PRACTICE POINT

Collection and Transport of Blood

Akeela Fatima, M.B., Abiroo Jan, M.B., Umara Amin, M.B.

Department of Microbiology, SKIMS, Soura, Srinagar

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Blood cultures are collected from patients with suspected sepsis or bacteremia and are essential in the diagnosis and treatment of the etiologic agent of septicemia.

Collection

To reduce blood culture contamination rate, collection may be improved by taking precautions at each step.

Preparation of the site

Select the site of venipuncture. If the selected site is unusually dirty, wash it with soap and water. Apply a tourniquet, 3-4 inches, above the intended site (alternatively, this can be done after cleaning). Put on the examination gloves. Vigorously cleanse the venipuncture site with 70% isopropyl or ethyl alcohol to remove surface dirt and oils; scrub gently but firmly with the cotton beginning in the centre and continuing in an outward direction circularly for an area of 4 to 5 inches. Allow to dry. Swab or wipe concentric circles of povidone/tincture of iodine, in a similar manner as with alcohol and allow to dry (2 minutes). Do not touch the site after cleaning. Instruct the patient to clench and unclench the fist. Perform phlebotomy using the needle and syringe. Release the tourniquet and withdraw the needle. Apply pressure to the site of venipuncture and place a bandage over the puncture site. After phlebotomy, remove residual tincture of iodine from the patient's skin by cleansing with alcohol to avoid development of irritation.

Skin preparation with either alcohol, alcoholic chlorhexidine (2%), or tincture of iodine (10%) leads to

lower blood culture contamination rates than does the use of povidone-iodine and have lesser drying period (30 secs) than povidone I2 (2 min).

For pediatric patients < 2 months, omit the iodine step and clean two additional times with separate preparation pads saturated with 70% isopropyl alcohol or ethyl alcohol. For pediatric patients > 2 months, chlorhexidine gluconate as a skin antiseptic is approved for use.

While collecting through an intravenous line, it is not necessary to discard the initial volume of blood or flush the line with saline to eliminate residual heparin or other anticoagulants. Using an alcohol prep, scrub catheter hub connection for 15 s with 70% alcohol. Air dry.

Preparation of the bottle

There are two types of automated BacTAlert Blood culture bottles available for bacterial culture; adult aerobic bottles (green capped) for adult blood cultures and other body fluids (pleural fluid, ascitic fluid, bone marrow, etc.) and pediatric aerobic bottles (yellow capped) for pediatric blood cultures and CSF samples (not to be used for adult patients except for those elderly patients in whom it's difficult to obtain larger amounts of blood).

Inspect each blood culture bottle before use to ensure integrity of bottle and sensor on bottom of bottle is intact. The sensor is normally a uniform grayish-green color and a yellow color would indicate contamination of the broth. Discard any bottle found to be damaged or with a sensor that is yellow. Remove protective flip top over the cap. The septum is not sterile and must be disinfected with 70% alcohol and allowed to dry before piercing. Thoroughly mix the bottle contents to avoid clotting. Label the bottles with the patient name, OPD/MRD No. and the date and time of draw. Site of draw may be listed. In particular, mention whether blood collected from a central line or from

Correspondence

Dr. Akeela Fatima, M.B.
Department of Microbiology,
SKIMS, Soura
Email: akeela_f@rediffmail.com

venipuncture.

For manual blood culture method, blood culture for bacterial infections is to be carried in a bottle containing 50 ml (adult) or 20 ml (pediatric) of tryptone soy broth. After removing the kraft paper, inoculate the blood culture bottle without disinfecting.

Recommended total volume and numbers of blood cultures

For adult patient (50kg), 10-20 ml blood divided between two blood cultures from separate, peripheral venipuncture sites. For pediatric patient, 6-10 ml divided between two blood cultures.

Initially obtain three blood culture sets within a 30-minute period before administration of empiric antimicrobial agents from patients presenting with possible infective endocarditis. If those sets are negative at 24 hours, obtain two more sets, for a total of five sets overall.

Age and weight	Volume (divided between 2-3 blood cultures)
Neonates to 1 year (< 4 kg)	0.5 to 1.5 ml
Children (< 40 kg)	10 to 20ml
Adults and children (> 40 kg)	30 to 40 ml

Timing of blood cultures

Although drawing blood cultures before or during the fever spike is optimal for recovery, volume is more important than timing in the detection of agents of septicemia.

Rejection criteria

Call physician to prioritize requests if there is insufficient volume. Unlabelled, improperly labelled or broken bottles are not accepted for processing.

Transport of blood culture bottles

In case of delay between collection and processing, never refrigerate the bottle. Keep the bottle preferably in a 35°C incubator, if available, otherwise leave the bottle at room temperature.

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