BLOOD CULTURE COLLECTION GUIDELINES FOR PHLEBOTOMISTS (WITHIN REGION 6)

The rate of isolation of micro-organisms from blood is directly related to the volume of blood collected.

Therefore, it is recommended that a blood culture set consist of a total 30 mL (for adults) and less than 10 mL for pediatrics collected from two separate venipuncture sites (see Table I below).

The bottles making up the set should be collected at the same time.

It is critical that there be meticulous preparation of the skin prior to venipuncture to prevent contamination of the specimen which could result in inappropriate antimicrobial therapy.

Table I – Blood Culture Sites and Optimal Values

<table>
<thead>
<tr>
<th>Age</th>
<th>Site #1</th>
<th>Site #2</th>
<th>Total Volume Collected</th>
<th>Sets</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥ 10 Years and</td>
<td>One BACTEC Plus + Aerobic/F vial (8-10 mL)</td>
<td>One BACTEC Plus + Anaerobic/F vial (8-10 mL)</td>
<td>24 – 30 mL</td>
<td>Single Set (3 bottles)</td>
</tr>
<tr>
<td>≥ 30 kg</td>
<td>One BACTEC Plus + Aerobic/F vial (8-10 mL)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 10 years</td>
<td>One BACTEC Peds Plus/F vial (1-5 mL)</td>
<td>One BACTEC Peds Plus/F vial (1-5 mL)</td>
<td>2-10 mL</td>
<td>Single Set (2 bottles)</td>
</tr>
<tr>
<td>Neonates</td>
<td>One BACTEC Peds Plus/F vial</td>
<td></td>
<td>1.0 - 1.5 mL</td>
<td>Single Set (1 bottle)</td>
</tr>
</tbody>
</table>
NOTE: Pediatric volume guide: One can usually draw 1 mL/year of age. Volume is very important in detection of bacteria. The more blood collected the better the chance of detecting the presence of bacteria. For pediatrics especially, there must be a balance between volume of blood collected and the clinical condition of the patient.

Please follow the site preparation guidelines carefully.

- Obtain blood vials (available from the exchange cart on the ward or call Dispatch.)
- Do NOT use vials that have expired or show signs of contamination, e.g. turbidity, bulging septums. Dispose of these in a biohazard container (Sharps).
- Check the expiry date on the side of the vial. Return any expired vials to the Lab Collections area. These vials are used for training purposes.

NUMBER OF SETS TO COLLECT FOR CULTURE.

- **Acute febrile episode** - antimicrobials to be started or changed immediately. 1 set within 10 minutes (before antimicrobials).
- **Nonacute disease** - antimicrobials will not be started or changed immediately. -, 1 set
- **Endocarditis, acute** - +2 sets within 1 to 2 hours before antimicrobials if possible.
- **Endocarditis, subacute** - +2 sets ≥ 1 hour apart within 24 hours. If negative at 24 hours, obtain 2 or 3 more sets.

Site of Collection:

- The initial collection should be peripheral venipuncture (not through a line) if possible.
- Second site may be a central line if line sepsis is suspected or peripheral access sites are unavailable. Peripheral sites are preferred. For pediatric patients, the decision to obtain a sample from a second site may be at the discretion of the physician or nurse practitioner.
• Collect peripheral blood distally (towards the extremities) of any venous/arterial lines in the same limb, but preferably in a limb without a line.
• In specific critical care units blood cultures are collected from central venous catheters or arterial lines upon insertion. If line sepsis is suspected do not collect blood cultures from an existing central or arterial line.
• In Hemodialysis Units, blood culture may be collected in the dialysis blood lines during a dialysis session.

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**Site Preparation:**

• Vigorously cleanse the skin over the venipuncture site in a circle approximately 5 cm in diameter with 70% alcohol. Scrubbing should continue for 30 seconds.

• Starting in the centre of the circle, apply 10% povidine iodine (betadine) in ever widening circles until the entire circle is saturated with iodine. Chlorhexidine swabs which are 2% chlorhexidine Gluconate and 70% Isopropyl Alcohol can be used in place of iodine.

• Leave the iodine (or chlorhexidine) on the venipuncture site to act for 60 seconds.

• Do not touch the venipuncture site after preparation and prior to phlebotomy.
NOTE: Remove iodine/chlorhexidine from skin with 70% alcohol or water when collection is complete.

Mark Volume and Disinfect Top of Vial

- Before collection mark the appropriate volume on the vial. For adults mark off 10 mLs above the fluid level in the vial. For pediatrics mark off the volume based on patient weight and age (see Table 1).
• Remove the cap and disinfect the septum with an alcohol swab and allow to dry. Do not use iodine as it may damage the septum.

Order of Draw/Collection:

• Collect blood cultures first starting with the aerobic vial followed by the anaerobic lytic vial from the first site.

• Draw all other blood work (i.e. Chemistry, Hematology, etc.) from this site after blood culture has been collected.

• Collect blood culture from second site. For pediatric patients, the decision to obtain a sample from a second site may be at the discretion of the physician or nurse practitioner.

• After collection, mix the bottles thoroughly by gentle inversion.

Butterfly needle procedure: (PREFERRED METHOD EXCEPT FOR NEONATAL PATIENTS)

Remove butterfly needle and tubing from the package. [Be careful not to touch the rubber cover to prevent contamination.]

Perform venipuncture by inserting the needle with the rubber cover directly into the Bactec bottle. The needle and vacutainer holder must be held down to keep the
Remove the vial(s) when the blood flow has reached the mark that has been made on the vial indicating the appropriate fill level (Table 1).

Remember to hold the vacutainer/needle assembly down onto the vial

- After collection, mix the bottles thoroughly by gentle inversion.

For alternative syringe draw

- Perform venipuncture with needle and syringe and draw proper amounts of blood.

- Inoculate the blood into the appropriate blood culture vial(s).

- Do not change needles before injecting the blood into vial(s).

- Be sure to inoculate the correct volume into each vial.

Do NOT recap the needles.

After collection, mix the bottles thoroughly by gentle inversion.
Labeling the vials

Label vials with the following information:

Patient Name
ULI Number (Provincial Healthcare Number)
Day and Time of Collection
Site # (site 1 or site 2)
Site Location (Left Arm, Right Hand, line type, etc.)
Collector’s Initials.

• Make certain the Labels go around the vials, but DO NOT OBSCURE THE BAR CODE and adjacent sequence number on the original Bactec vial Laboratory.

• Immediately (within 1 hour) transport the specimen to the Laboratory.

• Use one requisition for each blood culture set, indicating the site(s) used and time(s) collected.

• If you have any questions regarding collection, have the Microbiologist on call for your site paged.