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 blood culture bottle label with the minimum / maximum fill requirements prior to the draw. 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 8-10 mL of whole blood in aerobic bottle (blue) and 5-7 ml in anaerobic bottle (yellow), or
- 9 mL in each of two large SPS tubes (fill until vacuum stops), or
- 3 mL in one pedi bottle (pink)
- **Note:** if you cannot get enough blood for both the aerobic and anaerobic bottles, put 3 mL blood in the pedi bottle or 8-10 mL blood in the aerobic bottle.

CHILD:
- One set is one pedi bottle or one pedi SPS tube:
  - 5-10 years old: 3 mL of blood in pedi bottle (pink)
  - less than 5 years: 1-2 mL of blood in pedi bottle
  - minimum volume = 0.5 mL of blood in pedi bottle
  - 3 mL blood in pedi SPS tube (fill until vacuum stops)
- 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 ***

1. Sterilize bottle stopper and/or SPS vacutainer with isopropyl alcohol. Allow to air dry.
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 & C.
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, 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 and loaded onto Bactec within 4 hours of collection.

D. There is extra vacuum in Bactec 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 in one hour from opposite arm, or as requested.
12. Bring appropriately labeled blood cultures to Microbiology ASAP for incubation.
13. Place blood cultures on the Bactec. Follow procedure for Bactec 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 Bactec method. Isolator collection tubes are required (available in microbiology) and are forwarded to FAHC for testing.
3. Leave blood cultures at room temperature if you are unable to place them in the incubator. Place into incubator ASAP.
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. BD BACTEC Package insert PP-105E 2001/01
3. Principles and Procedures for Blood Cultures; Approved Guideline; CLSI document M47-A Vol. 27 No. 17