve oxygen saturation

D. Facilitate airway management

The primary goal of administering high-flow oxygen to a patient in respiratory distress is to improve oxygen saturation. In cases of respiratory distress, patients often struggle to get enough oxygen into their bloodstream, which can lead to hypoxia—a condition characterized by low levels of oxygen in the body. By providing high-flow oxygen, you're increasing the amount of oxygen available for the patient to breathe, which helps ensure that their tissues and organs receive the necessary oxygen to function properly. Improving oxygen saturation is crucial because it can significantly enhance a patient's chances of recovery and prevent complications from insufficient oxygenation, such as organ failure or cardiovascular issues. By effectively increasing the oxygen levels, you support the body's metabolic needs and help stabilize the patient's condition. The other options don't address the immediate physiological needs of a patient in respiratory distress as directly as improving oxygen saturation does. For example, increasing blood pressure might be relevant in certain situations but is not the primary focus when dealing with respiratory distress. Reducing anxiety can be beneficial and may occur as the patient feels better with improved oxygen, but it's not the primary goal of oxygen supplementation. Similarly, facilitating airway management is critical in some contexts, but the foremost aim of administering high-flow oxygen is specifically tied to enhancing oxygen delivery and saturation in cases of

5. What is the expected oxygen saturation level for a severely hypoxic patient?

A. 92% to 100%

B. 85% to 90%

C. 75% to 84%

D. Below 75%

In the context of severe hypoxia, the expected oxygen saturation level would typically be below normal thresholds. Severe hypoxia indicates a critical lack of oxygen in the body, which is often represented by low oxygen saturation levels on a pulse oximeter. The range of 75% to 84% is indicative of a significant impairment in oxygen delivery to the tissues, which aligns with the clinical presentation of a severely hypoxic patient. At this saturation level, the body is experiencing substantial stress, leading to potential organ dysfunction and other serious complications if corrective actions are not taken promptly. In contrast, levels such as 85% to 90% indicate a moderate level of hypoxia, while saturation levels of 92% to 100% would be considered acceptable and suggest adequate oxygenation. A saturation below 75% represents extremely critical hypoxia, which might be expected in dire situations and does not align with the clinical definition of "severe hypoxia," where patients would typically be categorized within the 75%-84% range.

6. Continuous positive airway pressure (CPAP) therapy works by reopening collapsed alveoli when the patient:

A. Inhales deeply against positive pressure

B. Exhales against positive pressure

C. Receives supplemental oxygen

D. Is placed in a supine position

Continuous positive airway pressure (CPAP) therapy is a non-invasive ventilatory support method used primarily to treat conditions such as obstructive sleep apnea and certain types of respiratory distress. The key concept behind CPAP is maintaining a constant pressure in the airways, which helps keep the alveoli open during both inhalation and exhalation. When a patient exhales against the positive pressure provided by CPAP, it helps to keep the airways open and prevents the collapse of smaller airways and alveoli. This is crucial because during exhalation, there is a risk that smaller airways can collapse if the pressure drops too low. By maintaining a positive pressure, CPAP effectively prevents these collapses, allowing for better gas exchange and improved oxygenation. Moreover, the other options presented focus on conditions that do not directly facilitate the reopening of collapsed alveoli in the way that exhaling against continuous positive pressure does. While inhaling deeply could open the alveoli, the maintenance of pressure during exhalation is vital to prevent their collapse again. The mention of supplemental oxygen refers to a treatment that enhances oxygen content in the blood but does not inherently keep the alveoli open. Lastly, a supine position may assist in some scenarios by improving lung mechanics

7. Which of the following patients is the best candidate for an oropharyngeal airway?

A. An elderly woman with COPD who is semiconscious

B. An unresponsive trauma patient with blood draining from the nose

C. A conscious adult suffering from a severe allergic reaction

D. A child with a mild respiratory infection

The best candidate for an oropharyngeal airway is an unresponsive trauma patient with blood draining from the nose. This type of airway adjunct is specifically designed for patients who are unresponsive and cannot maintain their own airway. In this situation, the oropharyngeal airway helps prevent airway obstruction by ensuring that the tongue does not fall back into the throat, which is particularly vital for someone who is unresponsive. In trauma patients, maintaining a patent airway is critical, and despite the presence of blood, the immediate concern is protecting the airway from occlusion. If severe complications such as nasal injury are present, care must be taken when using airway adjuncts, but the primary goal is to maintain an open airway. Other choices represent situations where the use of an oropharyngeal airway may not be appropriate. For instance, in the case of an elderly woman with COPD who is semiconscious, oropharyngeal airways can stimulate the gag reflex, potentially causing aspiration or airway obstruction. A conscious adult suffering from a severe allergic reaction might also have the gag reflex intact and may not tolerate an oropharyngeal airway, while a child with a mild respiratory infection is likely more manageable with non-invasive techniques and may not

8. Which technique is essential for ensuring proper mask ventilation in an unresponsive patient?

A. Firm pressure on the mask

B. Using a bag with a larger volume

C. Proper head positioning to maintain airway patency

D. Multiple rescuers to operate the bag

Proper head positioning to maintain airway patency is essential for ensuring effective mask ventilation in an unresponsive patient. In this context, achieving an unobstructed airway is critical. When the patient is unresponsive, the tongue can fall back and obstruct the airway, which can prevent effective ventilation. By positioning the head appropriately—usually by extending the neck and lifting the chin or using the jaw-thrust maneuver—an EMT can help open the airway and ensure that air can flow into the lungs effectively when using a bag-mask device. Other techniques, while important, may not directly address the fundamental issue of airway obstruction caused by the tongue or other factors. For example, while firm pressure on the mask can help create a better seal, that alone will not suffice if the airway is not patent. Similarly, using a bag with a larger volume or having multiple rescuers may assist in ventilation but are secondary to the necessity of maintaining an open airway. Therefore, ensuring proper head positioning is the foundational step for successful mask ventilation in this scenario.

9. What is the primary concern when dealing with a patient experiencing severe asthma?

A. Heat exhaustion.

B. Respiratory distress and inadequate ventilation.

C. Cardiac arrest.

D. Hyperventilation syndrome.

The primary concern for a patient experiencing severe asthma is respiratory distress and inadequate ventilation. In severe asthma attacks, the airways become significantly narrowed and inflamed, which impairs the ability to move air effectively in and out of the lungs. This can lead to a decrease in oxygen levels in the blood (hypoxemia) and can cause the patient's condition to deteriorate rapidly if not addressed promptly. The hallmark signs of severe asthma include wheezing, difficulty in speaking, use of accessory muscles for breathing, and often a decreased level of consciousness or confusion due to inadequate oxygenation. When addressing the patient's airway and breathing, the focus must be on restoring adequate ventilation to ensure sufficient oxygen delivery to the body's tissues. Treatment may involve administering bronchodilators, corticosteroids, and possibly oxygen therapy, all aimed at alleviating the airway obstruction and improving respiratory function.

10. What is the appropriate intervention for a middle-aged male in respiratory distress with a history of emphysema?

A. Administer supplemental oxygen via nasal cannula

B. Ventilate him with a bag-valve-mask device

C. Initiate chest compressions immediately

D. Provide a bronchodilator via nebulizer

In the case of a middle-aged male in respiratory distress with a history of emphysema, the most appropriate intervention is to ventilate him with a bag-valve-mask device. Emphysema is a chronic obstructive pulmonary disease (COPD) characterized by damage to the alveoli, leading to decreased gas exchange efficiency and often causing respiratory distress. Ventilating with a bag-valve-mask device provides positive pressure ventilation, which can help support the patient's breathing if he is unable to maintain adequate ventilation on his own. This method is particularly useful in cases where the patient is unable to take in enough oxygen or expel enough carbon dioxide due to the compromised lung function associated with emphysema. It also helps in distributing oxygen more effectively throughout the lungs. While administering supplemental oxygen via nasal cannula is a common supportive measure, it may not be sufficient alone for a patient experiencing significant distress, especially with a history of emphysema. Providing a bronchodilator via nebulizer could also be beneficial, as it helps open the airways and improve airflow; however, it may not address immediate respiratory failure effectively without mechanical support. Initiating chest compressions is only appropriate if the patient is unresponsive and showing no signs of circulation, which is not