ARDS and Mechanical Ventilation Practice Exam (Sample)

Study Guide

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Questions

1. **Which nursing intervention for a mechanically ventilated patient can be delegated to an experienced licensed practical/vocational nurse (LPN/VN)?**

   A. Assess breath sounds every hour.

   B. Monitor central venous pressures.

   C. Place patient in the prone position.

   D. Insert an indwelling urinary catheter.

2. **What should the nurse anticipate giving to a 19-year-old patient with no prior tetanus vaccinations and multiple lacerations?**

   A. Tetanus immunoglobulin (TIG) only

   B. TIG and tetanus-diphtheria toxoid (Td)

   C. Tetanus-diphtheria toxoid and pertussis vaccine (Tdap) only

   D. TIG and tetanus-diphtheria toxoid and pertussis vaccine (Tdap)

3. **Which characteristic accurately describes positive pressure ventilation?**

   A. Requires artificial airway.

   B. Applied outside the body.

   C. Most similar to physiologic ventilation.

   D. Frequently used at home for neuromuscular disorders.

4. **Which medication should the nurse discuss with the healthcare provider before administering to a patient with ARDS?**

   A. Gentamicin 60 mg IV

   B. Pantoprazole (Protonix) 40 mg IV

   C. Sucralfate (Carafate) 1 gram per NG tube

   D. Methylprednisolone (Solu-Medrol) 60 mg IV

5. **What does maintaining appropriate cuff inflation on the endotracheal tube primarily prevent?**

   A. Aspiration of secretions

   B. Respiratory acidosis

   C. Ventilator-associated pneumonia

   D. Airway obstruction

6. What is the significance of a patient's BUN level of 32 mg/dL in the context of acute respiratory conditions?

A. Indicates immediate need for medication adjustment

B. Suggests dehydration or renal impairment

C. Reflects adequate nutritional status

D. Shows a response to IV antibiotics

7. What should a nurse do first when discovering a patient in respiratory distress with the endotracheal tube on the floor?

A. Activate the rapid response team.

B. Provide reassurance to the patient.

C. Call the health care provider to reinsert the tube.

D. Manually ventilate the patient with 100% oxygen.

8. What lab finding would confirm hypoxemic respiratory failure?

A. PaCO2 greater than 45 mmHg

B. PaO2 less than 60 mmHg

C. Normal bicarbonate levels

D. Decreased hemoglobin concentration

9. Which action by a new registered nurse indicates a need for further education regarding mechanical ventilation?

A. The RN increases the FIO2 to 100% before suctioning.

B. The RN secures a bite block in place using adhesive tape.

C. The RN asks for assistance to resecure the endotracheal tube.

D. The RN positions the patient with the head of bed at 10 degrees.

10. When assessing a patient with ARDS, which cardiac finding may indicate distress?

A. Normal heart rhythm.

B. Tachycardia.

C. Bradycardia.

D. Irregular pulse.

Answers

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

Explanations

1. Which nursing intervention for a mechanically ventilated patient can be delegated to an experienced licensed practical/vocational nurse (LPN/VN)?

A. Assess breath sounds every hour.

B. Monitor central venous pressures.

C. Place patient in the prone position.

D. Insert an indwelling urinary catheter.

The delegation of nursing tasks must consider the complexity of the procedures and the level of training required to perform them safely. In this scenario, inserting an indwelling urinary catheter is a task that can be performed by an experienced licensed practical nurse (LPN/VN). In many healthcare settings, LPNs/VNs are trained and authorized to conduct catheterizations, which involves relating to patient comfort and maintaining a sterile technique. The other options involve more complex assessments and monitoring tasks that require a higher level of clinical judgment and skills typically associated with registered nurses (RNs). For instance, assessing breath sounds every hour requires the ability to interpret findings and possibly make care decisions based on those results. Monitoring central venous pressures involves understanding hemodynamic status and may need immediate response to abnormal findings. Placing a patient in the prone position is a procedure that requires careful consideration of the patient's overall condition and potential complications, usually necessitating an RN's oversight. Therefore, the task of inserting an indwelling urinary catheter is appropriate to delegate to an experienced LPN/VN, given their education and skill set in performing such tasks.

2. What should the nurse anticipate giving to a 19-year-old patient with no prior tetanus vaccinations and multiple lacerations?

A. Tetanus immunoglobulin (TIG) only

B. TIG and tetanus-diphtheria toxoid (Td)

C. Tetanus-diphtheria toxoid and pertussis vaccine (Tdap) only

D. TIG and tetanus-diphtheria toxoid and pertussis vaccine (Tdap)

The appropriate response for a 19-year-old patient with no prior tetanus vaccinations and multiple lacerations is to administer tetanus immunoglobulin (TIG) along with the tetanus-diphtheria toxoid and pertussis vaccine (Tdap). This combination is critical for addressing both immediate and long-term protection. TIG is used in this situation as it provides passive immunity, which is especially important for someone who is unvaccinated and may be at significant risk of tetanus from their lacerations. The administration of TIG helps to neutralize any circulating tetanus toxin and offers immediate but short-term protection. Additionally, the tetanus-diphtheria toxoid and pertussis vaccine (Tdap) provide active immunization. Since this patient has never had any vaccinations for tetanus, the Tdap vaccine will stimulate their immune system to produce its own protective antibodies against tetanus, diphtheria, and pertussis in the long run. Using both TIG and Tdap ensures that the patient receives both immediate safety from potential tetanus infection and lasting immunity, which is vital given the presence of multiple lacerations and the patient's lack of vaccination history. This comprehensive approach balances the need for immediate protection with the

3. Which characteristic accurately describes positive pressure ventilation?

A. Requires artificial airway.

B. Applied outside the body.

C. Most similar to physiologic ventilation.

D. Frequently used at home for neuromuscular disorders.

Positive pressure ventilation is a mode of mechanical ventilation where air is delivered to the lungs under pressure. One of the defining features of this technique is that it generally necessitates an artificial airway, such as an endotracheal tube or a tracheostomy, to ensure that the air can effectively reach the patient's lungs. This artificial airway allows for the direct introduction of pressurized air, which is essential for maintaining adequate ventilation, especially in patients who have compromised respiratory function. While it's true that some forms of positive pressure ventilation can be applied non-invasively using masks (such as CPAP or BiPAP), the requirement for an artificial airway is most commonly associated with situations where higher levels of respiratory support are needed or when patients are unable to breathe adequately on their own. Thus, this characteristic remains a fundamental aspect of the use of positive pressure ventilation in various clinical settings. In contrast, other options do not accurately describe positive pressure ventilation in this context. For instance, while positive pressure ventilation is indeed applied to the lungs, it operates within the body rather than outside it. Furthermore, it does not resemble physiologic ventilation, which relies on negative pressure to draw air into the lungs, such as in normal breathing. Lastly, while positive pressure devices

4. Which medication should the nurse discuss with the healthcare provider before administering to a patient with ARDS?

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C. Sucralfate (Carafate) 1 gram per NG tube

D. Methylprednisolone (Solu-Medrol) 60 mg IV

In the context of a patient with Acute Respiratory Distress Syndrome (ARDS), the discussion around administering gentamicin as the medication of choice is important because of the potential for renal toxicity, especially in critically ill patients. Gentamicin is an aminoglycoside antibiotic typically used for treating serious infections, particularly those caused by gram-negative bacteria. However, in patients with ARDS, particularly those who may have impaired renal function or are on mechanical ventilation, there is a risk for aminoglycosides to exacerbate kidney issues. Furthermore, the use of gentamicin in patients with concurrent lung disease must be considered carefully since it can have nephrotoxic effects. When renal function is compromised, there's an increased risk of accumulation of the drug and sustained oto- and nephrotoxicity. Thus, it is crucial for the nurse to discuss with the healthcare provider before administering gentamicin, so that proper renal function assessments can be anticipated and alternative treatments can be planned if necessary. In contrast, options like pantoprazole and sucralfate, which are generally regarded as safe and low-risk regarding renal implications, do not typically necessitate such cautious deliberation in the context of ARDS management. Methylprednisolone,

5. What does maintaining appropriate cuff inflation on the endotracheal tube primarily prevent?

A. Aspiration of secretions

B. Respiratory acidosis

C. Ventilator-associated pneumonia

D. Airway obstruction

Maintaining appropriate cuff inflation on the endotracheal tube primarily prevents aspiration of secretions. When the cuff is inflated to an appropriate pressure, it creates a seal in the trachea, effectively preventing both air leaks and the aspiration of saliva or other secretions from the upper airway. This barrier protects the lungs from potential contaminants that could lead to serious complications, such as making the patient more susceptible to pneumonia. Inadequate cuff inflation may allow secretions to pass around the cuff into the lower airways, increasing the risk of aspiration. Therefore, regular monitoring and adjustment of cuff inflation is crucial in preventing this risk and ensuring a safely maintained airway during mechanical ventilation. Proper cuff management is a fundamental aspect of critical care management to safeguard respiratory status and prevent further complications.

6. What is the significance of a patient's BUN level of 32 mg/dL in the context of acute respiratory conditions?

A. Indicates immediate need for medication adjustment

B. Suggests dehydration or renal impairment

C. Reflects adequate nutritional status

D. Shows a response to IV antibiotics

A BUN level of 32 mg/dL is significant as it indicates potential dehydration or renal impairment. Blood urea nitrogen (BUN) is a waste product formed from protein metabolism, and its levels can rise for several reasons. In the context of acute respiratory conditions, an elevated BUN level often suggests that the patient may be experiencing volume depletion, which could occur due to dehydration, bleeding, or inadequate kidney perfusion. In respiratory distress situations, patients might have increased metabolic demands or may not be consuming adequate fluids, leading to dehydration. Moreover, kidney function could be compromised, particularly in cases of acute kidney injury or chronic kidney disease. Elevated BUN levels can thus serve as a valuable indicator for healthcare providers to assess the patient's volume status and renal function, prompting them to initiate appropriate interventions, such as rehydration or further evaluation of renal health. This context highlights the importance of monitoring renal function and hydration status in patients with acute respiratory conditions, as these factors can significantly influence treatment plans and overall management strategies in a clinical setting.

7. What should a nurse do first when discovering a patient in respiratory distress with the endotracheal tube on the floor?

A. Activate the rapid response team.

B. Provide reassurance to the patient.

C. Call the health care provider to reinsert the tube.

D. Manually ventilate the patient with 100% oxygen.

When a nurse discovers a patient in respiratory distress and finds the endotracheal tube on the floor, the immediate priority is to ensure adequate ventilation and oxygenation. Manually ventilating the patient with 100% oxygen serves to quickly provide the patient with the necessary support for their breathing until further interventions can be implemented. This step addresses the critical situation directly by helping to restore oxygen supply and maintain sufficient ventilation, which can be life-saving if the patient is unable to breathe adequately on their own. This action is crucial because if the endotracheal tube is dislodged, the patient is at risk for hypoxia and respiratory failure. By manually ventilating with 100% oxygen, the nurse effectively mitigates the immediate danger while preparing to carry out further actions, such as calling for help or preparing to reinsert the tube. Following this immediate intervention, it is essential for the nurse to activate the rapid response team or notify the healthcare provider, but ensuring the patient is receiving oxygen is the first and most critical step in managing this emergency.

8. What lab finding would confirm hypoxemic respiratory failure?

A. PaCO2 greater than 45 mmHg

B. PaO2 less than 60 mmHg

C. Normal bicarbonate levels

D. Decreased hemoglobin concentration

The lab finding that would confirm hypoxemic respiratory failure is a PaO2 less than 60 mmHg. In the context of respiratory failure, particularly hypoxemic respiratory failure, the primary issue is inadequate oxygenation of the blood. The PaO2 measurement directly reflects the amount of oxygen dissolved in the arterial blood. A value below 60 mmHg indicates significant impairment in oxygen transfer, which is characteristic of hypoxemic respiratory failure. In contrast, elevated levels of PaCO2, as indicated in another option, suggest hypercapnia, which is more related to ventilatory failure rather than exclusively to hypoxemia. Normal bicarbonate levels could indicate a normal metabolic response to respiratory challenges, but they do not provide definitive evidence of oxygenation status. Similarly, decreased hemoglobin concentration may suggest anemia, which can lead to inadequate oxygen delivery but does not directly indicate hypoxemic respiratory failure on its own. Therefore, a PaO2 less than 60 mmHg is a clear indicator of hypoxemic respiratory failure.

9. Which action by a new registered nurse indicates a need for further education regarding mechanical ventilation?

A. The RN increases the FIO2 to 100% before suctioning.

B. The RN secures a bite block in place using adhesive tape.

C. The RN asks for assistance to resecure the endotracheal tube.

D. The RN positions the patient with the head of bed at 10 degrees.

The choice indicating a need for further education is when the new registered nurse positions the patient with the head of the bed at 10 degrees. In patients receiving mechanical ventilation, especially those who are critically ill or at risk for developing complications such as ventilator-associated pneumonia, it is recommended to elevate the head of the bed to at least 30 to 45 degrees. This position helps reduce the risk of aspiration, promotes better lung mechanics, and improves oxygenation by enhancing ventilation-perfusion matching. In contrast, the other actions mentioned align with established practices in mechanical ventilation. Increasing the FIO2 to 100% before suctioning is a common practice to optimize oxygenation during the procedure. Using a bite block to secure the endotracheal tube is appropriate to prevent accidental extubation. Seeking assistance to resecure the endotracheal tube demonstrates a good understanding of the need for teamwork and patient safety. Each of these actions supports best practices in managing patients on mechanical ventilation, while a low elevation of the head of bed does not.

10. When assessing a patient with ARDS, which cardiac finding may indicate distress?

A. Normal heart rhythm.

B. Tachycardia.

C. Bradycardia.

D. Irregular pulse.

In patients with Acute Respiratory Distress Syndrome (ARDS), tachycardia is a common finding that may indicate distress. This increased heart rate often results from the physiological stress the body is undergoing due to hypoxia and the inflammatory processes associated with ARDS. As the lungs fail to adequately oxygenate the blood and remove carbon dioxide, the heart compensates by increasing its rate to maintain cardiac output and ensure tissues receive sufficient oxygenation. In the context of ARDS, tachycardia often correlates with worsening respiratory status or the potential for developing further complications. It may also serve as an early warning sign that the patient is experiencing significant respiratory distress or is progressing towards respiratory failure, prompting caregivers to assess further and consider interventions. Other findings such as a normal heart rhythm or bradycardia typically would not indicate distress. A normal heart rhythm suggests stability, while bradycardia may indicate underlying issues such as increased vagal tone or a response to hypoxia, which can sometimes reflect a more severe physiological compromise. An irregular pulse could imply other cardiac concerns but is not as directly indicative of respiratory distress in the setting of ARDS. Thus, the presence of tachycardia is a crucial vital sign to monitor and interpret in the overall