CRT Respiratory Exam Prep

Free Practice Test — 30 Real Exam-Style Questions

with full answer key & explanations

Practice Questions

Try all 30 first, then check the answer key at the back.

1. A respiratory therapist is evaluating a patient with chronic obstructive pulmonary disease (COPD) who is experiencing a severe exacerbation. The patient's partial pressure of arterial oxygen ($$PaO_{2}$$) has dropped significantly. Which of the following medications should NOT be used to rapidly improve the patient's oxygenation?

A. Albuterol
B. Ipratropium
C. Levalbuterol
D. Tiotropium

2. Which of the following is NOT an advantage of using invasive mechanical ventilation over non-invasive ventilation methods?

A. It provides more accurate monitoring of ventilatory parameters
B. It is suitable for more severe cases of respiratory failure
C. It reduces the risk of ventilator-associated pneumonia (VAP)
D. It offers better control over oxygen levels

3. Which of the following conditions is BEST treated with positive pressure ventilation?

A. Acute respiratory distress syndrome (ARDS)
B. Pulmonary fibrosis
C. Chronic obstructive pulmonary disease (COPD)
D. Pulmonary embolism

4. What percentage of a nebulized medication dose typically reaches the alveoli when administered correctly?

A. 30%
B. 50%
C. 80%
D. 10%

5. A patient is being ventilated in an ICU at 25°C with a relative humidity of 60%. What is the absolute humidity of the air? (Note: at 25°C, air can hold 23.1 mg H2O/L)

A. 12.0 mg H2O/L
B. 13.86 mg H2O/L
C. 14.50 mg H2O/L
D. 20.0 mg H2O/L

6. Which of the following conditions does NOT necessitate careful monitoring when initiating a bronchodilator therapy?

A. Hypotension
B. Hypertension
C. Tachycardia
D. Cardiac arrhythmias

7. The respiratory therapist is asked to interpret the following ABG results from a patient with persistent diarrhea: Parameter Value pH 7.32 PaCO2 35 torr PaO2 90 torr HCO3- 16 mEq/l BE -8 Which of the following conditions is MOST likely to cause this ABG result?

A. Diarrhea-induced metabolic acidosis
B. Intractable vomiting
C. COPD exacerbation
D. Severe anxiety leading to hyperventilation

8. Which of the following is NOT an effect of hypoxemia in a patient with chronic obstructive pulmonary disease (COPD)?

A. Pulmonary hypertension
B. Polycythemia
C. Right ventricular hypertrophy
D. Increased erythropoiesis

9. During an asthmatic episode, which of the following breathing techniques is BEST for a patient to use to promote effective bronchodilation and improve airflow?

A. Rapid shallow breathing
B. Using a spirometer
C. Pursed-lip breathing
D. Deep inhalation through the mouth

10. Which of the following is NOT a potential hazard of using a mechanical ventilator?

A. Oxygen toxicity
B. Increased physical activity
C. Barotrauma
D. Ventilator-associated pneumonia

11. A respiratory therapist is preparing to administer a bronchodilator via nebulizer. Which of the following is NOT a potential contraindication for this intervention?

A. History of hypertension
B. Severe tachycardia
C. Acute myocardial infarction
D. History of hypersensitivity to medication

12. Which of the following particle sizes is recommended for delivering aerosolized medications aimed at the lower respiratory tract?

A. < 0.1 µm
B. 1-3 µm
C. 5-50 µm
D. 2-5 µm

13. Which of the following is NOT a common complication associated with prolonged mechanical ventilation?

A. Barotrauma
B. Muscle atrophy due to disuse
C. Improved cardiovascular stability
D. Ventilator-associated pneumonia (VAP)

14. A respiratory therapist is attending to a patient receiving non-invasive positive pressure ventilation (NIPPV). The patient displays acute shortness of breath accompanied by neck vein distention and tracheal deviation. Which of the following conditions should be suspected?

A. Tension pneumothorax
B. Pulmonary embolism
C. Bronchospasm
D. Congestive heart failure

15. When assessing the asthma control level in a patient, which of the following considerations is important?

A. The PEF should be measured only in the morning before medication.
B. The PEF readings are only valid if the patient has not taken any form of medication that day.
C. The PEF cannot be accurately measured if the patient is using daily maintenance medications.
D. The peak expiratory flow (PEF) should be measured after the administration of a short-acting bronchodilator.

16. The respiratory therapist is assisting with the setup of a ventilator for a six-year-old boy. The attending physician is uncertain about the appropriate tidal volume setting for this patient. What tidal volume should the respiratory therapist recommend?

A. 10-12 mL/kg of the patient's ideal body weight
B. 6-8 mL/kg of the patient's ideal body weight
C. 8-10 mL/kg of the patient's ideal body weight
D. 4-6 mL/kg of the patient's ideal body weight

17. Which of the following is TRUE when a gas mixture at 25°C with a 100% relative humidity is inhaled during mechanical ventilation?

A. This is not normal but is not likely to be harmful
B. This is physiologically normal
C. This is harmful due to the low temperature and low humidity
D. This is harmful due to the low temperature, but not due to the humidity

18. The respiratory therapist is called to assess a 57-year-old female who has developed sudden difficulty breathing and cyanosis. The patient has a history of lung cancer and has just finished a course of chemotherapy. Which of the following conditions should the respiratory therapist recommend that the patient's provider consider?

A. Asthma exacerbation
B. Pulmonary embolism
C. Pneumonia
D. Cancer metastasis

19. A patient is being evaluated for abnormal breath sounds. The respiratory therapist auscultates over the bases of the lungs and hears soft, low-pitched sounds. What is the MOST accurate description of these breath sounds?

A. Tracheal breath sounds
B. Bronchial breath sounds
C. Bronchovesicular breath sounds
D. Vesicular breath sounds

20. When evaluating a patient's oxygen saturation levels, which method is considered to be the MOST reliable?

A. Check oxygen saturation every hour using a bedside monitor
B. Estimate oxygen saturation based on the patient's skin color and breathing pattern
C. Use a pulse oximeter to continuously monitor oxygen saturation
D. Measure oxygen saturation levels using arterial blood gas samples every 15 minutes

21. When analyzing the symmetry of chest movements during ventilation, which of the following statements is TRUE?

A. Chest movements are generally symmetrical except in cases of pulmonary embolism.
B. Asymmetry in chest movements can indicate underlying pathological conditions.
C. Asymmetry in chest movements always indicates a neurological disorder.
D. Symmetrical chest movements suggest the presence of a respiratory pathology.

22. A respiratory therapist is reviewing the medical history of a patient diagnosed with asthma. The patient insists that they have never had any known allergies. Which of the following potential causes for their asthma is LEAST likely?

A. The patient has a history of significant radon exposure.
B. The patient has a family history of asthma.
C. The patient has prolonged exposure to air pollution.
D. The patient has a workplace with high levels of dust and particulate matter.

23. Which of the following is NOT a potential complication associated with mechanical ventilation that should be monitored by the respiratory therapist?

A. Barotrauma
B. Oxygen toxicity
C. Acidosis
D. Ventilator-associated pneumonia (VAP)

24. A 56-year-old patient with a history of chronic obstructive pulmonary disease (COPD) is brought into the hospital following a severe asthma attack. The patient is cyanotic, has poor respiratory effort, and is unresponsive. Which of the following medications is MOST important for the respiratory therapist to recommend?

A. Dexamethasone
B. Epinephrine
C. Albuterol
D. Ipratropium bromide

25. When treating an asthmatic patient in acute respiratory distress, which of the following is TRUE?

A. Starting with mechanical ventilation is necessary
B. Emergency intubation is the first line of intervention
C. Administering bronchodilators and steroids is a mainstay of treatment
D. Mild cases should be treated with antibiotics

26. During a routine assessment of an adult patient with known chronic obstructive pulmonary disease (COPD), the respiratory therapist notes an $$SpO_{2}$$ of 89%. The patient's respiratory rate is 24 breaths per minute, and they appear to be in no acute distress. What intervention should the respiratory therapist recommend?

A. Continue with current treatment and provide supplemental oxygen as needed
B. Initiate invasive mechanical ventilation
C. Intubate the patient immediately
D. Administer high-dose bronchodilators

27. The respiratory therapist is evaluating a patient with suspected acute respiratory distress syndrome (ARDS). Which of the following imaging techniques would NOT be used to assess ARDS?

A. Chest X-Ray
B. Computed Tomography (CT) Scan
C. Ultrasound
D. Magnetic Resonance Imaging (MRI)

28. A patient tests positive for influenza. Which of the following isolation precautions should be used for this patient? Options Precautions 1 Standard 2 Contact 3 Droplet 4 Airborne 5 Contact plus

A. 3 & 4
B. 1, 2, 3, & 4
C. 1 & 4
D. 1 & 3

29. Which of the following correctly describes the sterility assurance level (SAL) in the context of medical device sterilization?

A. Sterilization effectiveness measured by visual inspection of the device
B. A probability of a single viable microorganism occurring on a device that has undergone the sterilization process
C. The percentage of microorganisms killed during the sterilization process
D. The probability of multiple microorganisms surviving on a sterilized device

30. Which of the following is NOT a necessary component for ensuring the proper function of a mechanical ventilator in a hospital setting?

A. Regular routine maintenance checks
B. A back-up manual ventilator (bag-valve mask) stored in a different room
C. Alarms for disconnections and high/low pressure
D. A humidification system to prevent drying of airways

Answer Key & Explanations

1. D — Tiotropium
Answer: Tiotropium Tiotropium is a long-acting muscarinic antagonist (LAMA) used for maintenance therapy in COPD and is not effective for rapid relief. Albuterol, levalbuterol, and ipratropium are all short-acting medications and are more appropriate for treating acute exacerbations.

2. C — It reduces the risk of ventilator-associated pneumonia (VAP)
Answer: It reduces the risk of ventilator-associated pneumonia (VAP) While invasive mechanical ventilation has several advantages such as offering better control over oxygen levels, providing more accurate monitoring of ventilatory parameters, and being suitable for more severe cases of respiratory failure, it increases the risk of ventilator-associated pneumonia (VAP) compared to non-invasive methods.

3. A — Acute respiratory distress syndrome (ARDS)
Answer: Acute respiratory distress syndrome (ARDS) Positive pressure ventilation is most effective for conditions like ARDS as it helps improve oxygenation and reduces the work of breathing by keeping alveoli open. While positive pressure ventilation may assist in the general management of COPD, pulmonary fibrosis, and pulmonary embolism, it is not the primary treatment modality for these conditions. Pulmonary fibrosis involves lung scarring that doesn't necessarily benefit from positive pressure, pulmonary embolism primarily requires antithrombotic treatment, and COPD management often focuses on airway clearance and bronchodilation.

4. D — 10%
Answer: 10% Only 10% of a nebulized medication dose typically reaches the alveoli. Ensuring proper technique during administration is crucial to maximize the therapeutic effect of the medication.

5. B — 13.86 mg H2O/L
Answer: 13.86 mg H2O/L Absolute humidity is calculated by multiplying relative humidity by the capacity of air to hold water. For this question, the equation is 0.60 * 23.1 mg H2O/L = 13.86 mg H2O/L.

6. A — Hypotension
Answer: Hypotension Bronchodilator therapy, particularly with beta-agonists, can cause an increase in heart rate and blood pressure due to its stimulatory effects. Conditions such as hypertension, tachycardia, and cardiac arrhythmias must be carefully monitored as the medication can exacerbate these issues. Hypotension, on the other hand, is not typically aggravated by bronchodilators and thus does not require additional consideration.

7. A — Diarrhea-induced metabolic acidosis
Answer: Diarrhea-induced metabolic acidosis This ABG result indicates metabolic acidosis. Persistent diarrhea can cause a significant loss of bicarbonate, leading to metabolic acidosis. Intractable vomiting typically causes metabolic alkalosis. COPD exacerbation usually results in respiratory acidosis. Severe anxiety causing hyperventilation typically results in respiratory alkalosis.

8. D — Increased erythropoiesis
Answer: Increased erythropoiesis Hypoxemia in COPD patients does not increase erythropoiesis directly. Instead, it frequently leads to pulmonary hypertension, polycythemia, and right ventricular hypertrophy due to chronic low oxygen levels and the subsequent physiological responses.

9. C — Pursed-lip breathing
Answer: Pursed-lip breathing Pursed-lip breathing helps to slow down the exhalation process, keep the airways open longer, and prevent airway collapse, thereby promoting bronchodilation and improving airflow during an asthmatic episode.

10. B — Increased physical activity
Answer: Increased physical activity Using a mechanical ventilator cannot cause an increase in physical activity. It is intended to assist in breathing. Barotrauma, ventilator-associated pneumonia, and oxygen toxicity are potential hazards of mechanical ventilation.

11. A — History of hypertension
Answer: History of hypertension History of hypertension is not a contraindication for administering a bronchodilator via nebulizer. Bronchodilators should be avoided or used with caution in patients with severe tachycardia, acute myocardial infarction, or a history of hypersensitivity to the medication. Severe tachycardia, acute myocardial infarction, and a history of hypersensitivity to medication are potential contraindications as they may exacerbate the patient's condition.

12. D — 2-5 µm
Answer: 2-5 µm Particles with a mass median aerodynamic diameter (MMAD) of 2-5 µm are most effective for targeting the lower respiratory tract. Particles of < 0.1 µm will penetrate deeper into the airways and parenchyma, particles of 1-3 µm target the alveolar regions, and particles of 5-50 µm are primarily effective for the upper airways.

13. C — Improved cardiovascular stability
Answer: Improved cardiovascular stability Prolonged mechanical ventilation is associated with complications such as ventilator-associated pneumonia (VAP), barotrauma, and muscle atrophy due to disuse. Conversely, mechanical ventilation does not improve cardiovascular stability; it can sometimes impair it by affecting intrathoracic pressures and venous return.

14. A — Tension pneumothorax
Answer: Tension pneumothorax Acute shortness of breath, neck vein distention, and tracheal deviation are classic signs of a tension pneumothorax, which requires immediate medical intervention to decompress the affected side. Pulmonary embolism, bronchospasm, and congestive heart failure can present with respiratory distress but are unlikely to cause the combination of symptoms described.

15. D — The peak expiratory flow (PEF) should be measured after the administration of a short-acting bronchodilator.
Answer: The peak expiratory flow (PEF) should be measured after the administration of a short-acting bronchodilator. The peak expiratory flow (PEF) should be measured after the administration of a short-acting bronchodilator when evaluating the patient's asthma control level. This practice helps to determine the effectiveness of the bronchodilator and the patient's current level of airflow obstruction. Peak expiratory flow is not ideally measured at specific times of day without considering medication, nor does the patient's use of daily maintenance medications directly impact the validity of PEF readings.

16. B — 6-8 mL/kg of the patient's ideal body weight
The correct tidal volume setting for a pediatric patient, such as a six-year-old boy, is typically 6-8 mL/kg of the patient's ideal body weight. This range is appropriate for most patients and helps to avoid volutrauma by limiting the volume of air delivered with each ventilator breath. Using a higher range, like 8-10 mL/kg, may be suitable for older children or adolescents, while a lower range, such as 4-6 mL/kg, could be considered for neonates or those with specific lung injuries.

17. C — This is harmful due to the low temperature and low humidity
Answer: This is harmful due to the low temperature and low humidity Epithelial damage can occur during prolonged exposure of the lower airways to gas that is 25°C at 100% humidity. Although the relative humidity at this temperature is 100%, the absolute humidity is lower at 25°C than it would be at the body's temperature of 37°C. This lower absolute humidity and cooler temperature can harm the respiratory epithelium.

18. B — Pulmonary embolism
Answer: Pulmonary embolism Pulmonary embolism is a blockage in one of the pulmonary arteries in your lungs. It is often caused by blood clots that travel to the lungs from the legs or other parts of the body (deep vein thrombosis). Factors like cancer and chemotherapy increase the risk of blood clots and subsequent pulmonary embolism. Pneumonia is an infection that inflames the air sacs in one or both lungs. Cancer metastasis to the lungs would show gradual respiratory decline rather than sudden symptoms. Asthma exacerbation is typically linked with a history of asthma and triggers such as allergies or respiratory infections, not chemotherapy.

19. D — Vesicular breath sounds
Answer: Vesicular breath sounds Vesicular breath sounds are characterized by their low-pitch and soft-intensity, and are normally auscultated over the bases of the lungs. Tracheal and bronchial breath sounds are loud and high-pitched, typically heard over the trachea. Bronchovesicular breath sounds have a moderate pitch and intensity, usually heard around the upper sternum and between the scapula.

20. C — Use a pulse oximeter to continuously monitor oxygen saturation
Answer: Use a pulse oximeter to continuously monitor oxygen saturation Using a pulse oximeter provides continuous, real-time monitoring of oxygen saturation, making it the most reliable method. Periodic sampling through arterial blood gases can be invasive and may not provide timely data. Checking each hour with a bedside monitor does not offer continual monitoring and can miss fluctuations. Estimating based on visible signs is highly subjective and inaccurate.

21. B — Asymmetry in chest movements can indicate underlying pathological conditions.
Answer: Asymmetry in chest movements can indicate underlying pathological conditions. Asymmetry in chest movements during ventilation can suggest conditions like atelectasis, pleural effusion, or pneumothorax. Symmetrical chest expansion is typically observed in healthy individuals. Therefore, observing asymmetrical chest movements is a crucial clinical sign indicating potential respiratory issues.

22. A — The patient has a history of significant radon exposure.
Answer: The patient has a history of significant radon exposure. Radon exposure is more commonly linked to lung cancer rather than asthma. A family history of asthma, prolonged exposure to air pollution, and working in environments with high levels of dust and particulate matter are all known risk factors for developing asthma.

23. C — Acidosis
Answer: Acidosis Complications of mechanical ventilation can include ventilator-associated pneumonia (VAP) due to prolonged intubation, barotrauma caused by excessive ventilatory pressures, and oxygen toxicity from high levels of oxygen exposure. Acidosis is typically an underlying condition that may require mechanical ventilation but is not a complication caused by the ventilation itself.

24. C — Albuterol
Answer: Albuterol The patient appears to be having a severe asthma attack, and albuterol is a bronchodilator commonly used to provide quick relief from asthma symptoms. Ipratropium bromide, while helpful, should be used as an adjunct to albuterol for a combination therapy in severe cases. Dexamethasone is a corticosteroid and is used for long-term management rather than immediate relief. Epinephrine is generally reserved for anaphylaxis rather than asthma attacks.

25. C — Administering bronchodilators and steroids is a mainstay of treatment
Answer: Administering bronchodilators and steroids is a mainstay of treatment Asthma exacerbations are primarily treated with bronchodilators, often in the form of short-acting beta-agonists (SABA), and systemic corticosteroids. These therapies help to open airways and reduce inflammation. While severe cases may require escalation to other forms of respiratory support, mechanical ventilation, and emergency intubation are generally reserved for life-threatening situations. Antibiotics are not typically indicated unless there is a concurrent bacterial infection.

26. A — Continue with current treatment and provide supplemental oxygen as needed
Answer: Continue with current treatment and provide supplemental oxygen as needed A patient with known COPD who has an $$SpO_{2}$$ of 89% and is in no acute distress typically does not require invasive intervention. Continuing current treatment with adjustments like providing supplemental oxygen is generally sufficient unless there are additional signs of respiratory failure.

27. D — Magnetic Resonance Imaging (MRI)
Answer: Magnetic Resonance Imaging (MRI) Magnetic Resonance Imaging (MRI) is generally not used to assess ARDS. MRI is more commonly used for detailed imaging of soft tissues and the central nervous system. Chest X-Ray is commonly used to identify bilateral infiltrates indicative of ARDS. Computed Tomography (CT) Scan provides detailed images that can help identify lung pathology in ARDS patients. Ultrasound can be used to detect pleural effusions and other lung abnormalities associated with ARDS.

28. D — 1 & 3
Answer: 1 & 3 Influenza is predominantly spread via droplet transmission, requiring droplet precautions. Standard precautions should always be followed for every patient. Airborne, contact, or contact plus precautions are not required for influenza.

29. B — A probability of a single viable microorganism occurring on a device that has undergone the sterilization process
Answer: A probability of a single viable microorganism occurring on a device that has undergone the sterilization process The sterility assurance level (SAL) is the probability of a single viable microorganism occurring on a device that has been subjected to sterilization. The commonly accepted SAL for medical devices is $$10^{-6}$$, which ensures a high level of sterility. Lower probabilities, such as $$10^{-3}$$, are inadequate for most medical applications.

30. B — A back-up manual ventilator (bag-valve mask) stored in a different room
Answer: A back-up manual ventilator (bag-valve mask) stored in a different room. While having a back-up manual ventilator (bag-valve mask) is essential for patient safety, it is not necessary for ensuring the proper function of a mechanical ventilator. Mechanical ventilators should be equipped with alarms for disconnections and high/low pressure, a humidification system to prevent drying of airways, and regular routine maintenance checks.

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