THE University of Vermont HEALTH NETWORK

Central Vermont Medical Center

Department of Pathology and Laboratory Medicine

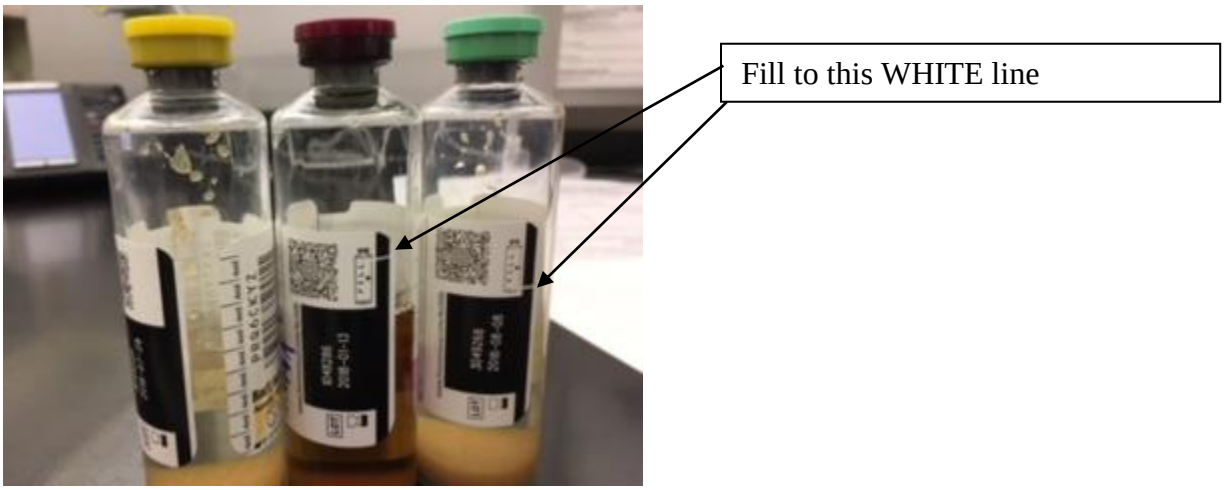
BLOOD CULTURE COLLECTION PROCEDURE

PRINCIPLE

Proper collection of blood cultures is as important as the blood culture analysis. If collection is done improperly, contamination from the skin will cause inaccurate results.

SPECIMEN

It is recommended to mark the pediatric (yellow- PF plus) blood culture bottle label with the minimum / maximum fill requirements prior to the draw. The aerobic (mint green FA plus) and anaerobic (maroon- SN) bottles have a **fill to** line on the label. It is important to note that there is a diagram of a bottle that has the word fill and an arrow; the arrow is NOT the fill line, the white mark on the black label is the ideal fill volume indicator. Drawing the optimal volume increases the likelihood of the detection of pathogenic microorganisms in the shortest time possible. False negative test results can occur with sub-optimal volumes.



ADULT:

- One set includes 10 mL of whole blood in aerobic bottle (mint green) and anaerobic bottle (maroon), **or**
- 9 mL in each of two large SPS tubes (fill until vacuum stops), **or**
- 1-4 mL in one pedi bottle (yellow)
- **Note**: if you cannot get enough blood for both the aerobic and anaerobic bottles, put 0.5-4 mL blood in the pedi bottle **or** 8-10 mL blood in the aerobic

bottle. If there is a 2nd SPS tube, that volume should be transferred to an anaerobic bottle.
- DO NOT combine SPS tubes.

CHILD:
- One set is one pedi bottle: (There are NO pedi SPS tubes)
  - 5-10 years old: 3 mL of blood in pedi bottle (yellow)
  - less than 5 years: 1-2 mL of blood in pedi bottle
  - minimum volume = 0.5 mL of blood in pedi bottle
- Only draw 1 set of cultures on children < 13 years of age

REAGENTS-SPECIAL SUPPLIES-EQUIPMENT

1. Appropriate blood culture bottles for Bactec or SPS vacutainer tubes
2. ChloraPrep Applicator or Iodine swabstick (Infant <2months)
3. Tourniquet
4. Gloves
5. Alcohol prep pads
6. Syringe
7. Butterfly blood collection set
8. Sterile blood transfer device

QUALITY CONTROL

1. Proper venipuncture technique should be used.
2. Proper cleansing of the venipuncture site is very important.
3. Proper cleansing of the blood culture bottles is very important.

SPECIAL HANDLING / PRECAUTIONS

1. If the patient is allergic to chlorhexidine (the active ingredient in the Chloraprep) the procedure for infants <2 months should be followed utilizing iodine and isopropyl alcohol.
2. If the patient is allergic to iodine then the selected site should be disinfected with isopropyl alcohol twice using two different prep pads.

PROCEDURE

*** THE BEST SAMPLE IS DRAWN DIRECTLY INTO THE BLOOD CULTURE BOTTLE, USING A BUTTERFLY BLOOD COLLECTION SET. THERE IS A SPECIAL ADAPTOR TO DIRECT DRAW USING A BUTTERFLY ***

1. Sterilize bottle stopper and/or SPS vacutainer with isopropyl alcohol. Allow to air dry.
2. Apply tourniquet. Find venipuncture site. Remove tourniquet.
3. Sterilize selected venipuncture site in infants < 2 months old with alcohol and iodine using the following procedures:

A. Cleanse skin of site on a circle approximately 5 cm. in diameter with alcohol, rubbing vigorously for at least 30 seconds. Allow to air dry.
B. When alcohol has dried, cleanse the venipuncture site with an iodine swab; start centrally over the selected site and move outward in concentric circles, exerting moderate pressure for at least 30 seconds. Allow iodine to air dry.
C. Repeat A & B.

4. Sterilize venipuncture site on patients >2 months of age by using a Chloraprep in the following manner:
    A. Pinch the wings of the applicator to break the ampule and release the antiseptic. Do not touch the sponge.
    B. Wet the sponge by repeatedly pressing and releasing the sponge against the treatment area until liquid is visible on the skin.
    C. Use repeated back and forth strokes of the applicator for approximately 30 seconds. Completely wet the venipuncture site with the antiseptic.
    D. Allow the area to air dry for approximately 30 seconds. Do not blot or wipe dry.
    E. Discard the applicator after a single use
5. Apply tourniquet.
6. Do not palpate disinfected venipuncture site.
7. Perform Venipuncture:
    A. Direct blood draw (optimal method): using butterfly and adaptor, draw appropriate volume of blood from the patient.
    B. DO NOT DRAW BLOOD DIRECTLY INTO BLOOD CULTURE BOTTLES USING A STRAIGHT NEEDLE. A contaminated vial could contain positive pressure and contaminated culture media could be refluxed into the patient's vein during a direct draw. When using a butterfly blood collection set, if culture media fills any part of the collection set tubing, discard the blood culture bottles and use a new set of blood culture bottles.
    C. Indirect blood draw via SPS tube or syringe:
        - Syringe: draw appropriate volume of blood from the patient. Alcohol the tops of the blood culture bottles, using separate alcohol prep pads for each bottle. Using a transfer device, aseptically transfer the blood into the blood culture bottles ASAP.
        - SPS tubes: fill the SPS tubes until the vacuum stops. Alcohol the tops of both the SPS tubes and blood culture bottles, using a fresh alcohol prep for each container. Using a syringe and transfer device, aseptically transfer the total volume from one SPS tube into one of the blood culture bottles ASAP. Repeat with a fresh, sterile syringe and transfer device for the other SPS tube. Blood must be transferred to bottles within 4 hours and loaded on the analyzer.
    D. There is extra vacuum in BacT/ALERT bottles, so fill with appropriate volume. DO NOT FILL UNTIL VACUUM IS GONE!

8. Withdraw needle from vein. Apply pressure to venipuncture site with clean gauze.
9. Remove the iodine or chlorhexidine from the patient's arm.
10. Label each bottle with the appropriate specimen label that contains the patient's name, ID number and date and time of collection.
11. If another culture is ordered, label with the appropriate specimen label, draw culture in the same fashion from the opposite arm, or as requested.
12. Bring appropriately labeled blood cultures to Microbiology ASAP for incubation.
13. Place blood cultures on the BacT/ALERT. Follow procedure for BacT/ALERT bottle handling.
14. Place barcode of blood culture on the corresponding workcard, and place the workcard in the microbiology workcard box under "new blood culture".

PROCEDURE NOTES

1. Blood cultures for endocarditis (SBE) should be collected in the same manner as routine blood cultures.
2. Mycobacteria (AFB), fungi and Legionella will not be recovered by BacT/ALERT method. Isolator collection tubes are required (available in microbiology) and are forwarded to the University of Vermont Medical Center for testing.
3. Leave blood cultures at room temperature if you are unable to place them in the incubator. Load onto instrument within 24 hours of collection.
4. When a port or line draw is obtained, a peripheral blood draw should also be drawn to eliminate possible contamination in the line draw.

REFERENCES

1. Bailey and Scott's Diagnostic Microbiology; Baron, Peterson and Finegold; Ninth Edition; 1994
2. BacT/ALERT FA Plus Package insert REF 410851 4/17
3. BacT/ALERT PF plus Package insert REF 401853 4/17
4. BacT/ALERT SN Package Insert REF 259790 4/17
5. Principles and Procedures for Blood Cultures; Approved Guideline; CLSI document M47-A Vol. 27 No. 17