Detailed Answer Key
Complex Oxygenation ATI Practice

1. A nurse is conducting a primary survey of a client who has sustained life-threatening injuries due to a motor-vehicle crash. Identify the sequence of actions the nurse should take. (Move the actions into the box on the right, placing them in the selected order of performance. Use all the steps.)

   C. Open the airway using a jaw-thrust maneuver.

   D. Determine effectiveness of ventilator efforts.

   B. Establish IV access.

   A. Perform a Glasgow Coma Scale assessment.

   E. Remove clothing for a thorough assessment.

2. A nurse is caring for a client who has active pulmonary tuberculosis (TB) and is to be started on intravenous rifampin therapy. The nurse should instruct the client that this medication can cause which of the following adverse effects?

   A. Constipation

      Rationale: Rifampin does not cause constipation. More common gastrointestinal effects are diarrhea and nausea.

   B. Black colored stools

      Rationale: It is most commonly iron supplements that cause stools to turn black, not rifampin.

   C. Staining of teeth

      Rationale: Teeth may be stained from taking liquid iron preparations, not from taking rifampin.

   D. Body secretions turning a red-orange color

      Rationale: Rifampin is used in combination with other medicines to treat TB. Rifampin will cause the urine, stool, saliva, sputum, sweat, and tears to turn reddish-orange to reddish-brown.

3. A nurse is caring for a client who has returned from the surgical suite following surgery for a fractured mandible. The client had intermaxillary fixation to repair and stabilize the fracture. Which of the following actions is the priority for the nurse to take?

   A. Prevent aspiration.

      Rationale: When using the airway, breathing, circulation approach to client care, the nurse should determine that the priority goal is to prevent the client from aspirating. Because the client's jaws are wired together, aspiration of emesis is a possibility. Therefore, the client should be given medication for nausea, and wire cutters should be kept at the bedside in case of vomiting.

   B. Ensure adequate nutrition.

      Rationale:

The client should be NPO initially after surgery until the gag reflex has returned. Once the client is able to eat, the client may advance to a calorie-appropriate, high-protein liquid diet. However, this is not the priority at this time.

C. Promote oral hygiene

Rationale: The client will have an incision inside the mouth. While it is important that the client receive frequent mouth cleaning, this is not the priority at this time.

D. Relieve the client's pain.

Rationale: While the client may be in pain and will need to be medicated, this is not the priority at this time.

4. A nurse caring for a client who has hypertension and asks the nurse about a prescription for propranolol. The nurse should inform the client that this medication is contraindicated in clients who have a history of which of the following conditions?

A. Asthma

Rationale: Propranolol, a beta-blocker, is contraindicated in clients who have asthma because it can cause bronchospasms. Propranolol blocks the sympathetic stimulation, which prevents smooth muscle relaxation.

B. Glaucoma

Rationale: Beta-blockers are contraindicated in clients who have cardiogenic shock, but are not contraindicated in a client who has glaucoma.

C. Depression

Rationale: Beta-blockers are contraindicated in clients who have AV heart block, but are not contraindicated in clients who have depression.

D. Migraines

Rationale: Beta-blockers are used for prophylactic treatment of migraine headaches.

5. A nurse is caring for a client who has acute respiratory distress syndrome (ARDS), and requires mechanical ventilation. The client receives a prescription for pancuronium. The nurse recognizes that this medication is for which of the following purposes?

A. Decrease chest wall compliance

Rationale: Neuromuscular blocking agents, such as pancuronium, induce paralysis by relaxing skeletal muscles, which improves chest wall compliance.

B. Suppress respiratory effort

Rationale: Neuromuscular blocking agents, such as pancuronium, induce paralysis and suppress the client's respiratory efforts to the point of apnea, allowing the mechanical ventilator to take over the work of breathing for the client. This therapy is especially helpful for a client who has ARDS

and poor lung compliance.

C. Induce sedation

Rationale: Neuromuscular blocking agents, such as pancuronium, induce paralysis and have no sedative effect at all. A sedative or analgesic should be prescribed as an adjunct to the pancuronium.

D. Decrease respiratory secretions

Rationale: Neuromuscular blocking agents, such as pancuronium, induce paralysis. An adverse effect of this medication is increased production of respiratory secretions.

6. A nurse is caring for a client who experienced a lacerated spleen and has been on bedrest for several days. The nurse auscultates decreased breath sounds in the lower lobes of both lungs. The nurse should realize that this finding is most likely an indication of which of the following conditions?

A. An upper respiratory infection

Rationale: Although the spleen plays a role in immunity against bacterial infections, the nurse would be more concerned about the risk of an upper respiratory infection in a client who has undergone splenectomy, or removal of the spleen.

B. Pulmonary edema

Rationale: Pulmonary edema may develop in a client who is on bedrest following trauma, but this is not the most likely cause of decreased breath sounds in this client.

C. Atelectasis

Rationale: Atelectasis is the collapse of part or all of a lung by blockage of the air passages (bronchus or bronchioles) or by hypoventilation. Prolonged bedrest with few changes in position, ineffective coughing, and underlying lung disease are risk factors for the development of atelectasis.

D. Delayed gastric emptying

Rationale: Although delayed gastric emptying may result in ineffective coughing, this is not the most likely cause of decreased breath sounds in this client.

7. A nurse is observing the closed chest drainage system of a client who is 24 hr post thoracotomy. The nurse notes slow, steady bubbling in the suction control chamber. Which of the following actions should the nurse take?

A. Check the tubing connections for leaks.

Rationale: This action is used to determine why a water seal chamber has continuous bubbling, not slow, steady bubbling.

B. Check the suction control outlet on the wall.

Rationale: This action is used to determine why a suction control chamber that is hooked to wall suction has little or no bubbling.

C. Clamp the chest tube.

Rationale: The nurse should briefly clamp the chest tube to check for air leaks or to change the drainage system. This is not an appropriate action for the nurse to take at this time.

D. Continue to monitor the client's respiratory status.

Rationale: Slow, steady bubbling in the suction control chamber is an expected finding. Therefore, the nurse should continue to monitor the client's respiratory status.

8. A nurse is reviewing the laboratory findings for a client who developed fat embolism syndrome (FES) following a fracture. Which of the following laboratory findings should the nurse expect?

A. Decreased serum calcium level

Rationale: A decreased serum calcium level is an expected finding for FES, although the reason for this finding is unknown.

B. Decreased level of serum lipids

Rationale: An increase serum lipid level is an expected finding for FES, although the reason for this finding is unknown.

C. Decreased erythrocyte sedimentation rate (ESR)

Rationale: An increased ESR is an expected finding for FES, although the reason for this finding is unknown.

D. Increased platelet count

Rationale: A decreased platelet count is an expected finding for FES, although the reason for this finding is unknown.

9. A nurse is caring for a client who is unconscious and has a breathing pattern characterized by alternating periods of hyperventilation and apnea. The nurse should document that the client has which of the following respiratory alterations?

A. Kussmaul respirations

Rationale: Kussmaul respirations are deep, rapid, regular respirations and are commonly seen in clients who are experiencing metabolic acidosis.

B. Apneustic respirations

Rationale: Apneustic respirations are characterized by a prolonged inspiratory phase alternating with expiratory pauses.

C. Cheyne-Stokes respirations

Rationale: Cheyne-Stokes respirations (CSR) are characterized by a rhythmic increase (to the point of hyperventilation) and decrease (to the point of apnea) in the rate and depth of respiration. CSR

are common respiratory alterations seen in clients who are unconscious, comatose, or moribund (approaching death).

D. Stridor

Rationale: Stridor is a continuous, high-pitched sound heard on inspiration in clients who have partial airway obstruction of the larynx or trachea.

10AA nurse is teaching a client who is obese and has obstructive sleep apnea how to decrease the number of nightly apneic episodes. Which of the following client statements indicates an understanding of the teaching?

A. "It might help if I tried sleeping only on my back."

Rationale: The flat, supine position increases the chance of obstructing the airway.

B. "I'll sleep better if I take a sleeping pill at night."

Rationale: Hypnotics (sleeping pills) aggravate sleep apnea and can also cause increased daytime somnolence (sleepiness).

C. "I'll get a humidifier to run at my bedside at night."

Rationale: Bedside humidifiers are an effective way to help clients who have thick pulmonary secretions, but they do not help sleep apnea.

D. "If I could lose about 50 pounds, I might stop having so many apneic episodes."

Rationale: Sleep apnea is a disorder in which breathing stops during sleep for at least 10 seconds at least five times per hour. Excessive weight is one of the three major risk factors associated with sleep apnea and is the only one the client can modify (gender and age are the other two). Weight loss and maintenance are the primary interventions for the treatment of sleep apnea.

11AA nurse is caring for a client who has a chest tube connected to a closed drainage system and needs to be transported to the x-ray department. Which of the following actions should the nurse take?

A. Clamp the chest tube prior to transferring the client to a wheelchair.

Rationale: Clamping the tube can lead to a tension pneumothorax (collapse of the lung) due to increased intrathoracic pressure from gas and fluid that cannot be drained from the pleural space.

B. Disconnect the chest tube from the drainage system during transport.

Rationale: The chest tube should not be disconnected from the drainage system.

C. Keep the drainage system below the level of the client's chest at all times.

Rationale: During transport, the drainage system should be kept below the level of the client's chest to prevent air and drainage fluid from re-entering the thoracic cavity.

D. Empty the collection chamber prior to transport.

Rationale:

Emptying the collection chamber prior to transport is unnecessary.

12AA nurse is providing teaching to a client who is postoperative following coronary artery bypass graft (CABG) surgery and is receiving opioid medications to manage discomfort. Aside from managing pain, which of the following desired effects of medications should the nurse identify as most important for the client's recovery?

A. It decreases the client's level of anxiety.

Rationale: The nurse should assess for and manage the client's anxiety, as this can result in postoperative delirium. Following the administration of an opioid medication, the nurse should assess the client for relief of pain and apprehension. Even though opioid analgesics may decrease the client's level of anxiety (partially from pain reduction alone), there is another effect that is more important.

B. It facilitates the client's deep breathing.

Rationale: When using the airway, breathing, circulation approach to client care, the nurse should identify facilitation of deep breathing as the most important desired effect of opioids aside from pain relief. Following thoracic type surgeries, the client's has increased pain with moving, deep breathing and coughing. Opioid medications help minimize the discomfort experienced with deep breathing and coughing which prevents the development of postoperative pneumonia. The nurse should also encourage the client to splint his incision to help minimize pain.

C. It enhances the client's ability to sleep.

Rationale: The nurse should take measures to facilitate sleep in the postoperative client such as providing quiet time that is undisturbed, dimming lights, and ensuring the client is comfortable and not in pain. Even though opioid analgesics may increase the client's ability to relax and sleep, another effect is more important.

D. It reduces the client's blood pressure.

Rationale: The nurse should closely monitor the cardiac status of the client who is postoperative. The client who is experiencing pain releases catecholamines which produce vasoconstriction and increase blood pressure. Even though opioid analgesics may assist in reducing a client's blood pressure, another effect is more important.

13. A nurse is assessing a client who has a pneumothorax with a chest tube in place. For which of the following findings should the nurse notify the provider?

A. Movement of the trachea toward the unaffected side

Rationale: A chest tube inserted for a spontaneous pneumothorax may result in the development of a tension pneumothorax, a medical emergency. This results from air in the pleural space compressing the blood vessels of the thorax and limiting blood return to the heart. An assessment of tracheal deviation, or movement of the trachea toward the unaffected side, is indicative of tension pneumothorax and should be reported to the provider immediately.

B. Bubbling of the water in the water seal chamber with exhalation

Rationale: The water seal chamber prevents air from re-entering the pleural space. Bubbling in this

chamber indicates air is being removed from the client's pleural space, allowing re-expansion of the lung. It should occur during exhalation, coughing, and sneezing. When the air from the pleural space is removed, the bubbling will stop. Excessive bubbling in this chamber may indicate an air leak and should be further investigated by the nurse.

C. Crepitus in the area above and surrounding the insertion site

Rationale: Crepitus, or subcutaneous emphysema, sounds like a crackling noise when palpated. It can be an expected finding in the client who has a pneumothorax and will persist for several hours (or longer, depending on how long it takes the air to be reabsorbed) following evacuation of the pneumothorax.

D. Eyelets are not visible

Rationale: The observation of eyelets would indicate to the nurse that the chest tube has been become dislodged from the pleural space and would necessitate reporting to the provider.

14. A nurse in an emergency department is caring for a client who has a sucking chest wound resulting from a gunshot. The client has a blood pressure of 100/60 mm Hg, a weak pulse rate of 118/min, and a respiratory rate of 40/min. Which of the following actions should the nurse take?

A. Raise the foot of the bed to a 90° angle.

Rationale: Trendelenburg position increases pressure on the heart and lungs and is contraindicated for a client who has an open chest wound. The nurse should place the client in a moderate to high-Fowler's position.

B. Remove the dressing to inspect the wound.

Rationale: A dressing should not be removed from a sucking chest wound until immediately prior to chest tube insertion. Removal of the dressing will cause an increase in size of the pneumothorax and increased respiratory difficulty.

C. Prepare to insert a central line.

Rationale: Although the client may need IV access, a central line is not usually needed in this situation.

D. Administer oxygen via nasal cannula.

Rationale: The client has an increased respiratory rate and heart rate, indicating that she is having respiratory difficulty. The sucking chest wound indicates the client has a pneumothorax and/or a hemothorax. Administering oxygen will increase the oxygen exchange in the lungs and the oxygen available to the tissues.

15. A nurse is suctioning the endotracheal tube of a client who is on a ventilator. The client's heart rate increases from 86/min to 110/min and becomes irregular. Which of the following actions should the nurse take?

A. Obtain a cardiology consult.

Rationale: These manifestations are not related to a cardiac condition in this situation.

B. Suction the client less frequently.

Rationale: These manifestations are not the result of suctioning too frequently.

C. Administer an antidysrhythmic medication.

Rationale: These manifestations cannot be corrected with the use of an antidysrhythmic medication.

D. Perform pre-oxygenation prior to suctioning.

Rationale: Suctioning should be performed on the endotracheal tube of a client who is mechanically ventilated to remove accumulated secretions from the airways. Possible complications of the procedure include hypoxemia, manifested by tachycardia and arrhythmia, and tissue injury. . In preparation for suctioning, and to prevent hypoxemia, the client should be pre-oxygenated using a manual resuscitator bag set at 100% oxygen.

16AA nurse is caring for a client who is 1-day postoperative following a left lower lobectomy and has a chest tube in place. When assessing the client's three-chamber drainage system, the nurse notes that there is no bubbling in the suction control chamber. Which of the following actions should the nurse take?

A. Continue to monitor the client as this is an expected finding.

Rationale: The expected finding would be a gentle bubbling of the water in the suction control chamber.

B. Add more water to the suction control chamber of the drainage system.

Rationale: More water should not be added to the closed system.

C. Verify that the suction regulator is on and check the tubing for leaks.

Rationale: A lack of bubbling may indicate that either the suction regulator is turned off or that there is a leak in the tubing.

D. Milk the chest tube and dislodge any clots in the tubing that are occluding it.

Rationale: Stripping, or milking, can pull too hard on the chest cavity and may cause a tissue injury to the lung. Stripping is only done when specifically indicated.

17. A nurse in the post-anesthesia care unit is caring for a client who is postoperative following a thoracotomy and lobectomy. Which of the following postoperative assessments should the nurse give highest priority to?

A. Arterial blood gases

Rationale: According to the ABC priority-setting framework, the postoperative surgical client may need supplemental oxygen in order to maintain normal blood oxygen levels. The effectiveness of oxygenation is monitored using pulse oximetry and arterial blood gases.

B. Urinary output

Rationale: The nurse should monitor the client’s urinary output in order to monitor fluid status and cardiac output of the client who is postoperative; however, there is another assessment that would take

priority.

C. Chest tube drainage

Rationale: The nurse should monitor the amount and characteristics of chest tube drainage because drainage in excess of 70 mL/hr may indicate acute bleeding or require that administration of blood products. While this is an appropriate intervention, there is another intervention that would take priority.

D. Pain level

Rationale: The nurse should monitor for and treat pain in the client who is postoperative following a thoracotomy to provide comfort and to enhance the client's ability to deep breathe. However, there is another assessment that would take priority.

18. A client is admitted to the emergency room with a respiratory rate of 7/min. Arterial blood gases (ABG) reveal the following values. Which of the following is an appropriate analysis of the ABGs? pH 7.22 PaCO2 68 mm Hg Base excess -2 PaO2 78 mm Hg Saturation 80% Bicarbonate 26 mEq/L

A. Respiratory acidosis

Rationale: Respiratory acidosis occurs when there is retention of CO_2 due to an impairment of respiratory function. It can be the result of respiratory depression, seen with anesthesia or opioid administration; inadequate chest expansion, due to a weakness of the respiratory muscles or constriction to the thorax; an obstruction of the airway, seen in aspiration, bronchoconstriction, or laryngeal edema; or from an inability of the lungs to adequately diffuse gases (O_2 and CO_2), resulting from conditions such as pneumonia, COPD, chest trauma, or pulmonary emboli. Arterial blood gases will reveal a pH that is lower than the normal reference range (7.35 – 7.45) and a CO_2 level that is higher than the normal reference range (35 – 45 mm Hg).

B. Metabolic acidosis

Rationale: Metabolic acidosis occurs when there is an alteration in the level of hydrogen ions or a reduction in the amount of bicarbonate available. It can be the result of diabetic ketoacidosis, starvation, hypoxia, renal or liver failure, dehydration, or diarrhea. Arterial blood gases will reveal a pH that is lower than the normal reference range (7.35 – 7.45) and a bicarbonate (HCO_3) level that is lower than the normal reference range (21 – 28 mEq/mL).

C. Metabolic alkalosis

Rationale: Metabolic alkalosis occurs when there is an alteration in the level of HCO_3 along with an increase in the pH of the blood. It can be the result when a client ingests too much antacid from blood transfusions or total parenteral nutrition. It can also occur if the client has prolonged vomiting or NG suction, takes thiazide diuretics, or has a metabolic disorder such as hypercortisolism or hyper aldosteronism. Arterial blood gases will reveal a pH that is higher than the normal reference range (7.35 – 7.45) and an HCO_3 level that is higher than the normal reference range (35 – 45 mm Hg).

D. Respiratory alkalosis

Rationale: Respiratory alkalosis occurs when there is an excessive loss of CO_2 through hyperventilation, mechanical ventilation, fever, overdose of salicylates, or lesions to the central nervous system. Arterial blood gases will reveal a pH that is higher than the normal reference range (7.35 – 7.45) and a CO_2 level that is lower than the normal reference range (35 – 45 mm Hg).

19AA nurse is caring for four hospitalized clients. Which of the following clients should the nurse identify as being at risk for fluid volume deficit?

A. The client who has been NPO since midnight for endoscopy.

Rationale: Most clients with a baseline normal fluid status can tolerate being NPO overnight without risk of fluid volume deficit.

B. The client who has left-sided heart failure and has a brain natriuretic peptide (BNP) level of 600 pg/mL.

Rationale: The client who has heart failure has ventricular impairment which prevents adequate filling or emptying of blood, resulting in fluid overload or inadequate tissue perfusion. An elevated BNP level is indicative of increased blood volume, thus fluid volume excess.

C. The client who has end-stage renal failure and is scheduled for dialysis today.

Rationale: The client who has end-stage renal failure is unable to appropriately filter blood and excrete waste products, including fluid. This client is likely to have a fluid excess that is managed with dialysis.

D. The client who has gastroenteritis and is febrile.

Rationale: This client has two risk factors for the development of fluid volume deficit, or dehydration. Gastroenteritis is characterized by diarrhea and may also be associated with vomiting, so it can be a significant source of fluid loss. The client who has a fever can also lose fluid via diaphoresis, and fever raises the metabolic rate, further putting the client at increased risk for dehydration. Consequently, this is the client at greatest risk for fluid volume deficit.

20. A nurse is assessing a client who has a fracture of the femur. The nurse obtains vital signs on admission and again in 2 hours. Which of the following changes in assessment should indicate to the nurse that the client could be developing a serious complication?

A. Increased respiratory rate from 18 to 44/min.

Rationale: This change in respiratory rate is significant, as the first value is within the expected reference range, but the second value is very elevated for an adult client. Increased respiratory rate could be a manifestation of a possible fat embolism, a serious complication that may follow the type of fracture sustained by the client. Fat emboli can be trapped in lung tissue, leading to respiratory symptoms and mental disturbances.

B. Increased oral temperature from 36.6° C (97.8° F) to 37° C (98.6° F).

Rationale: This change in temperature is not significant, as both values are within the expected reference range. A client who has a fat embolism may develop a high temperature, usually 39.5º C (103 Fº).

C. Increased blood pressure from 112/68 to 120/72 mm Hg.

Rationale: This change in blood pressure is not significant, as both values are within the expected reference range.

D. Increased heart rate from 68 to 72/min.

Rationale: