Helen Keller Hospital

POLICY TITLE: BLOOD CULTURE COLLECTION FROM ADULTS AND PEDIATRIC PATIENTS	
DEPARTMENT: CLINICAL LABORATORY	
AREA: SPECIMEN MANAGEMENT	ORIGINATION DATE: 6/1993
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	PROCEDURE NUMBER: COLL 5. 5. 20

BLOOD CULTURE COLLECTION FROM ADULT AND PEDIATRIC PATIENTS USING BacT/Alert CULTURE BOTTLES

POLICY:

All blood cultures must be collected aseptically per the process outlined in this procedure using the Chloraprep skin prep and appropriate BacT/Alert bottle(s). Pediatric patients less than 2 months old must be collected aseptically utilizing alcohol as the skin prep.

PRINCIPLE:

The BacT/Alert 3D microbial detection system utilizes a colorimetric sensor and reflected light to monitor the presence and production of CO_2 dissolved in the culture medium. If microorganisms are present in the test sample, CO_2 is produced as the organisms metabolize the substrate in the culture medium. The gas-permeable sensor installed in the bottom of each culture bottle changes from blue-green to yellow when growth of microorganisms produces CO^2. The lighter color results in an increase of reflectance units monitored by the system. Bottle reflectance is monitored and recorded by the instrument every ten minutes. The lighter color results in an increase of reflectance units measured by the system. Bottles are read every ten minutes to measure changes in reflected light.

MATERIALS NEEDED:

1. Butterfly set for blood culture collection
2. BacT/Alert blood culture bottles
3. Chloraprep
4. Adaptor appropriate for bottles
5. Alcohol prep

PRECAUTIONS:

Use standard precautions during this procedure. Wear appropriate personal protective equipment (PPE) while performing this procedure.

REAGENTS:

1. Chloraprep contains 2% chlorhexidine gluconate and 70% isopropyl alcohol
2. BacT/Alert FN Plus anaerobic (orange top), FA Plus aerobic (green top), and PF Plus (yellow top) bottles contain polymeric beads and a complex medium with the following reactive components: anticoagulant (sodium polyanetholesulfonate SPS), vitamins, amino acids, carbon sources, peptones/biological extracts and trace elements.

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SPECIMEN:

The timing of blood sampling is critical for optimal recovery of pathogenic microorganisms. Organisms are often few in numbers and may appear intermittently in the blood stream; therefore, two sets should be collected from each patient. Each routine set should include both an aerobic and anaerobic bottle. If same site must be used for second collection wait a minimum of 10 minutes for optimized detection of bacteria to aid in the detection of true pathogens.

BOTTLE SELECTION:

1. Select appropriate bottle(s) type and verify within expiration date.
2. Examine for cracks, leaks, turbidity or yellow sensor on bottom of bottle indicating contamination

ADULTS: 20 mL of blood should be collected and equally divided between and Aerobic and Anaerobic BacT/Alert bottle. If this amount cannot be obtained, a lesser amount may be used and equally divided between the bottles. **(If 5 mL or less is collected, place the entire amount in the aerobic bottle.)**

PEDIATRICS: Collect volumes as follows:

Patient Weight	Total Volume to Collect	Divide Equally Among the Following		
		YELLOW TOP PF Pediatric Bottle	GREEN TOP FA Aerobic Bottle	ORANGE TOP FN Anaerobic Bottle
<1.5 kg (3.3 lbs)	1.0 ml	X		
2.7 – 9.1 kg (6 - 20 lbs)	1.0 ml	X		
9.5 – 31.8 kg (21 -70 lbs)	4.0 ml	X		
32.3 – 45.5 kg (71 - 100 lbs)	10 ml		X	X
>45.5 kg (>100 lbs)	20.0 ml		X	X

If extenuating circumstances result in delay of loading bottles into the BacT/Alert 3D system, leave the bottles at Room Temperature during the entire delay. Maximum delay can't exceed 24 hours from collection to load time.

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PROCEDURE:

Patient identification, correct specimen collection and bottle preparation is extremely important when obtaining blood culture specimens. Proper bottle preparation, skin disinfection, and bottle inoculation are essential requirements to reduce the incidence of contamination. If skin is visibly soiled, clean the skin with hospital approved soap and water prior to disinfection with Chloraprep. Chloraprep is contraindicated in patients less than 2 months of age. If patient less than 2 months of age, clean skin with the hospital approved soap and water prior to disinfection with 70% isopropyl alcohol.
NOTE: Chloraprep is contraindicated for patients less than 2 months of age. Do not use Chloraprep for this age group.

After palpation and vein selection, cleanse venipuncture site as follows:

1. Pinch the applicator once to break the ampule.
2. Press the applicator gently against the treatment area.
3. Use a back and forth scrubbing motion to completely wet the treatment (3 inch x 3 inch) area for 30 seconds.
4. Allow the prepped area to dry completely. Do not blot or wipe the solution away.
5. Discard the applicator after a single use.
   Note: If further palpation of the vein is necessary during aspiration, the gloved finger must be disinfected using a new Chloraprep, unless contraindicated.
6. The blood culture bottles must be at room temperature. Remove the plastic flip-top from bottle(s). Disinfect each bottle septum with separate 70% isopropyl alcohol prep and allow to air dry. Set the bottle(s) upright at bedside.
7. Connect the adapter cap to the luer connector of the collection set .
8. Perform venipuncture. When the needle is in the vein, place adapter cap on the BacT/Alert culture bottle septum and press down to penetrate and obtain blood flow. Verify that blood flows into the bottle. Hold the adapter cap down on the bottle during collection. Line demarcation on the bottle label indicates sufficient blood volume. For adults, place 5-10 mL into each of the anaerobic and aerobic bottles. Do not overfill. If unable to draw required volume for both bottles; place 5-10 mL into the Aerobic bottle. For pediatrics, place up to 4mL into the pediatric blood culture bottle.
9. After obtaining the specified amount of blood, move the adapter to the next bottle (if required) and continue the collection. Do not remove the needle from the patient's vein during this process

NOTE: The use of syringes for blood culture collection is discouraged. If a syringe must be used, follow the proper procedure for disinfection of the venipuncture site and bottles.

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10. Once blood collection is complete; finish tasks in order.
    a. remove tourniquet
    b. remove adapter from bottle
    c. remove needle from patient arm and discard entire assembly in sharps container
    d. apply bandage and confirm draw site is not actively bleeding.
11. Place appropriate computer generated barcode label (or patient chart label) on each bottle in the designated area taking care not to cover the window or bottle barcode. Label must contain: Date, time, site, and collector's initials.
12. Promptly transport bottle(s) to laboratory
13. Receive specimens into computer LIS system and then immediately load bottles in the BacT/Alert 3D system. All bottles will be held on the BacT/Alert 3D for 5 days or until positive.

SPECIAL NOTE FOR REDBAY SPECIMENS: Blood culture bottles received from Redbay Hospital that do not arrive in enough time to be loaded on the BacT/Alert within 24 hours of collection will be rejected.

REFERENCES

Blood Culture prep kit directions for use, Medi-Flex, Inc., Overland Park, KS, 66210, 1-800-523-0502
Laboratory Best Practice Guide, Medmined, 2008 Cardinal Health Inc.
BacT/Alert FN Plus, FA Plus, and PF Plus Blood culture bottle package insert
Biomerieux Inc. 1-800-682-2666 www.biomerieux.com