

**CONSIDERATIONS:**

1. Blood cultures are ordered as a set. A set is two bottles: An aerobic bottle and an anaerobic bottle. Blood culture x 2 means:
  - a. You need 2 sets of culture bottles = 4 culture bottles:
    - i. 2 aerobic bottles
    - ii. 2 anaerobic bottles
  - b. You need to perform two venipunctures from 2 different venipuncture sites, usually the antecubital fossa of each arm
  - c. You need to draw 20 cc from each venipuncture site; 10 cc for the aerobic bottle and 10 cc anaerobic bottle. Once blood is drawn from both sites, you will have collected 40 cc of blood
  - d. The 2<sup>nd</sup> venipuncture can be done immediately after completing the collection of the first set, unless the physician specifically asks for a delay
2. Venipuncture is highly preferred to obtaining the specimen from a central line because the test is to determine if there are bacteria in the blood. If drawn from the line, the line itself can contaminate the specimen. At times, MD may order a second set of culture to be obtained via a central line. This would be done in order to evaluate whether the line itself is contaminated. Please refer to “Infusion Therapy – Central Line Blood Specimen” procedure for instructions regarding central line blood cultures.
3. Each blood culture bottle requires 10 cc of blood. Although a culture can be done on a 5 cc specimen, the closer to 10 cc, the more robust the test:
  - a. If an inadequate amount of blood is drawn for both culture bottles, fill the aerobic bottle first with at least 6 cc
  - b. Put the remainder, if any, in the anaerobic bottle
4. The key to obtaining useful blood cultures is to assure no contamination of the blood specimen. Potential contaminants are:
  - a. Flora on the patient’s skin
  - b. Microbes on bottle tops and other equipment
  - c. Accidental contamination by the phlebotomist
5. The venipuncture site must be disinfected before the venipuncture. Recommended skin disinfectants are scrubbed on site for at least 30 seconds:
  - a. Chlorhexidine gluconate, preferred
  - b. Chloride peroxide
  - c. Tincture of iodine
  - d. Povidine-iodine is not recommended. If it is used it must be scrubbed on skin for 2 minutes and then allowed to dry
6. To adequately disinfect the skin, a two step procedure is recommended:
  - a. First clean with 70% isopropyl solution for 30 seconds with spiral motion. Allow to air dry
  - b. Second, clean with the primary disinfectant – chlorhexidine, chloride peroxide or tincture of iodine – for 30 seconds and allow it to dry. Chlorhexidine recommends a back/forth scrubbing motion. Others recommend a spiral from center to margin of site
7. Clean the tops of the bottles for 30 seconds each with alcohol wipes, scrubbing vigorously. Allow to dry completely.
8. Method for obtaining blood cultures:
  - a. Adapter method:
    - i. Use a butterfly needle with tubing.
    - ii. Connect end of tubing to a vacutainer adapter
    - iii. Connect the adapter to a tube holder (barrel) for a vacutainer tube
    - iv. Invert the tube holder over the aerobic bottle, ready to start collection after venipuncture
    - v. Disadvantages:
      1. The bottles must be below patient’s arm or the culture fluid can flow back into the patient’s arm. Assure bottle is straight up and down, not at an angle
      2. The bottles can accept more than 10 cc. Mark bottles ahead of time so more than 10 cc is not collected
9. Blood culture bottles with blood :
  - a. Should not be refrigerated. No ice packs. Keep at room temperature
  - b. Should be in the lab within 2 hours of drawing

**EQUIPMENT:**

- Butterfly Needle with Tubing
- 1 set of cultures (double for 2 sets)
- Gloves
- Alcohol applicator (wipe/swab) for cleansing site
- Alcohol wipes for cleaning tops of culture bottles
- Disinfectant applicator, chlorhexidine, tincture of iodine or chloride peroxide
- Blood culture bottles, aerobic and anaerobic
- 2 x 2 gauze sponges
- Tourniquet
- Tape
- Puncture-proof sharps container
- Impervious trash bag

**PROCEDURE:**

1. Use two patient identifiers.
2. Adhere to Standard Precautions, explain the procedure and purpose to the patient/caregiver and assemble the equipment on a clean surface close to the patient.
3. Select vein by palpation and inspection. Release tourniquet.

4. Clean site with alcohol for 30 seconds. Allow to dry completely.
5. Clean the top of each culture bottle for 30 seconds. Allow to dry.
6. Scrub site with disinfectant for 30 seconds. Allow to dry.
7. Assure that all equipment is ready:
  - a. Butterfly/tubing/vacutainer adapters (Mark each bottle with marker so you know when 10 cc of blood is in the bottle)
8. Assure venipuncture site and tops of bottles are dry.
9. Reapply tourniquet.
10. Don sterile mask and gloves, optional
11. Remove needle cover. Keep sterile gloves sterile if you think you will need to palpate site. If no sterile gloves, do not palpate site.
12. Insert needle into vein at 15° to 30° angle with bevel facing up.
13. Using butterfly/adaptor method:
  - a. Tape butterfly in place
  - b. Press vacutainer adapter into aerobic bottle
  - c. Remove when it has reached the 10 cc mark you made
  - d. Press vacutainer adapter into anaerobic bottle
  - e. Remove when it has reached the 10 cc mark
  - f. Remove tourniquet
  - g. Place sterile 2 x 2 gauze over puncture site, then withdraw needle slowly
  - h. Ask patient/caregiver to continue to apply pressure
14. Drop needle into sharps container.
15. Gently invert each bottle 3 - 4 times.
16. Apply patient labels to bottles; include last and first names, and a second identifier (date of birth), date, time, and your initials.
17. Discard soiled supplies in appropriate containers.
18. Place bottles in biohazard specimen bag.
19. Place requisition in pocket of bag. Mark on the requisition site from which the blood was drawn.
20. If blood culture x 2 ordered, repeat whole procedure at another site.

**AFTER CARE:**

1. Transport blood culture bottles so they arrive in lab within 2 hours of obtaining blood. Keep specimens at room temperature.
2. Document in patient record:
  - a. Venipuncture sites
  - b. Number of aerobic and anaerobic bottles filled and amount of blood in each bottle
  - c. Any complications, e.g., more than one stick
  - d. Appearance of venipuncture site at end of procedure
  - e. Patient's response to procedure

- f. Name and location of laboratory where specimens taken
- g. Any instructions given to patient/caregiver

**REFERENCE:**

- CDC (2010). Clinician Guide. Retrieved on May 29, 2012 from <http://www.cdc.gov/getsmart/healthcare/learn-from-others/resources/clinician-guide.html#Cultures>
- Clinical & Laboratory Standards Institute (2007). Principles and Procedures for Blood Cultures. Wayne, PA: Author.
- Perry, A., Potter, P. & Elkin, M. (2012). Nursing Interventions and Clinical Skills, 5<sup>th</sup> Edition. St. Louis: Elsevier/Mosby.
- World Health Organization (2010). WHO Guidelines on Drawing Blood: Best Practices in Phlebotomy. Geneva: Author.

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