

CHILDLAB

Guide to Laboratory Services

BLOOD CULTURE

I. GENERAL CONSIDERATIONS

Bacteremia is defined as the presence of bacteria in the bloodstream. Although transient bacteremia occurs in every individual (for example, following vigorous tooth brushing), the association of bacteremia with active replication of bacteria in the bloodstream and signs and symptoms of sepsis (septicemia) is a life threatening condition and requires appropriate diagnosis by collection of blood cultures.

The primary blood culture system used in the Microbiology Laboratory is the BacT/Alert (FAN aerobic and standard anaerobic) bottle system.

II. SPECIMEN COLLECTION

A. Skin Antisepsis–WASH HANDS THOROUGHLY BEFORE BEGINNING THIS PROCEDURE

Patients < 2 months:

- (1) After palpating to isolate the vein, the venipuncture site should be vigorously cleansed with 70% isopropyl alcohol and then swabbed concentrically starting at the center with 10% povidine-iodine solution. The alcohol removes soil and organic material that may render the iodine inactive. The skin of patients with known hypersensitivity to iodine can be prepared with a double application of alcohol.
- (2) The iodine disinfectant should be allowed to dry for at least one minute and then removed with alcohol before collecting blood; the vein should not be palpated further at this time.
- (3) The rubber diaphragm tops of the blood culture bottles should be disinfected with **alcohol but not iodine** and allowed to dry. Be sure to check the expiration date of bottles before using.

Patients > 2 months:

- (1) Remove 1.5 mL Frepp applicator from plastic pouch; check expiration date.
- (2) Grasp by plastic "wings" (avoid touching the sponge) and pinch the applicator wings to break the ampule and release the antiseptic.
- (3) Wet the sponge uniformly by repeatedly pressing the sponge against the treatment area until fluid is visible on the skin.
- (4) Prep the skin by using repeated back and forth strokes with the sponge applicator with moderate pressure for 30 sec.
- (5) Allow the skin to dry for 30 sec.
- (6) Without further palpating the skin, perform venipuncture.

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NOTE: Use only isopropyl alcohol pads to disinfect the tops of blood culture bottles or Isolator blood culture tubes. **Do not use Chloraprep for this purpose.**

B. Venipuncture - Gloves should be worn during the procedure

- (1) Blood should be drawn with a needle and syringe (or butterfly) and distributed evenly to 2 blood culture bottles (1 aerobic and 1 anaerobic). If a vein is missed initially, a new needle should be used for each repeat venipuncture. Because blood culture bottles are evacuated and under negative pressure, **care should be taken not to inject the entire volume** into a single bottle.
- (2) Generally, blood should **not** be collected from indwelling intravascular catheters unless venipuncture is impossible or catheter-associated infection is suspected. In this latter case, separate blood cultures should be collected by peripheral venipuncture and catheter draw.

C. Initial Routine Blood Culture

- (1) Collect two sets of BacT/Alert bottles by separate venipuncture - one FAN aerobic (green label) and one anaerobic (purple label) bottle is considered one set.
- (2) Ideally 3-5 mL of blood (5-10 mL of blood in older children) should be collected (1 mL is adequate for neonates) from each venipuncture and **distributed evenly between the two bottles**. If <1.0 mL of blood is obtained, inoculate the entire volume into the FAN (green label) bottle. Immediately mix the contents by gently swirling the bottles several times.
- (3) Two blood cultures collected 15-30 min. apart from separate venipuncture sites are sufficient to diagnose most cases of septicemia.