Cognitive Domain
1. Spell and define the key terms
2. Describe the proper patient identification procedures
3. Identify equipment and supplies used to obtain a routine venous specimen and a routine capillary skin puncture
4. Describe proper use of specimen collection equipment
5. List the major anticoagulants, their color codes, and the suggested order in which they are filled from a venipuncture
6. Describe the location and selection of the blood collection sites for capillaries and veins
7. Describe specimen labeling and requisition completion
8. Differentiate between the feel of a vein, tendon, and artery
9. Describe the steps in preparation of the puncture site for venipuncture and skin puncture
10. Describe care for a puncture site after blood has been drawn
11. Describe safety and infection control procedures
12. Describe quality assessment issues in specimen collection procedures
13. List six areas to be avoided when performing venipuncture and the reasons for the restrictions
14. Summarize the problems that may be encountered in accessing a vein, including the procedure to follow when a specimen is not obtained
15. List several effects of exercise, posture, and tourniquet application upon laboratory values

Psychomotor Domain
1. Demonstrate proper use of sharps disposal containers
2. Practice standard precautions
3. Participate in standard precautions training
4. Perform handwashing
5. Obtain a blood specimen by evacuated tube or winged infusion set (Procedure 41-1)
6. Obtain a blood specimen by capillary puncture (Procedure 41-2)
7. Use medical terminology, pronouncing medical terms correctly, to communicate information
8. Prepare a patient for procedures and/or treatments
10. Respond to issues of confidentiality
11. Perform within scope of practice
12. Perform patient screening using using established protocols

Affective Domain
1. Display sensitivity to patient rights and feelings in collecting specimens
2. Explain the rationale for performance of a procedure to the patient
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>3.</td>
<td>Show awareness of patients’ concerns regarding their perceptions related to the procedure being performed</td>
</tr>
<tr>
<td>4.</td>
<td>Demonstrate sensitivity to patients’ rights</td>
</tr>
<tr>
<td>5.</td>
<td>Apply critical thinking skills in performing patient assessment and care</td>
</tr>
<tr>
<td>6.</td>
<td>Use language/verbal skills that enable patients’ understanding</td>
</tr>
<tr>
<td>7.</td>
<td>Demonstrate respect for diversity in approaching patients and families</td>
</tr>
<tr>
<td>8.</td>
<td>Demonstrate empathy in communicating with patients, family, and staff</td>
</tr>
<tr>
<td>9.</td>
<td>Apply active listening skills</td>
</tr>
<tr>
<td>10.</td>
<td>Demonstrate awareness of the territorial boundaries of the person with whom you are communicating</td>
</tr>
<tr>
<td>11.</td>
<td>Demonstrate sensitivity appropriate to the message being delivered</td>
</tr>
<tr>
<td>12.</td>
<td>Demonstrate recognition of the patient’s level of understanding in communications</td>
</tr>
<tr>
<td>13.</td>
<td>Demonstrate respect for individual diversity, incorporating awareness of one’s own biases in areas including gender, race, religion, age, and economic status</td>
</tr>
</tbody>
</table>

**ABHES Competencies**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Define and use entire basic structure of medical words and be able to accurately identify in the correct context, i.e. root, prefix, suffix, combinations, spelling, and definitions</td>
</tr>
<tr>
<td>2.</td>
<td>Build and dissect medical terms from roots/suffixes to understand the word element combinations that create medical terminology</td>
</tr>
<tr>
<td>3.</td>
<td>Document accurately</td>
</tr>
<tr>
<td>4.</td>
<td>Comply with federal, state, and local health laws and regulations</td>
</tr>
<tr>
<td>5.</td>
<td>Identify and respond appropriately when working/caring for patients with special needs</td>
</tr>
<tr>
<td>6.</td>
<td>Maintain inventory equipment and supplies</td>
</tr>
<tr>
<td>7.</td>
<td>Communicate on the recipient’s level of comprehension</td>
</tr>
<tr>
<td>8.</td>
<td>Use pertinent medical terminology</td>
</tr>
<tr>
<td>9.</td>
<td>Recognize and respond to verbal and nonverbal communication</td>
</tr>
<tr>
<td>10.</td>
<td>Use standard precautions</td>
</tr>
<tr>
<td>11.</td>
<td>Dispose of biohazardous materials</td>
</tr>
<tr>
<td>12.</td>
<td>Collect, label, and process specimens</td>
</tr>
<tr>
<td>13.</td>
<td>Perform venipuncture</td>
</tr>
<tr>
<td>14.</td>
<td>Perform capillary puncture</td>
</tr>
</tbody>
</table>
MULTIPLE CHOICE

Circle the letter preceding the correct answer.

1. When obtaining a blood specimen from a winged infusion set you need all of the following except:
   a. evacuated tubes.
   b. tourniquet.
   c. gauze pads.
   d. syringe.
   e. permanent marker.

2. A source of error in venipuncture is:
   a. puncturing the wrong area of an infant’s heel.
   b. inserting needle bevel side down.
   c. prolonged tourniquet application.
   d. pulling back on syringe plunger too forcefully.
   e. all of the above

3. When your patient is feeling faint during venipuncture, you should do all of the following except:
   a. remove the tourniquet and withdraw the needle.
   b. divert attention from the procedure.
   c. have patient breathe deeply.
   d. loosen a tight collar or tie.
   e. apply a cold compress or washcloth.

4. To avoid hemoconcentration the phlebotomist should:
   a. ensure the tourniquet is not too tight.
   b. have patient make a fist.
   c. use occluded veins.
   d. draw blood from the heel.
   e. use a needle with a small diameter.

5. If you accidentally puncture an artery, you should:
   a. hold pressure over the site for a full 5 minutes.
   b. use a cold compress to reduce pain.
   c. perform a capillary puncture.
   d. use a multisample needle instead.
   e. use a flatter angle when inserting the needle.

6. What is the difference between NPO and fasting?
   a. Fasting is no food, and NPO is no water.
   b. Fasting and NPO are basically the same.
   c. Fasting allows the patient to drink water, whereas NPO does not.
   d. NPO requires that the patient drink water, whereas fasting does not.
   e. Fasting is for surgery, and NPO is for getting true test results.

7. Aseptic techniques to prevent infection of the venipuncture site include:
   a. using sterile gloves.
   b. wearing a lab coat.
   c. using a gel separator.
   d. not opening bandages ahead of time.
   e. not speaking while you draw blood.

8. When collecting a blood sample from the fingers, you should use:
   a. the thumb.
   b. the second finger.
   c. the fifth finger.
   d. all fingers.
   e. the third and fourth fingers.

9. You should not draw blood using a small gauge needle because:
   a. there is a greater likelihood of it breaking off in the vein.
   b. blood cells will rupture, causing hemolysis of the specimen.
   c. the luer adaptor will not fit venipuncture cuffs.
   d. the small needles are awkward to hold and manipulate.
   e. the small needles do not allow you to collect enough blood.
10. Which of the following may trigger hematoma formation?
   a. Pressure is applied after venipuncture.
   b. The needle is removed after the tourniquet is removed.
   c. The needle penetrates all the way through the vein.
   d. The needle is fully inserted into the vein.
   e. The patient has not properly followed preparation instructions.

11. If you are exposed to blood by needlestick, it is necessary to:
   a. wash the needle with hot soap and water.
   b. notify your supervisor.
   c. determine the type of needle involved in the injury.
   d. alert the patient.
   e. activate the safety device on the needle.

12. Gloves that are dusted with powder may:
   a. contaminate blood tests collected by capillary puncture.
   b. transfer disease from patient to patient.
   c. inhibit the growth of bacteria.
   d. cause an allergic reaction in the patient.
   e. hold up better than regular latex gloves.

13. The purpose of antiseptics is to:
   a. hold needles.
   b. clean biohazardous spills.
   c. inhibit the growth of bacteria.
   d. promote anticoagulation.
   e. prevent hematomas.

14. The most commonly used antiseptic for routine blood collection is:
   a. 70% isopropyl alcohol.
   b. povidone iodine.
   c. 0.5% chlorhexidine gluconate.
   d. benzalkonium chloride.
   e. sodium chloride.

15. The end of the needle that pierces the vein is cut into a slant called a:
   a. bevel.
   b. hub.
   c. gauge.
   d. shaft.
   e. adapter.

16. Gauze pads are used to:
   a. prevent hemolysis
   b. prevent blood clots at the venipuncture site.
   c. handle used needles.
   d. hold pressure on the venipuncture site following removal of the needle.
   e. reduce the spread of bloodborne pathogens.

17. Which tubes must be first in the order of the draw?
   a. Blood culture tubes
   b. Coagulation tubes
   c. Heparin tubes
   d. Serum separator tubes (SSTs)
   e. Plain tubes

18. Which of the following is true of ethylenediaminetetraacetic acid (EDTA) tubes?
   a. They cause the least interference in tests.
   b. They should be filled after hematology tubes.
   c. They are the same as PSTs.
   d. They minimize the chance of microbial contamination.
   e. They elevate sodium and potassium levels.

19. What safety features are available for the holder used with the evacuated tube system?
   a. Shields that cover the needle, or devices that retract the needle into the holder
   b. A self-locking cover for recapping the needle
   c. A gripper to clamp the holder to the Vacutainer tube, preventing slippage
   d. Orange color as a reminder to discard in biohazard container
   e. A beveled point on only one end
**MATCHING**

Match each key term with the correct definition.

<table>
<thead>
<tr>
<th>Key Terms</th>
<th>Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>21. ______ anchor</td>
<td>a. physical products, equipment, or methods used specifically for the purpose of protecting the patient and the health care worker from exposure to potentially infectious material</td>
</tr>
<tr>
<td>22. ______ antecubital space</td>
<td>b. blood collection tube additive used because it prevents clotting</td>
</tr>
<tr>
<td>23. ______ anticoagulant</td>
<td>c. forms a physical barrier between the cellular portion of a specimen and the serum or plasma portion after the specimen has been centrifuged</td>
</tr>
<tr>
<td>24. ______ antiseptic</td>
<td>d. specimens drawn to culture the blood for pathogens</td>
</tr>
<tr>
<td>25. ______ barrier precautions</td>
<td>e. the end of the needle that pierces the vein that is cut on a slant</td>
</tr>
<tr>
<td>26. ______ bevel</td>
<td>f. diameter of the needle</td>
</tr>
<tr>
<td>27. ______ blood cultures</td>
<td>g. measure of the diameter of the needle</td>
</tr>
<tr>
<td>28. ______ bore</td>
<td>h. winged infusion set</td>
</tr>
<tr>
<td>29. ______ breathing the syringe</td>
<td>i. extensions on the sides of the rim of the holder to aid in tube placement and removal</td>
</tr>
<tr>
<td>30. ______ butterfly</td>
<td>j. grown in the laboratory</td>
</tr>
<tr>
<td>31. ______ cultured</td>
<td>k. solution used to inhibit the growth of bacteria</td>
</tr>
<tr>
<td>32. ______ distal</td>
<td>l. pads that come in multiple sizes depending upon their use in various clinical areas</td>
</tr>
<tr>
<td>33. ______ microcontainers</td>
<td>m. pull back the plunger to about halfway up the barrel, and then push it back</td>
</tr>
<tr>
<td>34. ______ edematous</td>
<td>n. the inside of the elbow</td>
</tr>
<tr>
<td>35. ______ evacuated tube</td>
<td>o. away from the origin</td>
</tr>
<tr>
<td>36. ______ fasting</td>
<td>p. swollen area due to excess tissue fluid</td>
</tr>
<tr>
<td>37. ______ flanges</td>
<td>q. the patient must eat nothing after midnight until the blood specimen is drawn, including chewing gum, breath mints, and coffee; the patient can have water</td>
</tr>
<tr>
<td>38. ______ gauge</td>
<td>r. extend beyond the normal range of motion</td>
</tr>
<tr>
<td>39. ______ gauze sponges</td>
<td>s. hold a vein in place so that it does not roll</td>
</tr>
<tr>
<td>40. ______ formation caused by blood leaking into the tissues during or after venipuncture</td>
<td>t. formation caused by blood leaking into the tissues during or after venipuncture</td>
</tr>
<tr>
<td>41. ______ packed red blood cell volume</td>
<td>u. packed red blood cell volume</td>
</tr>
</tbody>
</table>
### MATCHING

Match each key term with the correct definition.

<table>
<thead>
<tr>
<th>Key Terms</th>
<th>Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>47. _____ luer adapter</td>
<td>a. protective treatment for the prevention of disease once exposure has occurred</td>
</tr>
<tr>
<td>48. _____ lumen</td>
<td>b. an order form for laboratory tests</td>
</tr>
<tr>
<td>49. _____ lymphedema</td>
<td>c. system that facilitates collecting multiple tubes with a single venipuncture</td>
</tr>
<tr>
<td>50. _____ multisample needle</td>
<td>d. tube filling sequence for both collection of evacuated tubes and filling evacuated tubes from a syringe</td>
</tr>
<tr>
<td>51. _____ needle disposal unit</td>
<td>e. opening of a needle</td>
</tr>
<tr>
<td>52. _____ NPO</td>
<td>f. needle holder</td>
</tr>
<tr>
<td>53. _____ order of draw</td>
<td>g. disease of having too many red blood cells; abnormally high hematocrit</td>
</tr>
<tr>
<td>54. _____ palpate</td>
<td>h. puncture-resistant, leak-proof disposable container</td>
</tr>
<tr>
<td>55. _____ peak level</td>
<td>i. sharps container</td>
</tr>
<tr>
<td>56. _____ polycythemia vera</td>
<td>j. made of disposable plastic and vary in volume from 1 to 50 mL</td>
</tr>
<tr>
<td>57. _____ probing</td>
<td>k. veins that have been injured, lack resilience, and roll easily</td>
</tr>
<tr>
<td>58. _____ prophylaxis</td>
<td>l. lymphatic obstruction</td>
</tr>
<tr>
<td>59. _____ requisition</td>
<td>m. using the tip of the index finger to evaluate veins by feeling to determine their suitability</td>
</tr>
<tr>
<td>60. _____ sharps container</td>
<td>n. the patient must have absolutely nothing by mouth after midnight until the procedure is done; in this case, the patient cannot have water</td>
</tr>
<tr>
<td>61. _____ syncope</td>
<td>o. fainting</td>
</tr>
<tr>
<td>62. _____ syringe</td>
<td>p. digging with a needle</td>
</tr>
<tr>
<td></td>
<td>q. the highest serum level of a drug in a patient based on a dosing schedule, which is usually measured about 60 minutes after the end of the infusion</td>
</tr>
<tr>
<td></td>
<td>r. drug level drawn immediately prior to a dose</td>
</tr>
</tbody>
</table>
63. _____ taut  
64. _____ therapeutic phlebotomy  
65. _____ thrombosed  
66. _____ trough level

**SHORT ANSWER**

67. List four techniques for avoiding hemoconcentration.
   a. ____________________________
   b. ____________________________
   c. ____________________________
   d. ____________________________

68. List three problems using the correct order of draw enables you to avoid.
   ____________________________
   ____________________________
   ____________________________

69. What is a warming device? What is its purpose in capillary puncture?
   ____________________________
   ____________________________
   ____________________________

70. List six reasons not to choose a specific site for venipuncture.
   ____________________________
   ____________________________
   ____________________________
   ____________________________
   ____________________________
   ____________________________
71. What should you do if a hematoma begins to form during venipuncture?

72. List four sites to reject for capillary puncture.

73. Name eight sources of error in venipuncture procedure.

74. Fill in the blanks on situations that may trigger hematoma formation.
   a. The vein is ________________ or too ________________ for the needle.
   b. The needle ________________ all the way through the ________________.
   c. The needle is only ________________ inserted into the vein.
   d. ________________ or ________________ probing is used to find the vein.
   e. The needle is ________________ while the ________________ is still on.
   f. ________________ is not adequately ________________ after venipuncture.
### COC MATCHING

Match each tube with its description.

<table>
<thead>
<tr>
<th>Tubes</th>
<th>Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>75. _____ Heparin tubes</td>
<td>a. Drawn first to minimize chance of microbial contamination</td>
</tr>
<tr>
<td>76. _____ Tubes for coagulation testing</td>
<td>b. Prevents contamination by additives in other tubes</td>
</tr>
<tr>
<td>77. _____ EDTA tubes</td>
<td>c. Must be the first additive tube in the order because all other additive tubes affect coagulation tests</td>
</tr>
<tr>
<td>78. _____ Tubes for blood cultures</td>
<td>d. Come after coagulation tests because silica particles activate clotting and affect coagulation tests; carryover of silica into subsequent tubes can be overridden by the anticoagulant in them</td>
</tr>
<tr>
<td>79. _____ PST tubes</td>
<td>e. Affects coagulation tests and interferes in collection of serum specimens; causes the least interference in tests other than coagulation tests</td>
</tr>
<tr>
<td>80. _____ Serum separator gel tubes</td>
<td>f. Causes more carryover problems than any other additive; elevates sodium and potassium levels; chelates and decreases calcium and iron levels; elevates prothrombin time and partial thromboplastin time results</td>
</tr>
<tr>
<td>81. _____ Plain (nonadditive) tubes</td>
<td>g. Causes the least interference in tests other than coagulation tests and contains a gel separator to separate plasma from the blood cells in the specimen</td>
</tr>
</tbody>
</table>

### COC TRUE OR FALSE?

Indicate whether the statements are true or false by placing the letter T (true) or F (false) on the line preceding the statement.

82. _____ Winged sets cause increased numbers of needlesticks to phlebotomists.
83. _____ For finger puncture sites, it is best to have the hand below the heart.
84. _____ Never believe patients when they say they faint during venipuncture.
85. _____ Warmers decrease blood flow before the skin is punctured.
86. _____ Excessive massaging of the puncture site is a source of error in skin puncture.
COG SHORT ANSWER

Grade: ___________

87. The properly labeled sample is essential so that the results of the test match the patient. List the four key elements in labeling.

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

88. List the use of each item of equipment used to obtain a routine venous specimen and a routine capillary skin puncture.

a. Evacuated collection tubes:

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

b. Multisample needles:

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

c. Winged infusion sets:

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________
d. Holders/adapters:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

e. Tourniquets:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

f. Alcohol wipes:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

g. Gauze sponges:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

h. Bandages:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
i. Needle disposal units (sharps containers):

j. Gloves:

k. Syringes:

l. Puncture devices:

m. Microhematocrit tubes:
n. Microcollection containers:

o. Filter paper test requisitions:

p. Warming devices:

89. What are the two parts of patient identification in the medical office?

90. Supply the color code for each type of blood collection tube.
   a. Blood cultures
   b. Coagulation tests
   c. Serum separator tubes
   d. Ethylenediaminetetraacetic acid
   e. Plain (nonadditive) tubes
   f. Plasma tubes and plasma separator tubes
91. List the 7 items required for completing test requisitions.

- Patient name
- Date
- Reason for test
- Medical diagnosis
- Patient's address
- Physician's name
- Physician's signature

92. Fill in artery (A), tendon (T), or vein (V) by the feeling when palpating a vein.

a. _____ cordlike
b. _____ lacks resilience
c. _____ most elastic
d. _____ palpable
e. _____ pulsatile
f. _____ resilient
g. _____ trackable

93. Numbering from 1–25, place the steps for performing a venipuncture in the correct order.

_____ Properly care for or dispose of all equipment and supplies. Clean the work area. Remove personal protective equipment and wash your hands.
_____ Greet and identify the patient. Explain the procedure. Ask for and answer any questions.
_____ Tap the tubes that contain additives to ensure that the additive is dislodged from the stopper and wall of the tube. Insert the tube into the adaptor until the needle slightly enters the stopper. Do not push the top of the tube stopper beyond the indentation mark. If the tube retracts slightly, leave it in the retracted position.
_____ Check the requisition slip to determine the tests ordered and specimen requirements.
_____ If a fasting specimen is required, ask the patient the last time he or she ate or drank anything other than water.
_____ Select a vein by palpating. Use your gloved index finger to trace the path of the vein and judge its depth.
_____ Wash your hands.
_____ Apply the tourniquet around the patient's arm 3–4 inches above the elbow.
_____ Cleanse the venipuncture site with an alcohol pad, starting in the center of puncture site and working outward in a circular motion. Allow the site to dry or dry the site with sterile gauze. Do not touch the area after cleansing.
_____ With the bevel up, line up the needle with the vein approximately one quarter to half an inch below the site where the vein is to be entered. At a 15- to 30-degree angle, rapidly and smoothly insert the needle through
the skin. Place two fingers on the flanges of the adapter and with the thumb push the tube onto the needle inside the adapter. Allow the tube to fill to capacity. Release the tourniquet and allow the patient to release the fist. When blood flow ceases, remove the tube from the adapter by gripping the tube with your nondominant hand and placing your thumb against the flange during removal. Twist and gently pull out the tube. Steady the needle in the vein. Avoid pulling up or pressing down on the needle while it is in the vein. Insert any other necessary tubes into adapter and allow each to fill to capacity.

1. Assemble the equipment. Check the expiration date on the tubes.
2. Record the procedure.
3. Put on nonsterile latex or vinyl gloves. Use other personal protective equipment as defined by facility policy.
4. Place a sterile gauze pad over the puncture site at the time of needle withdrawal. Do not apply any pressure to the site until the needle is completely removed. After the needle is removed, immediately activate the safety device and apply pressure or have the patient apply direct pressure for 3–5 minutes. Do not bend the arm at the elbow.
5. Instruct the patient to sit with a well-supported arm.
6. Label the tubes with patient information as defined in facility protocol.
7. Release tourniquet after palpating the vein if it has been left on for more than 1 minute. Have patient release his or her fist.
8. Test, transfer, or store the blood specimen according to the medical office policy.
9. Remove the needle cover. Hold the needle assembly in your dominant hand, thumb on top of the adaptor and fingers under it. Grasp the patient’s arm with the other hand, using your thumb to draw the skin taut over the site. This anchors the vein about 1–2 inches below the puncture site and helps keep it in place during needle insertion.
10. If the vacuum tubes contain an anticoagulant, they must be mixed immediately by gently inverting the tube 8–10 times. Do not shake the tube.
11. If blood being drawn for culture will be used in diagnosing a septic condition, make sure the specimen is sterile. To do this, apply alcohol to the area for 2 full minutes. Then apply a 2% iodine solution in ever widening circles. Never move the wipes back over areas that have been cleaned; use a new wipe for each sweep across the area.
12. Thank the patient. Instruct the patient to leave the bandage in place at least 15 minutes and not to carry a heavy object (such as a purse) or lift heavy objects with that arm for 1 hour.
13. Properly care for or dispose of all equipment and supplies. Clean the work area. Remove personal protective equipment and wash your hands.
14. Reapply the tourniquet if it was removed after palpation. Ask patient to make a fist.
15. Check the puncture site for bleeding. Apply a dressing, a clean 2 × 2 gauze pad folded in quarters, and hold in place by an adhesive bandage or 3-inch strip of tape.
16. With the tourniquet released, remove the tube from the adapter before removing the needle from the arm.

94. Numbering from 1–16, place the steps for performing a capillary puncture in the correct order.
1. Thank the patient. Instruct the patient to leave the bandage in place at least 15 minutes.
2. Greet and identify the patient. Explain the procedure. Ask for and answer any questions.
3. Check the requisition slip to determine the tests ordered and specimen requirements.
4. Select the puncture site. Use the appropriate puncture device for the site selected.
5. Obtain the first drop of blood. Wipe away the first drop of blood with dry gauze. Apply pressure toward the site but do not milk the site.
6. Wash your hands.
7. Grasp the finger firmly between your non-dominant index finger and thumb, or grasp the infant’s heel firmly with your index finger wrapped around the foot and your thumb wrapped around the ankle. Cleanse the selected area with 70% isopropyl alcohol and allow to air dry.
8. Record the procedure.
Assemble the equipment.

Hold the patient’s finger or heel firmly and make a swift, firm puncture. Perform the puncture perpendicular to the whorls of the fingerprint or footprint. Dispose of the used puncture device in a sharps container.

Test, transfer, or store the specimen according to the medical office policy.

Put on gloves.

Collect the specimen in the chosen container or slide. Touch only the tip of the collection device to the drop of blood. Blood flow is encouraged if the puncture site is held downward and gentle pressure is applied near the site. Cap micro collection tubes with the caps provided and mix the additives by gently tilting or inverting the tubes 8–10 times.

Make sure the site chosen is warm and not cyanotic or edematous. Gently massage the finger from the base to the tip or massage the infant’s heel.

Properly care for or dispose of equipment and supplies. Clean the work area. Remove gloves and wash your hands.

When collection is complete, apply clean gauze to the site with pressure. Hold pressure or have the patient hold pressure until bleeding stops. Label the containers with the proper information. Do not apply a dressing to a skin puncture of an infant under age 2 years. Never release a patient until the bleeding has stopped.

**COG IDENTIFICATION**

Note if the following is acceptable (A) or unacceptable (U) treatment of the puncture site.

95. _____ If the venipuncture process is interrupted, leave the clean venipuncture site open to the air.

96. _____ Place pressure on the puncture site and remove needle.

97. _____ Do not have the patient fold the arm following venipuncture.

98. _____ Have the patient hold light pressure on the venipuncture site, if possible, while you secure the exposed needle.

99. _____ Dismiss the patient after holding light pressure on the venipuncture site.

100. _____ Avoid overly massaging the capillary puncture site.

101. _____ When finished, elevate the heel, place a clean gauze sponge on the puncture site and hold it in place until the bleeding has stopped.

102. _____ Gauze pads folded in fourths are used to hold pressure over the puncture site when secured by a bandage.

**COG TRUE OR FALSE?**

Indicate whether the statements are true or false by placing the letter T (true) or F (false) on the line preceding the statement.

103. _____ After the needle is removed, activate the safety device as soon as possible.

104. _____ The phlebotomy station should be central to all of the clinical areas so that it is easily accessible by everyone.
105. _____ A safety device locks the armrest in place in front of the patient to prevent falling from the chair if fainting occurs.

106. _____ Needle holders do not include a safety device, so needle safety devices are required.

107. _____ The Needlestick Safety and Prevention Act requires each phlebotomist to be responsible for his or her own safety.

108. _____ Quick activation of the safety device relieves the phlebotomist of concern for caution.

109. _____ Holder safety features may include a shield that covers the needle or a device that retracts the needle into the holder after it is withdrawn from the vein.

110. _____ Regardless of safety features, immediately dispose of used needles, lancets, and other sharp objects in a puncture-resistant, leak-proof disposable container called a sharps container.

111. List six actions that provide safety and infection control.

[ ]
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[ ]
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112. List nine factors that must be monitored to assure quality in phlebotomy.

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113. Exercise causes changes in the blood levels of which four analytes?

[ ]
[ ]
[ ]
[ ]
FILL IN THE BLANK

114. Postural changes (____________________,  ____________________,  ____________________) are known
to vary laboratory results of some analytes. The differences in these lab values have been attributed to shifts in
____________________  ____________________. Fluids tend to stay in the vascular compartment (bloodstream)
when the patient is__________________ or ______________. This tends to ___________________ the
blood. There is a __________________ of fluids to the interstitial spaces upon standing or ambulation. The lab
tests that are the most affected by this phenomenon are proteins (____________________, ____________________,
____________________) and protein-bound substances, such as ____________________,
____________________, ____________________, and ____________________.

115. The maximum time limit for leaving the tourniquet in place is ____________________ minutes. Extending
the time limit can alter test results by causing ___________________ and ___________________. The
____________________ of fluid in hemoconcentrated blood results in a(n) ___________________ of cellular
components in that blood. This ___________________ elevation results in ___________________ labora-
tory measurement of ____________________, ____________________, and some ____________________.
____________________ tourniquet placement may significantly increase total protein, aspartate aminotransferase
(AST), total lipids, cholesterol, iron, and hematocrit.

116. The most common complication of venipuncture is ____________________ formation caused by blood leaking into
the tissues during or after venipuncture.

117. Situations that may trigger hematoma formation include:
   a. The vein is ___________________ or too ___________________ for the needle.
   b. The needle ___________________ all the way through the ________________.
   c. The needle is only ___________________  ___________________ into the vein.
   d. Excessive or ___________________  ___________________ is used to find the vein.
   e. The needle is removed while the ___________________  ___________________  ____________________
      ________________.
   f. ___________________ is not adequately applied after venipuncture.

118. ___________________ veins (lack resilience) feel like rope or cord and ___________________ easily.

119. Accidental puncture of an ___________________ is recognized by the blood's bright red color and the
      ________________ of the specimen into the tube.

120. Permanent ___________________ damage may result from ________________ site selection, move-
      ment of the ________________, during needle insertion, inserting the needle too ___________________ or
      ____________________, or excessive blind ________________.

121. Make sure the needle fully ___________________ the ________________, most wall of the vein. (Partial
      ________________, allow blood to leak into the soft tissue surrounding the vein by way of the needle
      ________________,.)
122. If an insufficient amount or no blood is collected:

a. Change the ______________ of the ______________. Move it forward (it may not be in the ______________). Or, move it backward (it may have ______________ ______________ ______________).

b. Adjust the angle (the ______________ may be against the vein ______________).

c. Loosen the tourniquet; it may be ______________ blood ______________.

d. Try ______________ tube. There may be no ______________ in the ______________ ______________ ______________ ______________.

e. ______________ the vein. Veins sometimes ______________ ______________ from the ______________ of the needle and puncture site.

f. The vein may have ______________; ______________ the tourniquet to increase ______________ filling. If this is not successful, remove the ______________, take care of the ______________ site, and ______________.

g. The ______________ may have pulled ______________ ______________ when switching tubes. ______________ equipment firmly and place ______________ against patient's arm, using the ______________ for leverage when withdrawing and inserting ______________.

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CASE STUDIES FOR CRITICAL THINKING

Grade: ___________

1. You have a patient who says that he always becomes nervous at the sight of his own blood, but has never fainted before. You ask the patient to lie down during the procedure. Your patient is fine with the needle insertion, but as soon as he sees the sight of his own blood, he passes out. What should you do?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

2. It is your first time performing a skin puncture on the heel of an infant, and as much as the father tries to comfort his baby, the baby won't stop crying or hold still. How would you handle this situation?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
3. An older adult patient comes in for a venipuncture procedure. You insert the needle at a narrow angle because of the shallowness of her veins. However, her vein “rolls” during this procedure, and, after needle removal, she begins to develop a huge hematoma and becomes very anxious. How do you treat your patient’s condition and console her?

4. Write a narrative note that describes the procedure in the exercise above. Include all necessary details, as this will be included in the patient’s chart.

5. You are reviewing test results received from the referral laboratory. You notice that the HIV results on your neighbor, Alice Sihotang, are positive. Your friend Kaylene Oyakawa meets you for lunch. She tells you that all of your neighbors are worried about about Alice because she looks so ill and has been losing weight. Kaylene says that she knows Alice is a patient at your medical office and asks you what is wrong with Alice. What do you say?

6. After drawing blood with a winged set, you inadvertently stick yourself with the needle. How would you handle this situation?
CHAPTER 41 • Phlebotomy

7. Your last patient of the day, a young child accompanied by her mother, accidentally knocks over your collection tubes that were within her reach as you were disposing of sharps. How would you handle this situation?

8. Jordan, your 5-year-old patient, is afraid to have a skin puncture. She is extremely agitated, and her mother is having a difficult time trying to get her to sit still. Gloria, the phlebotomist, decides to have the parent restrain the child by firmly holding the child's finger very still. Gloria notices that the screaming child's hands are cold and clammy. With gloves on, Gloria quickly performs the skin puncture, capturing every drop. Identify the mistakes Gloria made in preparing the patient and list possible effects.

9. You are preparing to draw blood from your patient. When you begin to palpate for a vein, the patient asks what the doctor has ordered and why he ordered those tests. What do you say?

10. Jenna, your 15-year-old patient, is waiting with her mother. She is extremely nervous. You are greeting the patient and reviewing the requisition. The doctor has ordered a serum pregnancy test on Jenna. Jenna's mother asks what test the doctor has requested. What is the cause of Jenna's anxiety and how do you handle the situation?
11. Medical ethics limit your discussion with a patient regarding the physician’s orders and why she ordered them. To stress the key role patients play in staying healthy, what can you say to the patient about his rights and responsibilities?

12. In reviewing the physician’s orders on the requisition, you see that your patient needs to collect a urine specimen in addition to having blood drawn. You tell the patient you will need a urine specimen and that the containers are in the bathroom. Your patient stares at you and does not move toward the restroom. What is the reason and what action do you take?

13. Nick is preparing to draw blood from a 55-year-old, very obese female. In preparing to tie the tourniquet 3–4 inches above the elbow, he accidently brushes the patient’s breast. How should Nick handle completing this phlebotomy? How should Nick plan to handle this type of situation in the future?

14. The medical office has closed and you are completing preparation of specimens for the reference laboratory pick-up. You find you have two requisitions without labeled specimens to accompany them. You have two unlabeled blood tubes. There is no way to identify the two specimens. What do you do?
**PROCEDURE 41-1** Obtaining a Blood Specimen by Evacuated Tube or Winged Infusion Set

Name: ___________________________ Date: ________ Time: ________ Grade: ________

**EQUIPMENT/SUPPLIES:** Multisample needle and adaptor or winged infusion set, evacuated tubes, tourniquet, sterile gauze pads, bandages, sharps container, 70% alcohol pad, permanent marker or pen, appropriate personal protective equipment (e.g., gloves, impervious gown, face shield)

**STANDARDS:** Given the needed equipment and a place to work, the student will perform this skill with ________% accuracy in a total of ________ minutes. *(Your instructor will tell you what the percentage and time limits will be before you begin practicing.)*

**KEY:**

- 4 = Satisfactory
- 0 = Unsatisfactory
- NA = This step is not counted

**PROCEDURE STEPS**

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<tr>
<th>STEP</th>
<th>SELF</th>
<th>PARTNER</th>
<th>INSTRUCTOR</th>
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<td>5. <strong>AFF</strong></td>
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10. Apply the tourniquet around the patient's arm 3–4 inches above the elbow.
   a. Apply the tourniquet snugly, but not too tightly.
   b. Secure the tourniquet by using the half-bow knot.
   c. Make sure the tails of the tourniquet extend upward to avoid contaminating the venipuncture site.
   d. Ask the patient to make a fist and hold it, but not to pump the fist.

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<td>10c.</td>
<td>Make sure the tails of the tourniquet extend upward to avoid contaminating the venipuncture site.</td>
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<tr>
<td>10d.</td>
<td>Ask the patient to make a fist and hold it, but not to pump the fist.</td>
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11. Select a vein by palpating. Use your gloved index finger to trace the path of the vein and judge its depth.

12. Release tourniquet after palpating the vein if it has been left on for more than one minute. Have patient release fist.

13. Cleanse the venipuncture site with an alcohol pad, starting in the center of puncture site and working outward in a circular motion. Allow the site to dry or dry the site with sterile gauze. Do not touch the area after cleansing.

14. If blood being drawn for culture will be used in diagnosing a septic condition, make sure the specimen is sterile. To do this, apply alcohol to the area for 2 full minutes. Then apply a 2% iodine solution in ever widening circles. Never move the wipes back over areas that have been cleaned; use a new wipe for each sweep across the area.

15. Reapply the tourniquet if it was removed after palpation. Ask patient to make a fist.

16. Remove the needle cover. Hold the needle assembly in your dominant hand, thumb on top of the adaptor and fingers under it. Grasp the patient's arm with the other hand, using your thumb to draw the skin taut over the site. This anchors the vein about 1–2 inches below the puncture site and helps keep it in place during needle insertion.

17. With the bevel up, line up the needle with the vein approximately one quarter to half an inch below the site where the vein is to be entered. At a 15- to 30-degree angle, rapidly and smoothly insert the needle through the skin. Use a lesser angle for winged infusion set collections. Place two fingers on the flanges of the adapter and with the thumb push the tube onto the needle inside the adapter. Allow the tube to fill to capacity. Release the tourniquet and allow the patient to release the fist. When blood flow ceases, remove the tube from the adapter by gripping the tube with your non-dominant hand and placing your thumb against the flange during removal. Twist and gently pull out the tube. Steady the needle in the vein. Avoid pulling up or pressing down on the needle while it is in the vein. Insert any other necessary tubes into adapter and allow each to fill to capacity.

18. With the tourniquet released, remove the tube from the adapter before removing the needle from the arm.
19. Place a sterile gauze pad over the puncture site at the time of needle withdrawal. Do not apply any pressure to the site until the needle is completely removed.
   a. After the needle is removed, immediately activate the safety device and apply pressure or have the patient apply direct pressure for 3–5 minutes. Do not bend the arm at the elbow.

20. After the needle is removed, immediately activate the safety device and apply pressure, or have the patient apply direct pressure for 3–5 minutes. Do not bend the arm at the elbow.

21. If the vacuum tubes contain an anticoagulant, they must be mixed immediately by gently inverting the tube 8–10 times. Do not shake the tube.

22. Label the tubes with patient information as defined in facility protocol.

23. Check the puncture site for bleeding. Apply a dressing, a clean 2 × 2 gauze pad folded in quarters, and hold in place by an adhesive bandage or 3-inch strip of tape.

24. Thank the patient. Instruct the patient to leave the bandage in place at least 15 minutes and not to carry a heavy object (such as a purse) or lift heavy objects with that arm for 1 hour.

25. Properly care for or dispose of all equipment and supplies. Clean the work area. Remove personal protective equipment and wash your hands.

26. Test, transfer, or store the blood specimen according to the medical office policy.

27. Record the procedure.

28. Explain how to respond to a patient who is deaf, hearing impaired, visually impaired, developmentally challenged, or speaks English as a second language (ESL) or who has dementia, cultural or religious concerns, or generational differences.
CALCULATION

Total Possible Points: _______

Total Points Earned: _______ Multiplied by 100 = _______ Divided by Total Possible Points = _______ %

PASS  FAIL  COMMENTS:

☐  ☐

Student’s signature ___________________________ Date ______

Partner’s signature ___________________________ Date ______

Instructor’s signature ___________________________ Date ______
### Obtaining a Blood Specimen by Capillary Puncture

**Name:** __________________________  **Date:** __________  **Time:** __________  **Grade:** ______

**EQUIPMENT/SUPPLIES:** Skin puncture device, 70% alcohol pads, 2 × 2 gauze pads, microcollection tubes or containers, heel warming device if needed, small band aids, pen or permanent marker and personal protective equipment (e.g., gloves, impervious gown, face shield)

**STANDARDS:** Given the needed equipment and a place to work, the student will perform this skill with ________% accuracy in a total of ________ minutes. (Your instructor will tell you what the percentage and time limits will be before you begin practicing.)

**KEY:**  
4 = Satisfactory  
0 = Unsatisfactory  
NA = This step is not counted

<table>
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<td>1. Check the requisition slip to determine the tests ordered and specimen requirements.</td>
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<td>2. Wash your hands.</td>
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<td>3. Assemble the equipment.</td>
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<td>4. <strong>AFF</strong> Greet and identify the patient. Explain the procedure. Ask for and answer any questions.</td>
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<td>5. <strong>AFF</strong> Evaluate your patient for his or her ability to understand your instructions. When indicated, whether the problem is deafness, hearing impairment, visual impairment, a developmental challenge, English as a second language (ESL), dementia, cultural or religious concerns, or generational differences, you are responsible for helping the patient understand the procedure before beginning the phlebotomy. This may include help from the person who brought the patient to the office or from a translator.</td>
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<td>6. Put on gloves.</td>
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<td>7. Select the puncture site (the lateral portion of the tip of the middle or ring finger of the non-dominant hand or lateral curved surface of the heel of an infant). The puncture should be made in the fleshy central portion of the second or third finger, slightly to the side of center, and perpendicular to the grooves of the fingerprint. Perform heel puncture only on the plantar surface of the heel, medial to an imaginary line extending from the middle of the great toe to the heel, and lateral to an imaginary line drawn from between the fourth and fifth toes to the heel. Use the appropriate puncture device for the site selected.</td>
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8. Make sure the site chosen is warm and not cyanotic or edematous. Gently massage the finger from the base to the tip or massage the infant's heel.

9. Grasp the finger firmly between your nondominant index finger and thumb, or grasp the infant's heel firmly with your index finger wrapped around the foot and your thumb wrapped around the ankle. Cleanse the selected area with 70% isopropyl alcohol and allow to air dry.

10. Hold the patient's finger or heel firmly and make a swift, firm puncture. Perform the puncture perpendicular to the whorls of the fingerprint or footprint. Dispose of the used puncture device in a sharps container.

11. Obtain the first drop of blood.
   a. Wipe away the first drop of blood with dry gauze.
   b. Apply pressure toward the site but do not milk the site.

12. Collect the specimen in the chosen container or slide. Touch only the tip of the collection device to the drop of blood. Blood flow is encouraged if the puncture site is held downward and gentle pressure is applied near the site. Cap micro-collection tubes with the caps provided and mix the additives by gently tilting or inverting the tubes 8–10 times.

13. When collection is complete, apply clean gauze to the site with pressure. Hold pressure or have the patient hold pressure until bleeding stops. Label the containers with the proper information. Do not apply a dressing to a skin puncture of an infant under age 2 years. Never release a patient until the bleeding has stopped.

14. Thank the patient. Instruct the patient to leave the bandage in place at least 15 minutes.

15. Properly care for or dispose of equipment and supplies. Clean the work area. Remove gloves and wash your hands.

16. Test, transfer, or store the specimen according to the medical office policy.

17. Record the procedure.

### CALCULATION

Total Possible Points: _______

Total Points Earned: _______ Multiplied by 100 = _______ Divided by Total Possible Points = _______ %

PASS [ ] FAIL [ ]

COMMENTS:

Student’s signature ___________________________ Date _______

Partner’s signature ___________________________ Date _______

Instructor’s signature _________________________ Date _______