90 Pharmacology and Parenteral Therapy NCLEX® Questions

1. A nurse is preparing to administer a dose of warfarin to a patient. Based on the nurse’s knowledge of this drug, the nurse knows to monitor for which of the following side effects?
   a. Black stools
   b. Constipation
   c. Abdominal bloating
   d. Back pain

2. Which of the following is considered a contraindication for administration of Lasix®?
   a. 4+ pitting edema in the lower extremities
   b. Hypertension
   c. Facial swelling
   d. Decreased urine output

3. After starting an IV dose of sulfamethoxazole (Bactrim®), the nurse notes that the patient is having difficulty breathing, his face is flushed, and he complains of back pain. Which type of hypersensitivity reaction is this patient most likely experiencing?
   a. Cytotoxic
   b. Serum sickness
   c. Anaphylactic
   d. Infectious

4. A patient has received a prescription for sertraline (Zoloft®) for treatment of depression. The nurse is educating the patient about what types of side effects he should look for when taking this medication. Which of the following statements by the nurse is correct?
   a. “This medication is most likely to cause a low heart rate and low blood pressure.”
   b. “You may have an increase in anxiety when you take this medicine.”
   c. “The most common side effect that people see with this medication is blood in their stools.”
   d. “This medicine will probably increase your blood sugar levels.”
5. A nurse is caring for a pregnant patient who needs treatment for rosacea. The patient asks the nurse about using topical corticosteroids for treatment. Which of the following information should the nurse provide this patient?
   a. The patient can safely use this type of medication
   b. The patient can only use this medication in areas away from the abdomen
   c. This medication causes teratogenic effects and should be avoided
   d. There is no safety evidence of this medication during pregnancy, so it should be avoided

6. The extent to which a patient’s behavior of taking medication matches that of the medical advice given is known as:
   a. response.
   b. evaluation.
   c. adherence.
   d. implementation.

7. A nurse is preparing to administer a medication that she has never given before. Which of the following actions should the nurse do in order to promote safety for the patient and the nurse when giving the medication?
   a. Read about the drug in a reference guide before administration
   b. Contact the physician and ask for clarification about the drug
   c. Give the drug slowly and double-check the record with another nurse
   d. Refuse to give the drug until the nurse learns more about it

8. Which of the following situations is an example of an adverse drug interaction?
   a. A patient develops dyspnea and facial swelling after taking an antibiotic
   b. A patient becomes dizzy and falls when the nurse forgets to administer his morning insulin
   c. A patient develops hypokalemia with an extra dose of a diuretic
   d. A patient becomes pregnant despite her use of hormonal contraceptives because she has taken an anticonvulsant medication

9. A patient has been prescribed sublingual nitroglycerin to use prn for chest pain. The nurse is teaching the patient how to administer the medication. Which of the following statements by the nurse is correct?
   a. “Place this tablet in your cheek and let it dissolve.”
   b. “Put the tablet on your tongue for 1 minute, then chew and swallow.”
   c. “Place the tablet under your tongue until it has dissolved completely.”
   d. “Swallow this medication with a full glass of water.”
10. A nurse is giving a patient an IV medication; the medication is ordered as IV push and the nurse gives it slowly over about 5 minutes. Soon after administration, the patient begins coughing, breathing rapidly, and complaining of chest pain; he appears cyanotic and anxious. Which of the following is the most likely cause of this patient’s symptoms?
   a. Pneumothorax
   b. Pulmonary embolism
   c. Pinch-off syndrome
   d. Allergic reaction

11. A child is brought into the emergency department with severe injuries. The physician orders a transfusion of 1 unit of whole blood to be administered right away. The nurse has completed a rapid assessment of the child but there are no laboratory results available to know the child’s blood type. Which of the following actions of the nurse is most appropriate?
   a. Ask the physician if he ordered a type and crossmatch for the child
   b. Administer oxygen and fluids until the laboratory results have returned
   c. Contact the blood bank and request 1 unit of O negative blood for the child
   d. Contact the laboratory and request a cross-link between the lab outcomes and the blood type

12. Which best describes the purpose of the type and crossmatch blood test?
   a. To determine the patient’s blood type and whether it is ABO compatible with another sample of blood
   b. To determine the patient’s blood type and the Rh factor of the sample
   c. To determine the patient’s blood type and whether he will need blood in the next 24 hours
   d. To determine the patient’s blood type and whether any infectious diseases are present

13. A physician has ordered a unit of packed red blood cells for a patient with anemia. Before administering the blood product, the nurse checks the patient’s vital signs and notes that he has a temperature of 103°F. Which action should the nurse perform next?
   a. Check the patient’s heart rate and blood pressure and then start the blood transfusion
   b. Administer prescribed antibiotics prior to starting the transfusion
   c. Increase the rate of the IV and bolus with a liter of fluid before administering the blood
   d. Hold the blood transfusion and contact the physician
14. In which situation would packed red blood cells most likely be administered in an adult patient? Select all that apply.
   a. Hemoglobin level of 6 g/dL
   b. A sickle cell patient with acute chest syndrome
   c. Treatment of hemophilia
   d. Management of an acquired antibody deficiency
   e. Platelet count of 100,000/mcL

15. A patient needs a blood transfusion and has type A+ blood. Which of the following blood types is it safe for this patient to receive?
   a. A-
   b. B+
   c. AB+
   d. AB-

16. A nurse is administering a blood product to a patient in the recovery room. She has checked the product and compared it with the identity of the patient; the patient has a patent IV and the set is ready to be administered with normal saline solution. The nurse starts the transfusion. Which of the following interventions does the nurse perform next?
   a. Increase the rate of the transfusion after 30 minutes
   b. Check the patient’s vital signs
   c. Administer antibiotics as ordered
   d. Monitor the patient for signs of dehydration

17. A mother wants to donate her blood to her child who is having surgery. Which best describes this type of blood donation?
   a. Autologous blood donation
   b. Allogeneic blood donation
   c. Directed blood donation
   d. Xenogenic blood donation

18. A nurse is giving a transfusion of packed red blood cells to a patient; several minutes after the transfusion has started, the patient complains pain in his chest and back and his face is flushed. The nurse checks his temperature and finds that it is 102°F. Which of the following actions should the nurse perform first?
   a. Administer 100% oxygen to the client by face mask
   b. Raise the head of the bed and ask the patient to lean forward
   c. Stop the transfusion
   d. Contact the physician
19. A nurse has been directed to administer 1 unit of platelets to a patient; the nurse sets the transfusion to run over 2 hours. Thirty minutes after the transfusion has started, the nurse notes that the patient is scheduled to receive a dose of ampicillin IV. What is the most appropriate action of the nurse?
   a. Wait until the platelet transfusion is complete and then administer the medication
   b. Start a second IV and administer the medication
   c. Stop the transfusion and administer the medication, flushing both before and after the drug
   d. Stop the transfusion and contact the physician for further orders

20. A nurse administered a blood transfusion to a patient that was unknowingly contaminated with bacteria. Which of the following signs or symptoms would a patient most likely exhibit with a reaction to bacterial contamination of a blood product?
   a. High fever
   b. Dyspnea and wheezes
   c. Extensive itching and urticaria
   d. Nausea and vomiting

21. A nurse is caring for a patient who has a central venous catheter and she is changing the dressing. During the dressing change, the nurse accidentally drops the sterile dressing on the floor. Which of the following actions should the nurse perform next?
   a. Open a new package of a sterile dressing
   b. Withhold the dressing change
   c. Quickly pick up the dressing and use it
   d. Contact the physician

22. A nurse is preparing to assist with insertion of a central venous catheter. The physician has said that he wants to use the brachiocephalic vein for insertion. Which of the following best describes the location of this vein?
   a. The lateral portion of the upper arm, next to the biceps muscle
   b. The side of the neck, extending from the jaw to the clavicle
   c. At the level of the clavicle, connecting the internal jugular and the subclavian veins
   d. In the upper thigh, connecting the saphenous and femoral veins

23. A physician has decided to insert a central line into the subclavian vein of a patient; the line will have 3 lumens. Before the procedure, the nurse is preparing the patient for what to expect. Which of the following statements by the nurse is most appropriate?
   a. “You will have an IV coming out of the side of your neck.”
   b. “We are going to insert a triple lumen, central venous catheter into your subclavian.”
c. “This will be used for medication, but we can also use it to draw blood, perform
dialysis, or as a heart pacemaker.”
d. “This IV goes into a large vein in your chest. The end of the catheter will come out of
the skin under your collarbone.”

24. A nurse is assisting a physician with insertion of a central venous catheter into the
right internal jugular vein. The nurse prepares the patient by helping him into
position for the procedure. In which position should the nurse place this patient?
a. Trendelenburg with the head turned to the right
b. Trendelenburg with the head turned to the left
c. Supine, with the head looking straight up
d. In the high Fowler’s position

25. A physician has ordered for the nurse to remove a patient’s central line. The line is a
percutaneous non-tunneled central venous catheter placed in the patient’s
subclavian vein. Which of the following principles should the nurse consider when
removing this central line?
a. Have the patient take a deep breath and pull out the line while he is inhaling
b. Position the patient in the low Fowler’s position with his head turned
c. After removing the catheter, apply direct pressure to the site for 30 minutes
d. Assess the catheter after removal to ensure that the tip is intact

26. A patient’s central line has just been inserted by the physician while the nurse
assisted. The physician writes orders to start normal saline fluids to run in the
catheter and leaves to document the procedure. Which of the following should the
nurse do first?
a. Order a chest x-ray
b. Contact the pharmacy
c. Set up the infusion
d. Clarify the order with the physician

27. A nurse is caring for a patient who has a central line. The patient has developed
chest pain, hypotension, and has difficulty breathing. The nurse contacts the
physician, who suspects an air embolism. Which of the following is the first action of
the nurse?
a. Clamp the catheter and place the patient supine with the feet elevated
b. Turn the patient onto his left side
c. Prepare for patient intubation
d. Administer heparin into the catheter, as ordered
28. A patient has a central line that is being used to measure central venous pressure (CVP). Which situation would most likely demonstrate an increase in CVP?  
   a. Hypovolemia  
   b. Heart failure  
   c. Severe hemorrhage  
   d. Use of a nasogastric tube

29. Which of the following is an advantage of using a peripherally inserted central catheter (PICC)? Select all that apply.  
   a. It carries a lower risk of infection  
   b. It can be inserted at the bedside by a trained RN  
   c. It is cost effective  
   d. It is less painful with insertion  
   e. It can be used for hemodialysis

30. A nurse has been ordered to administer Lasix 60 mg po. The medication is available as 20 mg tablets. Which of the following should the nurse give?  
   a. 1 ½ tablets  
   b. 2 tablets  
   c. 3 tablets  
   d. 4 tablets

31. A nurse has an order for liquid acetaminophen 1,000 mg. The bottle is available as 625 mg in 5 mL. How much should the nurse give this client?  
   a. 6 mL  
   b. 8 mL  
   c. 9 mL  
   d. 11 mL

32. A physician has ordered 1,000 units of heparin to be infused IV over an hour. The medication is available as 10,000 units in 500 mL of 0.9% NaCl. What is the rate per hour that the nurse should administer the medication?  
   a. 25 mL  
   b. 50 mL  
   c. 80 mL  
   d. 100 mL

33. A physician has ordered that a patient receive 1,000 mL of D5LR at a rate of 150 mL/hour. At this rate, how many hours will it take to infuse the entire bag?  
   a. 5 hours, 30 minutes  
   b. 6 hours

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c. 6 hours, 40 minutes  
d. 7 hours, 10 minutes

34. A patient is receiving IV insulin. The container is labeled as 1,000 units of insulin in a 500 mL bag of 0.9% NaCl. The insulin pump is set and infusing at 10 mL/hour. At this rate, how much insulin does the patient get per hour?  
a. 20 units  
b. 100 units  
c. 200 units  
d. 500 units

35. A nurse is caring for a patient diagnosed with asthma. The nurse administers the patient’s most recent dose of theophylline. Which of the following must the nurse consider when administering this medication?  
a. The patient should limit intake of fluids with this medication  
b. The patient should avoid caffeine with this medication  
c. The patient should be given adjuvant medications to treat nasal and respiratory symptoms in addition to the theophylline  
d. The patient should take it before going to bed

36. The amount of medication needed to achieve a desired effect is called the:  
a. minimal dose.  
b. lethal dose.  
c. loading dose.  
d. therapeutic dose.

37. Which best describes how gender impacts medication dose and prescribing information?  
a. Women tend to have smaller doses of medications compared to men  
b. Men tend to have smaller doses of medications compared to women  
c. Men and women are almost identical in their doses of medications  
d. Men and women usually do not use the same types of medications, so this is irrelevant

38. Which of the following methods of administration would result in the fastest rate of absorption?  
a. Oral administration  
b. Rectal administration  
c. Sublingual administration  
d. Transdermal administration
39. A nurse is preparing to administer furosemide to a patient who is in the hospital with heart failure. Which of the following should the nurse consider when administering this medication?
   a. Give the dose first thing in the morning
   b. Do not administer the medication with meals
   c. Monitor the patient’s temperature every 4 hours
   d. Decrease fluid intake to avoid excess urine secretion

40. Which of the following medications is classified as a Schedule I controlled substance?
   a. Heroin
   b. Oxycodone
   c. Tylenol with codeine
   d. Methylphenidate

41. A nurse receives the following order from a physician: “Give Macrobid po t.i.d. with meals.” Which of the following elements is missing from this prescription?
   a. The dates to give the medication
   b. The dose of the medication
   c. The patient’s allergies
   d. The patient’s response to the medication

42. A nurse is attempting to read a medication order in a patient’s chart but the physician’s handwriting is illegible. The nurse contacts the physician to clarify the order. Which of the following information must the nurse document?
   a. None; the nurse should leave the order as is
   b. “Clarification from physician: Give acetaminophen p.o.....”
   c. “Unable to read. Order cancelled.”
   d. “Illegible.”

43. A patient is taking Parnate, which is classified as a monoamine oxidase inhibitor. Which of the following foods should the nurse counsel the patient to avoid?
   a. Cottage cheese
   b. Chicken
   c. Green beans
   d. Sauerkraut

44. A nurse is teaching a patient about possible side effects associated with his new prescription for amitriptyline as treatment for depression. Which of the following information should the nurse provide for the client?
a. The medication may cause hypertensive crisis
b. The medication can cause dry mouth and blurred vision
c. The medication will cause difficulties sleeping
d. The medication increases urinary output

45. A client has been prescribed paroxetine (Paxil®) while in the hospital. Several hours after receiving the first dose, the patient becomes confused and agitated; he starts sweating and is having hallucinations. Which of the following best describes the most likely cause of this reaction?
   a. Anaphylaxis
   b. Serotonin syndrome
   c. Infection
   d. Withdrawal syndrome

46. A patient who is receiving heparin for a history of blood clots has developed heparin-induced thrombocytopenia. His platelet count is 90,000/mcL. Which of the following nursing interventions is most appropriate in this situation?
   a. Continue to administer the heparin as scheduled and monitor for complications
   b. Administer half of the dose of heparin instead of the full amount
   c. Give protamine sulfate to counteract the heparin
   d. Hold the heparin dose and contact the physician

47. A nurse is caring for a patient who has angina. She notes that he has a prescription for nitroglycerin sublingual tablets. Based on the nurse’s understanding of this medication, the nurse knows that this medication works by:
   a. preventing blood clots in the lower extremities.
   b. minimizing atherosclerotic plaques to improve blood flow.
   c. dilating blood vessels and increasing venous return.
   d. increasing blood pressure to improve cardiac contractility.

48. Which of the following best describes the action of beta-blockers as cardiac medications?
   a. Decreasing preload to reduce the work of the heart
   b. Increasing sodium and water absorption
   c. Impeding the sympathetic nervous system to reduce vasoconstriction
   d. Regulating the cardiac conduction system to stabilize heart rhythms

49. Which of the following is an example of an antifungal medication?
   a. Nitrofurantoin
   b. Fluconazole
   c. Azithromycin
d. Levofloxacin

50. A patient has been prescribed an aminoglycoside antibiotic for an infection. Which of the following information about side effects of this medication is most appropriate for the nurse to give to this patient?
   a. This medication increases the risk of hearing loss
   b. The patient should avoid going into the sun while taking this medication
   c. The most common side effects of aminoglycoside medications are urinary retention and bladder infection
   d. The patient taking this medication is at high risk of cardiac arrhythmias

51. Which of the following is an example of a topical agent that may be applied for arthritis relief?
   a. Lanolin
   b. Zinc oxide
   c. Dexpantenol
   d. Capsaicin

52. A patient requires long-term systemic corticosteroid therapy for treatment of a skin disease. Which of the following effects has been associated with chronic use of corticosteroids?
   a. Weight loss
   b. Increased blood glucose levels
   c. Hypotension
   d. Hair loss

53. Which of the following is an example of a rapid-acting type of insulin?
   a. Lispro
   b. Humulin N
   c. Novolin R
   d. Detemir

54. Which best describes the medication administration process of an insulin jet injector?
   a. The syringe contains a pre-filled cartridge which is administered by sticking the needle under the skin and pressing a button
   b. The injector is connected to a port under the skin that provides a continuous infusion of insulin
   c. The patient wears a catheter that is attached to an area of the mucous membranes and the insulin is absorbed
   d. The insulin is injected directly through the skin without the use of a needle
55. A nurse prepares a dose of medication that is a controlled substance to give to a patient for pain. When the nurse takes the medication into the room, the patient refuses it. What action of the nurse is most appropriate?
   a. Encourage the patient to take the medication and explain that it has already been signed out to him
   b. Return the medication to its former packaging
   c. Label the medication for use and return it to the locked cupboard so that someone else may use it
   d. Discard the medication according to facility policy and document the patient’s refusal

56. A nurse needs to administer a medication that requires a tablet to be split in half. When splitting the tablet with the pill cutter, part of the tablet breaks so that it is not cut exactly in half. Which of the following should the nurse do in response?
   a. Choose the side that appears to be close to one-half of the dose as prescribed
   b. Contact the pharmacy and request a different pill cutter
   c. Measure out half of what is left of the medication and crush it to administer one half
   d. Discard the medication and choose another tablet

57. A nurse is preparing to give a dose of insulin subcutaneously to a patient. Which of the following needle sizes is most appropriate for this injection?
   a. 25-gauge
   b. 27-gauge
   c. 21-gauge
   d. 18-gauge

58. A patient requires a dose of an antiemetic medication, which has been sent from the pharmacy in an ampoule. Which of the following must the nurse consider when drawing up medication from an ampoule? Select all that apply.
   a. Tap the top of the ampoule before opening
   b. Snap the neck of the ampoule toward the body
   c. Use a filter needle when drawing medication from an ampoule
   d. Invert the ampoule to draw up the medication
   e. Use a filter needle when administering the medication to the patient from an ampoule

59. A nurse chooses the dorsogluteal site on a patient in which to administer an intramuscular injection. Which of the following should the nurse consider when giving an injection in this location?
   a. This site is most appropriate for clients of all ages
   b. The dorsogluteal site is the safest because it does not contain major blood vessels
   c. Injecting medication at this site may cause damage to the sciatic nerve

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d. This site tends to cause the most pain for the patient and is the least appropriate choice

60. A patient must receive a number of injections of medication based on his medical condition. The nurse wants to reduce his discomfort however she is able. Which of the following interventions can the nurse perform to minimize the patient’s discomfort from repeated injections?
   a. Administer the injections in approximately the same area each time
   b. Apply EMLA cream after giving an injection
   c. Use the smallest gauge of needle available
   d. Avoid administering any drug that could be irritating to the tissue

61. A school is offering tuberculosis testing for all of its employees. The health nurse administers the injections to each of the employees using a tuberculin syringe. At which angle does the nurse administer the injections into the skin?
   a. 90 degree
   b. 60 degree
   c. 25 degree
   d. 10 degree

62. A process that moves solutes from an area of higher concentration to an area of lower concentration is known as:
   a. active transport.
   b. capillary reabsorption.
   c. diffusion.
   d. filtration.

63. In which situation would a nurse need to apply an IV filter to a fluid administration set? Select all that apply.
   a. For a patient with heart failure
   b. In an immunocompromised patient
   c. When administering total parenteral nutrition
   d. When administering blood products
   e. In pediatric patients

64. A nurse is setting up an IV infusion pump in a patient’s room and is explaining the alarms to the patient. Which of the following instructions from the nurse is most appropriate?
   a. “When you hear this noise, it means that your IV is not working.”
   b. “Push this button to silence the alarm and then call me.”
c. “The alarm could be for a number of reasons, so don’t be frightened if you hear this sound.”
d. “There really isn’t much reason why your IV pump should alarm at all.”

65. A patient is experiencing severe nausea and vomiting; he is hospitalized for dehydration. Which of the following types of IV solutions would most likely be administered to correct this situation?
a. Isotonic solutions
b. Hypotonic solutions
c. Hypertonic solutions
d. Blood products

66. A patient is brought into the emergency department with severe injuries. The physician orders lactated Ringer’s solution to be given for fluid volume replacement. Which explanations best describe why crystalloid solutions would be used before colloid solutions in an emergent situation? Select all that apply.
a. Crystalloid solutions are easier to administer
b. Crystalloids are cheaper when compared to colloids
c. Colloids require blood tests and cultures before administration
d. Colloids are not as easily available
e. Crystalloids expand fluid volume in the circulatory system, but colloids do not

67. Which of the following types of IV fluids is an example of a hypertonic solution?
a. 0.45% sodium chloride
b. Lactated Ringer’s
c. D10W
d. 0.9% sodium chloride

68. In which situation would a nurse most likely use a pressure sleeve when administering IV fluids?
a. The patient is receiving antibiotics
b. The patient needs rapid intravascular volume repletion
c. The patient has high blood pressure
d. The patient is obese

69. A patient calls the nurse and complains about his IV site. The nurse assesses the site and notes that the skin is red and warm and the patient states that the pain travels up his arm. Which of the following potential complications of IV therapy most likely describes this situation?
a. Phlebitis
b. Thrombus

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c. Infiltration
d. Circulatory overload

70. A diabetic patient needs routine insulin injections on a daily basis. He uses NPH insulin combined with short-acting agents. Which of the following best describes the onset time of NPH insulin?
   a. 10 minutes
   b. 30 minutes
   c. 1 hour
   d. 4 hours

71. A patient who takes Digoxin has developed signs of toxicity, including nausea, vomiting, diarrhea, confusion, and cardiac arrhythmias. Once the nurse determines that toxicity is present, what is the first action the nurse should perform?
   a. Discontinue the digitalis dose until symptoms are gone
   b. Check the patient’s pulse before giving the next dose
   c. Administer the medication intravenously instead of orally
   d. Administer antiarrhythmics and drugs to prevent nausea along with the next dose

72. A patient is getting ready to be dismissed from the hospital with several prescriptions for medications, including morphine po. Which statement from the nurse should be included as part of discharge teaching with this medication?
   a. “You may experience more bowel movements or even diarrhea with this medication.”
   b. “You should not drink alcohol or take medications that make you feel drowsy while you are taking morphine.”
   c. “This type of medication may cause a urinary tract infection, so don’t be alarmed if that happens.”
   d. “You will need to take another adjuvant medication with each dose to avoid substantial effects of the medicine.”

73. Which best describes how benzodiazepines work in the body?
   a. Inhibiting neural impulses by blocking dopamine
   b. Blocking the reuptake of serotonin
   c. Increasing renal excretion of norepinephrine
   d. Enhancing the effects of GABA by inhibiting its binding to receptors

74. A nurse is caring for a patient who uses a morphine PCA for pain control. The patient calls the nurse and says that the PCA does not seem to be working because he is still having significant pain. Which response from the nurse is most appropriate?

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a. “Are you sure you are pushing the button often enough?”
b. “Here, let me push the button for you.”
c. “I will check the settings and see if everything is working correctly with the machine.”
d. “I will call the physician.”

75. Which of the following drugs would most likely be prescribed as a prn medication?
   a. Digoxin
   b. Gentamicin
   c. Theophylline
   d. Bisacodyl

76. Which of the following is a true statement regarding prescription and administration of schedule I controlled substances?
   a. Schedule I substances should be prescribed only through a written order.
   b. Schedule I drugs cannot be renewed after 12 months of use.
   c. Schedule I medications require 2 persons to sign off on the prescription.
   d. Schedule I drugs have no accepted medical use.

77. After administering a liquid opioid analgesic to a patient, the nurse must waste 3 mL. Which of the following actions is most appropriate when wasting this type of controlled substance?
   a. Pour the medication into a biohazard bag
   b. Throw the bottle in the trash
   c. Pour the extra medication down the sink
   d. Place the excess in a sealed container and lock it in the medication cabinet

78. When preparing to administer a medication to a patient, the nurse takes the dose out of a locked cart that keeps an electronic count of how many medications have been dispensed from the unit. Which of the following medication distribution systems is this nurse most likely using?
   a. Stock supply
   b. Unit-dose system
   c. Automated dispensing
   d. Double-locking system

79. Which of the following would be considered an advantage of sublingual medication administration?
   a. Rapid absorption into circulation
   b. Can be used by most patients
   c. Decreased protein-binding capacity

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80. Which of the following best describes cyclical TPN?
   a. Fluids administered in a cycle that alternates between TPN and lipids
   b. TPN infused over 16 hours, followed by 8 hours of rest
   c. TPN that has changing concentrations of dextrose with each new bag
   d. TPN solution that enhances and supports the insulin-secretion cycle compared to glucose levels

81. Which of the following patients is the best candidate for receiving peripheral parenteral nutrition (PPN)?
   a. A patient with severe burns
   b. A patient with fluid restrictions
   c. A patient with a feeding tube
   d. A patient with a prolonged ileus

82. A nurse is caring for a patient who requires TPN because he is unable to take anything by mouth. Which of the following principles must the nurse consider when working with TPN for a patient?
   a. The TPN solution must be changed every 48 hours
   b. The nurse should not add any other fluid to the TPN bag
   c. Contamination of TPN solution typically appears as a yellow tint in the bag
   d. An in-line filter is never used with TPN tubing

83. A metabolic complication that occurs when TPN is administered to a severely malnourished patient is called:
   a. refeeding syndrome.
   b. metabolic acidosis.
   c. fasting protein synthesis syndrome.
   d. potassium depletion disorder.

84. A nurse is checking laboratory results for a patient with TPN and lipids and notes the following:
   Sodium: 138 mEq/L
   Potassium: 4.1 mEq/L
   Calcium 10.1 mg/dL
   Albumin: 5.4 g/dL
   Triglycerides: 426 mg/dL
   Alkaline Phosphatase: 100 IU/L
Based on these laboratory results, which of the following actions of the nurse is most appropriate?

- a. Administer a thrombolytic agent as ordered
- b. Add normal saline solution to the TPN fluid
- c. Discontinue the lipid infusion
- d. Flush the catheter with saline

85. A nurse receives an infusion of TPN that is called a 3-in-1 solution. Which of the following are the elements of this type of solution?

- a. Dextrose, amino acids, and lipids
- b. Dextrose, vitamins, and protein
- c. Vitamins, minerals, and amino acids
- d. Carbohydrates, electrolytes, and amino acids

86. Which of the following lab values are typically monitored when a patient is receiving TPN? Select all that apply.

- a. Glucose
- b. Electrolytes
- c. Bilirubin
- d. CO2
- e. Albumin

87. Which of the following additives may be mixed into a solution of TPN for administration?

- a. Codeine
- b. Ranitidine
- c. Acetaminophen
- d. Diazepam

88. A nurse is monitoring her patient who is in the medical-surgical unit and who recently had a bowel resection. The patient has an infusion of TPN with lipids running into a central line. Which of the following metabolic complications would the nurse most likely see with a patient receiving TPN?

- a. Hypermagnesemia
- b. Hypoalbuminemia
- c. Hypertriglyceridemia
- d. Hyponatremia

89. A nurse is preparing to administer peripheral parenteral nutrition for a patient who is recovering from surgery. The nurse has primed the tubing from the bag of solution and is ready for the next step. Which action should the nurse perform next?
a. Open the roller clamp to begin the infusion
b. Check the patient’s identification bracelet
c. Review the order from the physician and ensure that it is correct
d. Connect the bag to the infusion pump and set the parameters

90. A nurse is caring for a patient who has developed sepsis related to the catheter used for TPN. The patient has a fever and chills and the physician-ordered laboratory testing determined that the blood culture for infection was positive. Which of the following nursing interventions is most appropriate?
a. Discontinue the catheter
b. Place the patient in the Trendelenburg position
c. Place an in-line filter on the catheter tubing
d. Administer anticoagulants as ordered

**Answers and Rationales**

1. A – Warfarin is an anticoagulant medication that prevents blood clots. Alternatively, it may also increase the risk of bleeding. The nurse should assess for signs of bleeding in the gastrointestinal system, which could manifest as black stools. (1)

2. D – Lasix is a diuretic medication that can be given to induce elimination of excess fluid from the body. Lasix is typically used when a patient has excess fluid because of such diseases as heart failure or when pulmonary edema is present. Lasix should not be used when a patient has decreased urine output as a method to get the patient to urinate. (2)

3. C – A patient may have an adverse reaction to a medication, which can occur as a result of various types of interactions, including cytotoxic response or an infection. An anaphylactic reaction is manifested as difficulty breathing and wheezing, facial edema, and flushing of the skin, which represent a hypersensitivity of the patient's body to the medication. (3)

4. B – Zoloft is an antidepressant medication that may be prescribed for the treatment of major depression. Before starting a patient on this type of medication, the nurse should provide teaching and education about possible side effects and what symptoms require contact with a healthcare provider. Zoloft may increase feelings of anxiety in a patient who takes this drug for depression; the patient should be taught that there is a potential for this type of reaction. (3)

5. D – When working with a pregnant client, the nurse must be familiar with those situations and medications that can be harmful to the pregnant mother and/or her unborn baby. An example is corticosteroid use, which has not been shown to be safe during pregnancy. The nurse should be aware of this and counsel the client against using this type of drug. (2)
6. C – Adherence describes the extent to which a person’s behavior matches the expectation of a certain situation. For example, if a physician writes a prescription for a medication to be taken daily, the physician has an expectation that the patient will take the medication on that schedule. The patient is practicing adherence when he follows through with the expectations. (1)

7. A – When a nurse must give a medication that she is not familiar with, the nurse should take time to read and learn about the medication thoroughly before administering it. Drug guides are available as books or online that a nurse can access to educate herself about a drug. For the safety of the patient and the nurse, the nurse must be informed about the drug that she is administering. (2)

8. D – An adverse drug reaction is any undesired effect that occurs when a patient takes a normal and standard dose of the medication. If a nurse forgets to give a medication or a patient takes the wrong amount and suffers the consequences, it is not an adverse event. Alternatively, a patient who takes hormonal contraceptives as prescribed and still becomes pregnant suffers an adverse event. (2)

9. C – A sublingual medication is administered under the tongue to dissolve completely. The nurse should teach the client in this situation to place the nitroglycerin tablet under his tongue and let it dissolve, rather than chewing it or swallowing it before it has dissolved. (1)

10. B – A pulmonary embolism occurs when a clot in the bloodstream travels to the lungs and lodges in one of the main blood vessels of the respiratory system. This occludes blood flow to the lungs and causes coughing and difficulties with breathing. A pulmonary embolism is a risk associated with intravenous medication administration. (2)

11. C – When a patient requires a blood transfusion, the providers must send a sample of his blood for a type and crossmatch to ensure that he receives a matched type of blood transfusion. In an emergency situation, however, the providers may transfuse O negative blood without first checking the patient’s type or performing a crossmatch, as withholding the blood to test the lab first would do more harm. (2)

12. A – A type and crossmatch is a lab test performed to determine what type of blood may be administered to a patient if it is needed. This test confirms the patient’s blood type as well as its ABO compatibility with another kind of blood. To test the crossmatch, a small amount of blood is mixed with a sample to determine compatibility. (1)

13. D – An increase in temperature that occurs after starting a blood transfusion is a sign of a transfusion reaction. Alternatively, an elevated temperature in a patient before administration of blood signifies that the nurse should withhold the transfusion until she has cleared it with the provider. The patient may have an
infection or a medical condition that could be worsened with the administration of blood products. (3)

14. A, B – Packed red blood cells are a type of blood product that may be transfused to increase the total number of red blood cells in the patient’s bloodstream. Parameters for administration of packed red blood cells may vary between institutions, but in most cases, a very low level of hemoglobin, such as 6 g/dL, and severe illness in a patient with sickle cell disease warrant administration of packed red blood cells. (2)

15. A – Certain types of blood, because of their types and markers on the surface of the blood cells, are only compatible with other types of blood. A person with one blood type may not necessarily receive blood from any other type. A patient with type A+ blood, for example, is safe to receive types O-, O+, A-, and A+. (1)

16. B – Before administering blood products, the nurse must take a set of the patient’s vital signs to determine a baseline. The nurse will check the vital signs again after the transfusion has started. This provides a basis for comparison to determine if the blood product has caused any changes in the patient’s vital signs. (2)

17. C – Blood that comes from a donor and that is specifically designated for another person is known as a directed blood donation. In certain situations, a person may direct their blood donation; this may be more likely done among family members or in emergent situations. (1)

18. C – When a patient experiences signs of a transfusion reaction, the first step of the nurse is always to stop the blood transfusion. While the nurse may eventually need to provide oxygen or contact the provider, stopping the transfusion is the first priority. (1)

19. B – When the timing of a medication coincides with the time of administering blood products, the nurse must assess whether the medication can be held or if it must be given. If the medication cannot wait, the nurse should start another IV line to administer the medication. The nurse should not mix the medication with the blood or administer it while the blood is being transfused. (3)

20. A – On rare occasions, a blood product may be contaminated; when this occurs, the nurse may not be aware of it until the patient develops a transfusion reaction. When a blood transfusion is contaminated with a pathogen, the patient may develop signs or symptoms of infection, such as a high fever. (2)

21. A – In the case when a nurse is performing an intervention that requires sterile products, the nurse should replace any of the items that have become contaminated. If the nurse drops a sterile item on the floor, she should never re-use it. Instead, she should acquire a replacement that is sterile and use it instead. (1)
22. C – The brachiocephalic vein returns blood from the upper part of the body to the heart. The brachiocephalic vein is often accessed on the upper part of the chest when the patient needs a central venous catheter. (2)

23. D – A central venous catheter is an intravenous line that is threaded into a large vein in the body for administration of fluids and medications. The nurse should prepare the patient by giving information in terms that he can understand, such as by saying that the line will exit the skin under the collarbone. (3)

24. B – Placement of a central venous catheter in the upper body, such as in the jugular vein, requires the patient to be in the Trendelenburg position to reduce the risk of air entering the site and causing an embolus. Because the catheter is going into the patient’s neck, the patient’s head should also be turned away from the physician during placement for better access. (2)

25. D – Removal of a central line must be done very carefully to avoid complications such as bleeding, blood clots, or an embolus. When the nurse removes the central line, she should inspect the tip of the catheter to ensure that it is intact, as there is a small chance that the catheter tip could have broken off into the bloodstream and caused an embolus. (2)

26. A – After a central line has been placed, it must be confirmed for proper position before being used. The normal method of confirmation is to take an x-ray of the area. In some cases, the physician may order the nurse to use the line before official confirmation. (1)

27. A – If the nurse suspects that a patient has an air embolism, the first action is to clamp the intravenous catheter to prevent further infusion of fluid or air into the bloodstream. The nurse should place the patient supine and raise his legs to promote venous blood return while waiting for further instructions from the physician. (3)

28. B – Central venous pressure is a measure of the blood pressure found in the large veins that lead to the heart. An increase in central venous pressure may occur for a number of reasons that cause increased fluid accumulation in the bloodstream, such as in the case of heart failure. (2)

29. A, B, C – A peripherally inserted central catheter (PICC) is a type of central line that is inserted in an extremity, such as an arm, and then threaded to a central vein near the heart. The PICC has many advantages, including a lower risk of infection when compared to other types of central lines, as well as cost effectiveness. A PICC can also be inserted by a specially trained RN and can be placed at the bedside. (1)

30. C – The nurse should administer 3 tablets. To determine how much to give, the nurse divides the dose ordered by the amount provided. In this case, it would be 60 mg dose divided by 20 mg tablets, which equals 3 tablets. (2)

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31. B – The nurse should give 8 mL to administer 1,000 mg. To determine this, the nurse takes the dose ordered and divides it by the dose available. She then takes the answer times the amount available to get the total amount to administer. In this example, the nurse would take 1,000 mg divided by 625 mg and then take the total times 5 mL to get 8 mL. (3)

32. B – The nurse should administer the fluid at a rate of 50 mL/hour. To determine this rate, the nurse takes the amount ordered and divides it by the number of units available. She then takes that total times the amount of fluid in the bag. For example, the nurse would take the order of 1,000 units of heparin and divide it by 10,000 units available. She then takes that answer times the 500 mL bag to get 50 mL/hour as a rate. (3)

33. C – It would take 6 hours and 40 minutes to infuse 1,000 mL at a rate of 150 mL/hour. To determine this, the nurse takes the total amount to infuse and divides it by the rate per hour it has been ordered. For example, a total of 1,000 mL is divided by 150 mL to get 6.667, which would equal 6 hours and 40 minutes. (3)

34. A – The patient is receiving 20 units of insulin per hour. To determine this, the nurse takes the rate of the infusion and divides by the mL available. She then takes the total amount times the dose available. For example, the nurse calculates a rate of 10 units per hour infusion and divides it by the 500 mL bag of fluid. She then takes this total times 1,000 units of insulin to get 20 units per hour. (3)

35. B – Theophylline is a medication used to treat certain respiratory conditions, such as asthma. It works by relaxing the bronchioles, which makes it easier to breathe. It may also cause jitteriness and shakiness in the patient, which is why the patient should avoid caffeine, which could worsen symptoms. (2)

36. D – The therapeutic dose describes the amount of medication needed to achieve the medication’s desired effects. In some cases, laboratory levels may be needed to determine if the therapeutic dose has been reached in the patient's body. (1)

37. A – Gender may impact how a person absorbs and utilizes medications in the body. Because men and women often have different body types, the provider may need to consider the patient’s gender when prescribing medications. In terms of gender, women tend to need smaller doses of medication than men because their bodies are often smaller than men. (2)

38. C – The rate at which medication is absorbed into the bloodstream may vary depending on the method of administration. Among the methods of administration, sublingual administration has the fastest rate of absorption, as the medication quickly passes through the mucous membranes to enter the bloodstream. (1)
39. A – Furosemide is a diuretic medication that increases excretion of excess fluid through urination. When giving this medication, the nurse should give it in the morning, as it will cause the patient to need to use the bathroom frequently. The nurse should avoid giving it in the evening, as it could disrupt sleep if the patient has to get up multiple times during the night to urinate. (3)

40. A – Controlled substances are those that must be controlled because they have a high rate of abuse and the potential for addiction. A Schedule I controlled substance has the highest rate of abuse and is actually not used for medical purposes nor is it ever prescribed by a physician. Examples of Schedule I controlled substances include heroin and marijuana. (1)

41. B – The order listed is missing the dose to be administered. The physician must always write the name, dose, route, and time of the medication with a prescription order. In this case, the nurse would need to clarify the order. (1)

42. B – If the nurse clarifies the order with the physician and the doctor is not present to rewrite the order, the nurse should document that she clarified the order and write what the clarification was. In this case, if the handwriting was illegible, there is no need to document that fact; instead, the nurse should simply write the clarification. (2)

43. D – A monoamine oxidase inhibitor is a type of medication used for the treatment of depression. This type of medicine can react with foods that contain tyramine, causing hypertensive crisis. The patient should be counseled to avoid tyramine-containing foods such as sauerkraut, aged cheeses, and fermented meats. (1)

44. B – Amitriptyline is a tricyclic antidepressant medication that may be used in the treatment of depression. This drug may have an anticholinergic effect on the patient, which can cause dry mouth and blurred vision. The nurse should counsel the patient about how best to minimize these effects and call the provider if they are persistent. (2)

45. B – Serotonin syndrome is a potential complication of using medications that are selective serotonin reuptake inhibitors. Serotonin syndrome can develop within a couple of hours to 3 days after an initial dose of this type of medication, and it can be life threatening. Symptoms include mental confusion, hallucinations, fever, sweating, and tremor. (3)

46. D – A patient who develops thrombocytopenia while taking heparin is at risk of hemorrhage. The nurse should notify the provider of the patient’s platelet count and wait for further orders before administering the next heparin dose. (3)

47. C – Nitroglycerin is a medication used for the treatment of angina when cardiac ischemia develops. Nitroglycerin works by dilating the blood vessels, including
those of the coronary arteries, which can improve blood flow and control symptoms of angina. (1)

48. C – Beta blockers are cardiac medications that are used for the treatment of hypertension. They work by reducing vasoconstriction that could further perpetuate high blood pressure. They may also be used for patients with heart failure to control symptoms of fluid excess by increasing the size of the blood vessels. (2)

49. B – Fluconazole is an example of an antifungal medication that may be given when a patient is infected with a type of fungus. Fluconazole is most commonly used to treat yeast infections caused by Candida, including vaginal yeast infections in women and thrush in the mouths of infants. (1)

50. A – Aminoglycosides are medications used to treat infections caused by bacteria. Although they are very effective, they can cause complications; one of the most common is hearing loss. Examples of aminoglycoside medications include tobramycin and gentamicin. (2)

51. D – Capsaicin is a type of compound that comes from chili peppers and is used for relief of some types of pain. Capsaicin is usually applied topically, where it first stimulates pain receptors and then diminishes the intensity of pain signals in the body to provide some relief from pain. (1)

52. B – Corticosteroids, while useful in the management of inflammation, can cause deleterious side effects when used long term. Corticosteroids may increase blood glucose levels, causing hyperglycemia; they may also cause such effects as facial edema, easy bruising, weight gain, osteoporosis, and high blood pressure. (2)

53. A – Insulin types have various rates of onset and peak times. Depending on the type of insulin used, the patient needs to coordinate its administration with other activities that can cause a change in blood sugar. An example of a rapid-acting type of insulin is Lispro. (2)

54. D – A jet injector is a type of insulin administration device that sends a dose of insulin directly into the skin and the underlying subcutaneous tissue. A jet injector does not use needles, which is a positive aspect for some. This type of system can cause bruising and pain with administration, even without a needle. (3)

55. D – Disposal of controlled substances requires following facility policy and getting rid of the medication according to the facility’s rules. In this case, the nurse should follow the policy for disposal to discard the medication and document the patient’s refusal. The nurse should never re-use the medication and should not attempt to put it back unless allowed by the hospital policy. (2)
56. D – When attempting to cut a tablet in half, if the tablet breaks unevenly, the nurse should discard the medication and start again with a new tablet. The nurse cannot be sure that she is giving the exact amount when a tablet breaks unevenly. It is safer for the patient to start with cutting another tablet. (2)

57. A – A subcutaneous injection requires a small gauge needle, as the injection will go through the skin and into the subcutaneous fat, but it does not need to penetrate the muscle. An example of a needle size used for a subcutaneous injection would be a 25-gauge needle. (1)

58. A, C, D – An ampoule is a small glass container; some medications are provided in ampoules, which require forethought before drawing up and administering. When using an ampoule, the nurse must use a filter needle while drawing up to avoid drawing up tiny shards of glass that may be present. She then switches the filter needle to a standard needle for administration of the medication. When opening the ampoule, the nurse taps the top to ensure all of the medication is out of the neck; she then snaps the neck of the ampoule away from her to avoid breaking glass in her direction. (3)

59. C – The dorsogluteal site is located on the patient’s backside, near the hip. Although there is a large muscle in this area, the sciatic nerve also runs nearby, which puts the nurse at risk of piercing it with the needle. Damage to the sciatic nerve can cause back and leg pain. (2)

60. C – Repeated injections may cause discomfort in a patient who is subjected to numerous needle sticks for medication. The nurse can try to reduce discomfort by using the smallest size of needle available that will still work to provide the medication. Application of EMLA may reduce pain with an injection but it should be applied prior to the injection, not afterward. (2)

61. D – When a nurse administers an intradermal injection to test for tuberculosis, she should insert the needle at a 10-degree angle. Inserting the needle at this angle will allow the nurse to inject the solution just under the skin to create a wheal for testing. (1)

62. C – Diffusion describes the process that moves solutes from an area of higher concentration to an area of lower concentration. When diffusion occurs within the body, the movement of solutes results in equal distribution between the compartments of the intracellular and extracellular spaces. (1)

63. B, C – An IV filter may be connected to tubing used with an IV set to filter out microscopic particles that could otherwise enter the patient’s bloodstream. An IV filter would be used for a patient who is at greater risk of infection, such as with an immunocompromised patient or for someone receiving total parenteral nutrition. (3)
64. C – Medical equipment and materials all make a lot of noise, which can be confusing for some patients. A patient may become anxious if he hears his IV pump alarm, so the nurse should explain the basics of why this may happen. To best help the patient, the nurse should explain the alarm may sound, but not to worry because it could happen for a number of reasons. (2)

65. B – When a patient experiences dehydration, he most likely has decreased fluid in the intravascular space. The nurse should administer a hypotonic solution, which will increase fluid in the blood vessels as well as draw fluid into the intravascular space to promote fluid volume. (2)

66. B, D – In some cases when a patient needs fluid volume replacement, the nurse may have the option to administer crystalloid solutions or colloid solutions. Crystalloids (lactated Ringer’s, normal saline) are typically much more accessible and available; they are also cheaper and can be given in large amounts. Alternatively, colloid solutions (blood products) provide for intravascular volume expansion but they are more expensive and often require a type and crossmatch before administration. (3)

67. C – A hypertonic solution is one that contains a greater amount of solutes when compared to plasma. As a result, when the nurse administers a hypertonic solution, fluid will flow out of the cell and into the extracellular space. An example of a hypertonic solution is D10W. (1)

68. B – A pressure sleeve is a mechanism that can be added to the outside of an IV bag to increase the rate at which IV fluid flows into the patient. A pressure sleeve may be added when a patient quickly needs greater volumes of intravascular fluid, such as with hemorrhage or severe dehydration. (2)

69. A – Phlebitis is a condition of inflammation that affects the IV site. It is often caused by irritating fluids or medications instilled into the IV. The patient with phlebitis may most likely have warm, red skin with pain traveling up the arm along the route of the vein. (1)

70. C – Different insulin agents have differing times of onset, peak, and duration for how they work. The nurse must be familiar with the various types of agents and their duration, as well as when they are expected to start working and when they peak. An example is NPH insulin, which has an onset of approximately 1 hour from administration. (1)

71. A – If a patient develops toxicity from Digoxin, the nurse must hold the next dose and contact the healthcare provider. The patient should not continue to receive the medication so long as signs of toxicity are present. The provider may need to recalculate the dose or change the rate of administration to prevent toxicity from occurring again. (2)
72. B – Morphine may be available as an oral medication that a patient can take at home for pain control. Before dismissing the patient with a prescription for morphine, the nurse should teach the patient about how to take the medicine and what side effects are possible. When taking morphine, the patient should know that it might cause drowsiness. (3)

73. D – Benzodiazepines are used as sedative medications that may be helpful for chronic anxiety or to induce sleep among people who have sleep difficulties. Benzodiazepines work by enhancing the effects of GABA in the body by inhibiting its binding to specific receptors. Benzodiazepines, while useful, may also be abused and taken inappropriately because of their pleasant effects. (3)

74. C – A PCA provides a certain amount of pain control for a patient who can push a button to deliver a dose of pain medication. There may be times when a patient feels that the PCA does not provide enough pain control; there may also be times when the machine simply isn’t working correctly. In order to determine the cause of the patient’s dissatisfaction, the nurse should first check the machine and make sure it is working properly. (2)

75. D – Prn medications are those that are given on an as-needed basis. The nurse administers a prn medication based on her judgment and the patient’s condition. Common prn medications include laxatives and analgesics. Medications that regulate specific conditions, such as cardiac medications, are typically not administered as prn. (1)

76. D – Controlled substances are classified according to schedules, which are based on the intensity of the medication, their medical use, and their ability to be abused or to cause addiction. Schedule I controlled substances have no medical purpose and are typically not prescribed by physicians. Heroin is an example of a Schedule I controlled substance. (2)

77. C – Each facility has its own policy regarding waste of opioid analgesics, and the nurse must follow the policy at her place of employment. In many locations, an acceptable method of wasting a liquid narcotic is to verify the waste with another nurse and then pour the liquid down the drain of a sink, as it cannot be retrieved later. (2)

78. C – Different healthcare facilities have differing types of medication administration systems that are used for dispensing and counting medications and controlled substances. Systems vary from locked cabinets to computerized dispensing machines in which the medication is sent straight from the pharmacy. An automated dispensing unit electronically counts and keeps track of the medications taken from the unit when the nurse signs on to the machine. (1)

79. A – A sublingual medication is administered by placing the tablet under the tongue and letting it dissolve. This provides rapid absorption of the medication into the
bloodstream when it crosses the mucous membranes under the tongue and enters circulation. (1)

80. B – Cyclical TPN is a method of TPN administration that may be beneficial for some patients who do not need constant parenteral nutrition or who are weaning off of parenteral nutrition. Cyclical TPN involves administering a TPN infusion over several hours and then taking several hours of rest where no TPN is administered. (2)

81. C – Peripheral parenteral nutrition is a form of nutritional supplement delivered intravenously through a peripheral IV and not a central line. Because PPN is not nutritionally complete, it is not designed for everyone. A patient with a feeding tube would be the best-listed candidate for this type of nutrition, as he could also receive extra nutrients through enteral formula as well. (3)

82. B – A nurse must use TPN carefully with a patient who requires it, as it is a specially prepared formula for the patient and can cause some complications. The nurse should not administer any other fluids or medications into the tubing with the TPN, as they may not be compatible. (2)

83. A – Refeeding syndrome describes a situation in which a severely malnourished patient suffers deleterious effects when he receives nutrition and electrolytes through TPN. The introduction of carbohydrates through the dextrose in TPN causes an increase in insulin secretion followed by cellular uptake of potassium, phosphate, and magnesium. The patient may suffer serious complications, such as cardiac arrhythmias. (3)

84. C – The patient in the scenario has high triglyceride levels, which is a potential complication of TPN administration with lipids. The first action of the nurse would be to discontinue the lipid infusion with the healthcare provider’s permission and then monitor the triglyceride levels to see if they return to normal. (3)

85. A – A 3-in-1 solution is a form of TPN preparation that contains a mixture of dextrose, amino acids, and lipids. Some solutions are known as a 2-in-1 solution, in which they do not contain lipids. The lipid emulsion is instead administered separately in these situations. (2)

86. A, B, E – When a patient receives TPN, the physician will typically order laboratory studies to determine how well the patient’s body is responding to the TPN formula. Common lab studies that may be ordered include electrolyte levels; protein levels, such as albumin, and glucose levels, as glucose may be altered from the infusion of dextrose in the TPN. (1)

87. B – TPN is usually prepared in a pharmacy under specialized conditions with certain equipment. In most cases, the TPN solution only contains what the physician has ordered for dextrose, protein, and lipid requirements. However, there are some
medications that can also be administered with TPN solution and can be mixed right into the bag. An example is ranitidine (Zantac®). (2)

88. C – A patient who receives TPN is at higher risk of certain metabolic complications, including hypo- or hyperglycemia and hypertriglyceridemia. TPN contains a mixture of several vitamins and electrolytes, as well as dextrose and lipids. When a lipid emulsion is added, the patient may be at higher risk of developing elevated triglycerides. (2)

89. D – Setting up PPN is a little like hanging an IV bag as far as the steps the nurse must take. When the nurse has prepared the infusion and has primed the tubing, the next step is to connect the bag to the infusion pump and set the parameters for administration before connecting the tubing to the patient. (1)

90. C – In this situation, an in-line filter may be added to filter out particles that could enter the patient’s bloodstream through the tubing and could worsen an infection. A patient who uses TPN is at higher risk of an infection because of the increased amounts of dextrose in the solution, as well as administration of the TPN through a central line. Placing a filter on the tubing adds another layer of protection for the patient. (2)