Potter: Canadian Fundamentals of Nursing, 5th Edition

Lesson 1 Post Test

Answer Key for Airway Module Post Tests and Exam

1. Which of the following patients would have the greatest potential for an alteration in respiration?
    a) A 15 year-old male with a migraine headache.
    b) A 44 year-old female with anemia.
    c) A 19 year-old female with diarrhea.
    d) A 32 year-old male with an ear ache.

Correct answer: b
Rationale: Hemoglobin carries about 97% of oxygen to the tissues. Anemia lowers the oxygen-carrying capacity of the blood and potentially leads to hypoxia.

2. Which of the following, if exhibited by the patient, would indicate late hypoxia?
    a) Restlessness
    b) Anxiety
    c) Eupnea
    d) Cyanosis

Correct answer: d
Rationale: Restlessness and anxiety are early indicators of hypoxia. Cyanosis is a late indicator of hypoxia. Eupnea is normal respiration.

3. Which of the following would lead to an increase in oxygen demand?
    a) A fever
    b) Sleep
    c) Taking a narcotic
    d) Postural drainage

Correct answer: a
Rationale: Increased metabolic activity associated with a fever increases tissue oxygen demand. Postural drainage is an intervention used to mobilize secretions and maintain an open airway.

4. What nursing intervention is appropriate for the patient with a large amount of sputum?
    a) Perform nasotracheal suctioning every hour
    b) Encourage the patient to cough every hour while awake
    c) Place the patient on fluid restriction
    d) Avoid all milk products

Correct answer: b

Rationale: A patient with a large amount of sputum should be encouraged to cough every hour while awake. Suctioning should be performed on an as-needed basis. Adequate fluids should be maintained to help keep secretions thin and easy to expectorate. Although milk has a protein structure similar to sputum, it does not increase sputum production and plays an important role in nutrition.

5. Match the patient description to the type of cough that would be recommended.
    a) A patient who is 2 days post-op from abdominal surgery or a patient who is paralyzed. / matches 2) Quad cough
    b) A patient who has a spinal cord injury. / matches 3) Huff cough
    c) A patient with a large amount of sputum./ matches 1) Cascade cough

Rationale: A huff cough stimulates the natural cough reflex. It is helpful in clearing the large central airways. To perform a cascade cough, the patient inhales and holds the breath for 2 seconds, then coughs during expiration. This technique promotes airway clearance in patients with large volumes of sputum. The quad cough is used with patients who lack control of their abdominal muscles. As the patient is breathing out with as much force as possible, you push inward and upward on the abdominal muscles in the direction of the diaphragm.

6. An elderly woman is hospitalized with pneumonia and anemia. She is weak and has a poor cough effort. She has a history of cardiomyopathy. Her current vital signs are temperature 100.2 ˚F, pulse 114, respiration 26, blood pressure 106/58. She has oxygen ordered at 2 liters by nasal cannula. Her oxygen saturation measures 88% when on room air, 93% with supplemental oxygen. She develops shortness of breath on any activity and eats little because it is difficult for her to eat and breathe at the same time. Which of the following are risk factors for this patient developing hypoxia? (Select all that apply.)
    a) Anemia
    b) Tachycardia
    c) Increased secretions with weak cough
    d) Cardiomyopathy
    e) Shortness of breath
    f) Pneumonia

Correct Answer: a, c, d, f
Rationale: Hypoxia results when there is inadequate tissue oxygenation at the cellular level. Lowered oxygen-carrying capacity from anemia can lead to hypoxia. A diminished concentration of inspired oxygen, such as with an obstructed airway from secretions, results in lowered oxygen saturation. Cardiomyopathy results in poor tissue perfusion with oxygenated blood. With pneumonia there is decreased diffusion of oxygen from the alveoli to the blood, leading to inadequate tissue oxygenation. An increase in pulse rate is an adaptive response to meet the body's oxygen demand. Shortness of breath (dyspnea) is a symptom of decreased oxygenation.

Lesson 2 Post Test:

1. You are caring for a patient who has undergone major abdominal surgery one day ago. The 72-year-old male patient is weak and lethargic because of large doses of medication for pain control. After noting audible gurgling on inspiration and expiration, you complete a respiratory assessment. Which assessment parameters indicate the need for oral suction? (Select all that apply.)
    a) Unusual restlessness
    b) Gagging
    c) Gurgling and adventitious lung sounds
    d) Evidence of emesis in the mouth
    e) Persistent coughing
    f) Persistent complaints of pain
    g) Weakness and lethargy accompanied by drooling

Correct answer: a, b, c, d, e, g
Rationale: The following signs indicate the need for oropharyngeal suctioning: (1) restlessness, especially if it is new or unusual for your patient; (2) obvious, excessive oral secretions as evidenced by drooling and/or gagging; (3) gurgling and/or audible crackles and wheezes that occur on inspiration and/or expiration; (4) evidence of gastric contents and/or emesis in the mouth; (5) persistent coughing that fails to clear the upper airway; and (6) weakness and lethargy accompanied by drooling and gagging. Persistent complaints of pain are more likely related to the surgery.

2. You are busy performing routine assessments of the patients on the unit. You note audible gurgling on inspiration and expiration of the stable postoperative patient. Which of the following tasks can you delegate to competent NAP?
    a) Performing oral suctioning
    b) Assessing the adequacy of respiratory functioning
    c) Evaluating the outcome of oral suctioning
    d) Performing nasotracheal suctioning

Correct answer: a
Rationale: Since the patient is stable, the task may be delegated to NAP. However, the responsibility for assessing the adequacy of respiratory functioning and evaluating the patient outcome of oral suctioning remains with you. Nasotracheal suctioning requires sterile technique and cannot be delegated to NAP.

3. You are preparing to perform oropharyngeal suctioning. Which of the following steps in the sequence is *incorrect*?
    a) Assist the patient into a supine position. Prepare supplies. Turn the suction unit on and set the suction control gauge to high. Connect the suction tubing to the suction machine and to the Yankauer suction catheter.

b) Place the suction catheter in the container of water and apply suction. If the patient has an oxygen device, remove it, placing it near the patient's face. Insert the catheter gently into the mouth along the gingival border (gum line).

c) Gently move the catheter around the patient's mouth until all of the secretions are cleared. Encourage the patient to cough. Replace the oxygen mask. Suction water from the basin through the catheter until the catheter is cleared of secretions. Reassess the patient's respiratory status and repeat the procedure if necessary.

d) Turn off the suction source. Wipe the patient's face. Discard the water into an appropriate receptacle. Discard the Yankauer suction catheter or place it in a non-airtight container to ensure that it remains uncontaminated. Provide oral care. Remove the gloves and perform hand hygiene. Record the procedure.

Correct answer: a
Rationale: You should place the patient in a Fowler's position, then perform hand hygiene, and finally set the suction control gauge to low.

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Lesson 1 Post Test

Answer Key for Blood Therapy Module Post Tests and Exam

(Since questions may be reordered with each usage, the question number in the answer key may not correspond to the number that the student reports for a particular quiz item).

1. A patient has type O+ blood. Which of the following blood types can the patient receive?
    a. A+
    b. B–
    c. O–
    d. AB+

Correct answer: c
Rationale: A person's blood type determines the antigens present on the red blood cells (RBCs). In this particular case, the patient lacks antigens on their RBCs and may receive either O– or O+ type blood.

2. The patient states, "I don't know my blood type. I just know that I'm a universal donor." The nurse correctly interprets this statement inferring that the patient has most likely has which blood type?
    a) AB+
    b) O–
    c) A+
    d) AB–
    e) O+

Correct answer: b
Rationale: Type O– is considered the universal donor because universal donors lack antigens to cause an immunological response with any of the other blood types.

3. The patient has type AB+ blood. Which statement, if made by the patient, would require *correction?*
    a) "I can safely receive blood from any blood-type group."
    b) "I can only donate blood to another AB+ type individual."
    c) "It is preferable for me to receive AB+ type blood."
    d) "I should not receive type A–, B–, or O- blood."

Correct answer: d
Rationale: An individual with type AB+ blood can receive blood from any group (with type AB being preferable) and can only donate blood to another AB+ type individual.

4. A bus accident occurred in a rural area. Several patients taken to the local hospital required blood transfusions, which resulted in a decreased supply of whole blood. One patient is blood type B. The blood bank sends type O– RBCs. What is the nurse's best action?
    a) Return the blood to the blood bank.
    b) Administer the type O blood.
    c) Begin IV fluids until type B blood is obtained.
    d) Complete an incident report.

Correct answer: b
Rationale: It is acceptable to provide group O RBCs to all patients. This often occurs in emergency situations before blood typing occurs and/or blood banks will often substitute group O RBCs for other blood types if their supply is low.

5. A patient is Rh(D) positive. The blood bank sends Rh(D) negative RBCs. What is the nurse's best action?
    a) Send the blood product back to the blood bank because Rh(D) negative RBCs should not be transfused to Rh(D) positive patients.
    b) Ask the patient whether he has every been exposed to Rh(D) negative blood before.
    c) Request that unit of AB+ blood be sent for the patient.
    d) Use the blood product supplied, because Rh(D) negative RBCs may be safely transfused to Rh(D) positive patients.

Correct answer: d
Rationale: It is acceptable to transfuse Rh(D) negative RBCs to Rh(D) positive patients.

6. A patient is Rh(D) negative. The blood bank sends Rh(D) positive plasma. What should the nurse do?
    a) Use the blood product supplied, because Rh(D) positive plasma may be safely transfused to Rh(D) negative patients.
    b) Send the blood product back to the blood bank, because Rh(D) positive plasma should not be transfused to Rh(D) negative patients.
    c) Send a sample of the patient's blood to the blood bank for repeat Rh typing before administering plasma.
    d) Contact the physician for further pretransfusion orders.

Correct answer: a
Rationale: It is acceptable to transfuse Rh(D) positive plasma to Rh(D) negative patients, because the Rh(D) antigens are associated with RBCs rather than with plasma.

7. Identify the blood component that elevates hematocrit by 3% and hemoglobin by 1 g/dL when 1 unit is administered. (Select all that apply.)
    a) Whole blood
    b) RBCs
    c) Platelets
    d) Plasma
    e) Cryoprecipitate

Correct answer: a, b
Rationale: A unit of whole blood should elevate hematocrit by 3% and hemoglobin by 1g/dL in non-hemorrhaging adult. A unit of RBCs is expected to raise Hgb/Hct levels same as whole blood.

8. Identify the blood component that can be stored for up to 5 days at room temperature.
    a) Whole blood
    b) RBCs
    c) Platelets
    d) Plasma
    e) Cryoprecipitate

Correct answer: c
Rationale: Platelets may be stored up to 5 days at room temperature.

9. Identify the blood component that decreases microvascular bleeding during surgery and does not require ABO and/or Rh testing.
    a) Whole blood
    b) RBCs
    c) Platelets
    d) Plasma
    e) Cryoprecipitate

Correct answer: e
Rationale: Cryoprecipitate decreases microvascular bleeding during surgical procedures. Cryoprecipitate is indicated if the patient is bleeding and the fibrinogen level is below 100 mg/dL.

10. The advantages of using this type of autologous blood donation include: it contains more viable RBCs than stored blood, it has a normal pH, and it contains more 2,3-DPG than other types of blood donations.
    a) Prepoperative
    b) Perioperative
    c) Hemodilution
    d) Allogenic

Correct answer: b
Rationale: Perioperative blood contains more viable RBCs and 2,3-DPG than stored forms of blood. In addition, the pH is normal.

11. Compatibilities for ABO type of donor and recipient are required for which blood products? (Select all that apply.)
    a) Whole blood
    b) RBCs
    c) Platelets

d) Plasma

Correct answer: a, b, c, d
Rationale: All of the blood products listed should be blood typed prior to use in order to avoid life-threatening complications from occurring. Cryoprecipitate and colloid components (such as albumin) do not require ABO or Rh typing.

Lesson 2 Post Test

1. Why might dysrhythmias and a reduction in core body temperature occur in a recently infuse patient?
    a) Due to an air embolism
    b) Due to volume overload
    c) Due to hypocalcemia
    d) Due to the rapid administration of unheated blood products

Correct answer: d
Rationale: Rapid administration of unheated solutions may result in iatrogenic hypothermia. A patient who has an air embolism will probably experience symptoms related to heart attack or stroke. A patient who experiences volume overload will probably exhibit shortness of breath and edema. A patient who has hypocalcemia may experience muscle twitching and numbness of the extremities, which should resolve as the blood passes through the liver.

2. When administering blood products, large-bore catheters are used for this primary reason.
    a) Large-bore catheters prevent blood product hemolysis as the product passes through the catheter and into the blood stream.
    b) Larger catheters allow a more consistent rate of administration than smaller catheters.
    c) Large-bore catheters are used, because blood products are viscous.
    d) Large-bore catheters are used so that flushing the line before and after blood product infusion is easier.

Correct answer: a
Rationale: Using a large-bore catheter reduces the risk of blood product hemolysis, especially when administering RBCs. Although some blood products are viscous and a large-bore catheter does support faster administration and is easier to flush than a small-bore catheter, protecting blood products from destruction during administration is the primary reason that large-bore catheters are used.

3. Identify the needle gauge typically recommended to infuse blood products.
    a) 16-gauge needle
    b) 18-gauge needle
    c) 20-gauge needle
    d) 22-gauge needle
    3) 24-gauge needle

Correct answer: b
Rationale: An 18-gauge needle is the recommended gauge for planned infusions. A 16-gauge needle is most often used during major surgery, trauma, and obstetric emergency; although it may be used to infuse blood products outside of those situations, it is rarely the recommended gauge during a planned infusion. The 20-gauge needle is recommended for most routine patient applications. The 22-gauge needle is recommended for elderly and children applications. The 24-gauge needle is the recommended gauge for pediatric and neonate applications.

4. Which blood product places a patient at a higher risk of fluid overload after transfusion?
    a) Whole blood
    b) RBCs
    c) Platelets
    d) Leukocyte-poor RBCs
    e) Cryoprecipitate

Correct answer: a
Rationale: A unit of whole blood is 450 to 500 mL. Other blood products are substantially less volume.

5. If a patient develops a skin rash, edema, and wheezing during a blood transfusion, the nurse should:
    a) Discard the blood bag and tubing
    b) Slow the rate of the transfusion
    c) Stop the transfusion immediately
    d) Reassess the patient in 10 minutes

Correct answer: c
Rationale: These are signs of an allergic reaction. Stop the transfusion immediately, and connect normal saline-primed tubing at VAD to prevent any subsequent blood from infusing from the tubing.

6. What may happen if Lactated Ringers, electrolytes, or other calcium-containing solutions are administered concurrently with blood products?
    a) Calcium binds to citrate.
    b) Electrolyte imbalance occurs due to upsetting the sodium-to-calcium balance.
    c) Serum protein concentrations reduce.
    d) Hyperchloremic metabolic acidosis occurs.

Correct answer: a
Rationale: Most blood products contain citrate as an anticoagulant. Calcium binds to citrate. For this reason, it is recommended that blood product administration occur separately from most other IV fluids (except normal saline).

7. A trauma patient has received 6 units of red blood cells. Plasma and platelets are now prescribed. The nurse changes the blood administration tubing because:
    a) Blood tubing must be changed every 6 units.
    b) Plasma is unable to pass through tubing that has previously filtered red blood cells.
    c) Platelets should run through tubing different than the tubing used for RBCs.
    d) Blood tubing must be changed every hour.

Correct answer: c
Rationale: Fibrin strands and debris in the filter may trap platelets.

8. The initial infusion rate and total infusion time for blood products are:
    a) 5 mL/min; 30 minutes
    b) 10 mL/min; 2 hours
    c) 30 mL/min; 4 hours
    d) 2 mL/min; 4 hours

Correct answer: d
Rationale: The infusion rate is 2 mL/min (or 20 gtt/min using macrodrip of 10 gtt/mL) for the initial 15 minutes. All blood products need to be infused within 4 hours of initiating the transfusion.

9. Heating a unit of blood products in a microwave and/or under hot water from the tap is contraindicated because:
    a) It destroys the blood product.
    b) It makes the blood product too hot to infuse and, as it cools, it coagulates.
    c) Preparation of blood products is the blood bank's responsibility.

Correct answer: a
Rationale: Use of microwaves and/or hot water destroys blood products, because the heat generated by the microwave or hot water cannot be adequately moderated to protect blood products from damage.

10. Identify the transfusion reactions that result in immediate cessation of the transfusion. (Select all that apply.)
    a) Hemolytic reaction
    b) Allergic reaction
    c) TRALI
    d) GVHD
    e) Nonhemolytic reaction
    f) Circulatory overload
    g) Hyperkalemia
    h) Hypocalcemia
    i) Hypothermia

Correct answer: a, b, e
Rationale: Hemolytic, nonhemolytic , and allergic reactions are life-threatening reactions that require immediate cessation of the transfusion.

11. It is acceptable practice to place blood into refrigerators and/or freezers located in patient care areas.
    True / False

Correct answer: False
Rationale: Standard refrigerators and/or freezers located in patient care areas are unable to ensure accurate temperature regulation of blood products. For this reason, they should never be used to store blood products.

12. It is acceptable practice to transfuse medications with blood components.
True / False

Correct answer: False
Rationale: The only solution that may be transfused with blood products is normal saline. All other IV fluids and/or medications should be administered independent from blood product administration. For example, 5% dextrose or Ringer's lactate can result in hemolysis and/or cause coagulation of the donor blood.

Lesson 3 Post Test

1. Most life-threatening transfusion reactions result from:
    a) Incorrect identification of patients
    b) Failure to type and cross-match blood
    c) Patient not knowing his blood type
    d) Allergic response to a plasma protein in donor's blood

Correct answer: a
Rationale: Incorrect patient identification and/or incorrect labeling of blood leads to the administration of incompatible blood and causes life-threatening transfusion reactions.

2. Adverse reactions from blood transfusions usually occur:
    a) After the first hour of the transfusion
    b) Within the first 15 minutes of the transfusion
    c) 1 hours after completion of the transfusion
    d) During the last 15 minutes of the transfusion

Correct answer: b
Rationale: This is why the transfusion is started slowly and why it is so important for the nurse to intensely monitor the patient during the first 15 minutes of the transfusion.

3. The nurse is transfusing a large amount of blood to a trauma patient. The nurse knows to observe the patient for:
    a) Hypotension and cardiac dysrhythmias
    b) Headache and muscle pain
    c) Crackles in the lungs and increased central venous pressure
    d) Wheezing and chest pain

Correct answer: a
Rationale: Hypotension and cardiac dysrhythmias are the initial reactions to massive transfusions.

4. Which transfusion reaction results from administering ABO incompatible blood?
    a) Febrile reaction
    b) Allergic reaction
    c) Hemolytic reaction
    d) Graft-versus-host disease

Correct answer: c
Rationale: Administration of the wrong blood type results in a hemolytic reaction and is the most extreme transfusion reaction that is life threatening.

5. A febrile transfusion reaction typically occurs when the patient's antibodies react to transfused:
    a) FFP
    b) RBCs
    c) Corticosteroids
    d) White blood cells (WBCs)

Correct answer: d
Rationale: A febrile transfusion reaction is caused by a patient's anti bodies responding to the antigens present on transfused WBCs or platelets in the donor's blood.

6. The nurse is preparing to administer a unit of packed red blood cells to a patient with a history of anemia. Which is the best question the nurse should ask the patient before explaining the procedure?
    a) "Are you a Jehovah's Witness?"
    b) "Have you ever had a blood transfusion before?"
    c) "Do you have any allergies?"
    d) "Are you aware of the risks associated with receiving a blood transfusion?"

Correct answer: b
Rationale: The best question to ask is "Have you ever had a blood transfusion before?" This question will elicit information without creating fear before patient teaching.

Lesson 4 Post Test

1. Which of the following patients is ineligible for autotransfusion?
    a) A trauma patient with bilateral hemothorax and splenic tear with an accumulation of more than 300 mL of blood in the collection chamber
    b) A patient admitted with a lower gastrointestinal bleed with copious amounts of blood coming from the rectum at a rate equal to or greater than 100 mL/hr
    c) A patient who has an orthopedic procedure with a hemoglobin of 8
    d) A patient who is recovering from a cardiovascular procedure and who has a hematocrit of 24

Correct answer: b
Rationale: GI bleeding is probably contaminated with bacteria and would exclude this patient from receiving autotransfusion.

2. A patient who is receiving an autotransfusion has an estimated blood loss of half of the patient's blood volume. The physician has ordered FFP. The nurse correctly understands that the primary rationale for using FFP is:
    a) To increase the hematocrit and hemoglobin levels
    b) To provide clotting factors and increase blood volume
    c) To replace the loss of platelets and clotting factors
    d) To prevent a transfusion reaction to the autologous blood.

Correct answer: b
Rationale: FFP is administered because it can be transfused rapidly to replace lost fluid volume and will provide clotting factors. FFP does not contain platelets, so it will not replace platelet loss. FFP will not specifically increase the hematocrit and hemoglobin. It is unlikely to have a transfusion reaction to autologous blood. Furthermore, FFP will not prevent a transfusion reaction and requires ABO compatibility.

3. When turning a patient who has a right-sided hemothorax, 250 mL of dark blood pours into the chest tube container. The most important intervention is to:
    a) Check the chest tube system to confirm patency, and call for a chest x-ray film immediately.
    b) Assess the patient's vital signs and emergently transfuse 2 units of packed red blood cells to treat hypovolemia.
    c) Prepare for autotransfusion using a high-pressure, rapid infuser to quickly infuse the blood.
    d) Monitor the patient closely, obtain a blood sample for a hematocrit, and document the drainage since this is probably old blood.

Correct answer: d
Rationale: The color of the blood indicates that it is possibly old, deoxygenated blood. Running laboratory tests to ensure that the patient's hematocrit is stable before taking any other action is the best course of listed actions.

4. Signs of complication during autotransfusion would most likely be manifested as:
    a) Hypotension and hives
    b) Bradycardia and sudden increase of oral temperature
    c) Lower back pain and hypotension
    d) Blood oozing from all puncture sites and wounds

Correct answer: d
Rationale: Blood oozing from all breaks within the skin indicates clotting issue. The other signs and symptoms listed would be complications of an allogenic transfusion.

5. A patient arrives in the emergency department with a stab wound to the upper abdomen. Which of the following findings contraindicates autotransufsion of pleural blood?
    a) Wound 5 hours old
    b) Great vessel injury
    c) Diaphragmatic disruption
    d) Myocardial rupture

Correct answer: a
Rationale: Recall that autotransfused blood must be transfused within 6 hours. If the wound is 5 hours old, clotting factors have probably been active and made the blood non-transfusable.

6. While assessing a 49-year-old, intubated patient, the nurse notes that the patient is pale and hypotensive and has tachycardia and oliguria. The patient has a hemothorax on the right side and bilateral femur fractures. His chest tubes have drained 350 mL over the previous 2 hours. The nurse knows that:
    a) This patient is hypovolemic from blood loss and is an appropriate candidate for autotransfusion.
    b) The patient should begin receiving dopamine for his blood pressure, and large amounts of fluid should be infused to facilitate increased urine output.
    c) The patient is hypovolemic and a poor candidate for autotransfsion because of the increased risk of a transfusion reaction.
    d) The patient requires decreased cardiac output to decrease his heart rate and compensate for hypovolemia.

Correct answer: a
Rationale: The signs and symptoms indicate that this patient is hematologically compromised. The volume of blood in the chest tubes makes this patient an ideal candidate for autotransfusion.

7. The patient is to have blood dilution (i.e., hemodilution) prior to surgery. The nurse is assessing the patient's understanding of the procedure. Which statement, if made by the patient, indicates that *further* instruction is needed?
    a) "A unit of my blood will be removed before surgery and reinfused at the end of the operation."
    b) "A unit of my blood will be removed, diluted with IV fluids, and returned during surgery."
    c) "As soon as the blood is withdrawn, I will receive IV fluids to restore my blood volume."
    d) "During surgery, I will lose fewer RBCs than I would if I did not have the procedure."

Correct answer: b
Rationale: The removed blood is not diluted; rather, the blood is drawn from a patient before surgery, and the patient is immediately given IV fluids to compensate for the amount of blood removed. Since the number of red blood cells in a person's circulatory system will have been diluted, fewer red blood cells will be lost from bleeding during the operation. After surgery, the patient's own blood is infused.

8. A patient is to have a perioperative blood collection for autotransfusion. The nurse would recognize which of the following measures as an unexpected step in the process?
    a) Fluid aspirated from the surgical site is mixed with an anticoagulant solution.
    b) Care is taken when suctioning blood in order to reduce hemolysis of RBCs.
    c) Collected blood is washed and concentrated prior to reinfusion.
    d) Blood collected from a drainage tube is transfused unwashed to the patient.

Collect answer: d
Rationale: Blood collected from a drainage tube at the surgical site and transfused either washed or unwashed to the patient describes postoperative blood collection, not perioperative blood collection. All other statements correctly describe perioperative blood collection for autotransfusion.

9. A newly hired nurse is orienting to the orthopedic unit where postoperative blood collection and autotransfusion commonly occur. Which statement, if made by this new nurse, indicates that further instruction is necessary?
    a) "A hemovac is used to collect the blood for autotransfusion."
    b) "The autotransfusion will end when the bleeding stops or slows significantly."
    c) "Postoperative blood collection may also be performed on postoperative cardiac patients."
    d) "The amount of salvaged blood is generally small.

Collect answer: a
Rationale: Postoperative collection is used primarily in cardiac and orthopedic surgery. Autotransfusion is ended when bleeding is stopped or slows significantly. Connecting an ordinary, self-draining device such as a Hemovac container to the drain line(s) discontinues autotransfusion. In most cases, the volume of salvaged red blood cells is small.

Module Exam

1. The nurse is inspecting a unit of platelets before administering it to the patient. What should the nurse expect to see?
    a) Contains many air bubbles
    b) Appears cloudy, light pink in color
    c) Contains aggregates of cells
    d) Appears cloudy, light green in color

Correct answer: b
Rationale: Air bubbles, clots, or discoloration indicate bacterial contamination or inadequate anticoagulation of the stored component and are contraindications for transfusion of that product. Thawed FFP should be yellow, light green, or light orange in color and clear in appearance. A unit of platelets should appear clear and straw or light pink in color. It is normal for cryoprecipitate to be cloudy.

2. Match the blood product type to the benefits of transfusing that product.
Correct match:

Red blood cells	Given to increase the oxygen-carrying capacity of the circulatory system due to acute or chronic blood loss (i.e., anemia)
Whole blood	Given to increase the oxygen carrying capacity of the blood and to replace the volume in a patient who is in shock
Albumin	Given to replace volume after acute loss, especially in patients who have severe burns and/or who are developing signs of edema; known as a volume expander
Platelets	Given to prevent and/or control bleeding due to thrombocytopenia
Plasma	Given to correct coagulation deficiencies and/or to reverse the effects of warfarin
Cryoprecipitate	Given to control bleeding by replacing clotting factors

3. A young, female trauma patient, whose identity is unknown, requires an immediate, massive blood transfusion upon arrival to the emergency department. The nurse should administer:
    a) O-negative RBCs
    b) Typed and cross-matched blood
    c) Type-specific blood
    d) O-positive RBCs

Correct answer: a
Rationale: While it is preferable to wait for typing and cross matching to occur, in an emergency, O- blood can be administered until blood typing and matching can occur. O-negative blood is desired in the premenopausal, female patient. If this patient were male or a postmenopausal female, it would be acceptable to use O+ blood in this situation.

4. When preparing to administer red blood cells, the nurse notes that lactated Ringer's solution is hanging on the patient's IV pole. Before administering the blood product, the most appropriate action is to cease administering the lactated Ringer's solution and flush the line with:
    a) Histamine
    b) Normal saline solution
    c) Heparin
    d) Calcium

Correct answer: b
Rationale: It is contraindicated to transfuse any substance that might bind to the citrate in the red blood cells. By flushing with normal saline, you reduce the likelihood that citrate will bind to the calcium in the lactated Ringer's solution.

5. After transfusion of several units of blood, a patient continues to bleed. Anticipate an order to transfuse:
    a) Albumin
    b) Platelets
    c) Whole blood
    d) Red blood cells

Correct answer: b
Rationale: Platelets are transfused when it appears that a clotting issue exists.

6. For a patient with low hemoglobin and hematocrit values, the physician would be expected to order a transfusion of:
    a) FFP
    b) Platelets
    c) RBCs
    d) Clotting factors

Correct answer: c
Rationale: A transfusion of RBCs should increase a patient's hemoglobin and hematocrit values.

7. On inspection, a unit of blood from the blood bank shows several blood clots clinging to the bag. The best course of action is:
    a) Notify the blood bank.
    b) Administer the blood as ordered.
    c) Add citrate phosphate dextrose (CPD) to the blood.
    d) Shake the bag to break the clots up into smaller pieces.

Correct answer: a
Rationale: The blood bank will need to prepare an alternate bag for transfusion.

8. A patient has a pretransfusion hemoglobin value of 6 g/dL and a hematocrit value of 18%. Two units of RBCs are transfused. Four hours after the transfusion, the patient's hemoglobin and hematocrit values would be expected to be:
    a) Hemoglobin of 7 g/dL and hematocrit of 26%
    b) Hemoglobin of 8 g/dL and hematocrit of 24%
    c) Hemoglobin of 9 g/dL and hematocrit of 21%
    d) Hemoglobin of 9 g/dL and hematocrit of 26%

Correct answer: b
Rationale: The hemoglobin is expected to increase by 2 g/dL and the hematocrit is expected to increase by 6% after the transfusion of 2 units.

9. What is the most likely complication of an FFP transfusion?
    a) Sepsis
    b) Dehydration
    c) Fluid overload
    d) Thrombocytopenia

Correct answer: c
Rationale: Fluid overload is the most likely complication that can occur as a result of an FFP transfusion.

10. The patient is receiving a unit of whole blood. The patient complains of pain from his surgical site. The patient has an order for morphine 2 mg IV push every 1 hour as needed. What is the nurse's best action?
    a) Administer the morphine IV push in the port closest to the patient of the blood administration tubing.
    b) Wait until the transfusion is complete, and then administer the morphine as ordered.
    c) Initiate another IV access, and administer the morphine as ordered.
    d) Temporarily stop the blood transfusion, flush the tubing with normal saline, administer the morphine, and restart the transfusion.

Correct answer: c
Rationale: Never inject medication into the same IV line with a blood component because of the risk for contaminating the blood product with pathogens and the possibility of incompatibility. A separate IV access must be maintained if the patient requires an IV infusion (i.e., total parenteral nutrition, pain control) during the transfusion.

11. The nurse is initiating a blood transfusion of packed RBCs. At what rate should the infusion initially be set?
    a) 2 mL/min
    b) 10 mL/min
    c) 15 mL/min
    d) 20 mL/min

Correct answer: a

Rationale: The initial flow rate during the first 15 minutes of a transfusion should be 2 mL/min or 20 gtt/min (using a macrodrip of 10 gtt/mL). Then regulate to the physician's orders.

12. The nurse initiates a blood transfusion of packed RBCs at 0800. The unit of blood should not hang beyond:
    a) 1000
    b) 1200
    c) 1400
    d) 2000

Correct answer: b
Rationale: A blood transfusion should be completed within 4 hours to reduce the risk of bacterial growth.

13. The nurse obtains the patient's vital signs before initiating a blood transfusion. The patient's vital signs are B/P 114/78, T 100.3° F, P 88 beats, R 20. What is the nurse's most appropriate action?
    a) Record the vital signs and initiate the blood therapy slowly.
    b) Notify the health care provider of the pretransfusion vital signs.
    c) Continue to monitor the patient's vital signs and, if the patient's temperature is greater than 101° F, administer antipyretic.
    d) Administer antipyretic and antihistamine, and initiate the transfusion.

Correct answer: b
Rationale: If the patient is febrile (temperature becomes greater than 100° F [37.8° C]), notify the physician or health care provider before initiating the transfusion.

14. The nurse initiates a blood transfusion at 0800. When would an acute hemolytic transfusion most likely occur?
    a) By 0815
    b) By 0830
    c) 2 to 4 hours after completion
    d) 2 to 14 days after completion

Correct answer: a
Rationale: Most transfusion reactions occur within the first 15 minutes of the transfusion.

15. A patient who is classified as a universal recipient has what blood type?
    a) O-negative
    b) O-positive
    c) AB-negative
    d) AB-positive

Correct answer: d
Rationale: A person with AB-positive blood can receive A+, A–, B+, B–, O+, O–, AB+, and AB– type blood, and is referred to as the universal recipient.

16. The nurse checks the physician's orders to determine whether there are any pretransfusion medications to be administered. Which of the following would the nurse most likely expect to administer?
    a) Analgesic (e.g., morphine sulfate)
    b) Antibiotic (e.g., ciprofloxacin)
    c) Antihistamine (e.g., diphenhydramine)
    d) Diuretic (e.g,. furosemide)

Correct answer: c
Rationale: Premedications such as antihistamine or antipyretic may be ordered especially if the patient demonstrated previous transfusion sensitivity.

17. The nurse is preparing to infuse a blood transfusion rapidly for a patient who is experienced significant blood loss in a motor vehicle accident. Which gauge of IV cannula would be best for the nurse to choose?
    a) 18 to 20 gauge
    b) 22 to 24 gauge
    c) 26 gauge
    d) 28 gauge

Correct answer: a
Rationale: Large-gauge cannulas (18- or 20-gauge) promote rapid flow of blood components and are preferred in emergency situations.

18. The nurse initiates a blood transfusion and monitors the patient for signs of a transfusion reaction. Five minutes into the transfusion, which would be a cause for concern?
    a) Temperature is 98.6° F.
    b) Patient complains of flank pain and chills.
    c) Systolic blood pressure increased by 4 mm Hg from baseline.
    d) Patient complains of feeling tired and sleepy.

Correct answer: b
Rationale: Flank pain and chills are signs of an acute hemolytic reaction. The patient may also complain of chest pain, dyspnea, and pain along the vein receiving blood. The patient is likely to be hypotensive and tachycardic. Fatigue is a symptom that often accompanies anemia.

19. The nurse is instructing the NAP on signs that a person is having an adverse reaction to a transfusion. Which of the following would be one of the first signs?
    a) Tachycardia
    b) Hypertension
    c) Hypothermia
    d) Disseminated intravascular coagulation (DIC)

Correct answer: a

Rationale: An elevation in temperature or heart rate is one of the first signs that a person is having an adverse reaction to a transfusion. Some patients also experience marked hypotension if a severe reaction occurs. DIC is a later sign of a hemolytic transfusion reaction.

20. How long should the nurse stay with the patient after initiating a blood transfusion?
    a) Until the transfusion is completed
    b) 5 to 10 minutes
    c) 15 minutes
    d) 1 hour

Correct answer: c
Rationale: Most transfusion reactions occur within the first 15 minutes.

21. The nurse obtains the blood from the blood bank and is called away to see another patient. Twenty minutes later, the nurse realizes that she will be unable to initiate the transfusion at this time. What is the nurse's best action?
    a) Put the blood in the facility's refrigerator.
    b) Have the NAP initiate the transfusion under the nurse's verbal direction.
    c) Return the blood to the blood bank.
    d) Discard the blood appropriately, and retrieve another one when able to administer it.

Correct answer: c
Rationale: If you cannot initiate the blood transfusion within 30 minutes from the time of release from the blood bank, immediately return the blood to the blood bank and retrieve it when you can administer it.