

## PHLEB 2 Blood Culture Collection Procedure

### Copy of version 2.1 (approved and current)

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### Comments for version 2.0 (last major revision)

Clarified how to draw from needle and syringe and clarified venipuncture procedure process

### Comments for version 2.1 (this revision)

Fixed typo

### Approval and Periodic Review Signatures

Type	Description	Date	Version	Performed By	Notes
Periodic review	Designated Review er	2/4/2026	2.1	<i>Brian Webber</i> Brian Webber	
Approval	Lab Director	10/9/2024	2.0	<b>Aml Girgis, MD</b> Aml Girgis	
Approval	Approval by Chief Medical Technologist	10/9/2024	2.0	<i>Ruth J. Simmons MS, MLS (ASCP)</i> Ruth Simmons	
Periodic review	Designated Review er	1/17/2023	1.0	<b>Aml Girgis, MD</b> Aml Girgis	
Approval	Lab Director	3/29/2021	1.0	Aml Girgis	Recorded w hen document added to MediaLab
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Approvals and periodic reviews that ocured before this document was added to the MediaLab Document Control system may not be listed.

### Version History

Version	Status	Type	Date Added	Date Effective	Date Retired
2.1	Approved and Current	Minor revision	10/9/2024	10/9/2024	Indefinite
2.0	Retired	Major revision	10/9/2024	10/9/2024	10/9/2024
1.2	Retired	Minor revision	6/20/2024	6/20/2024	10/9/2024
1.1	Retired	Minor revision	5/24/2023	5/26/2023	6/20/2024
1.0	Retired	First version in Document Control	12/29/2021	3/29/2021	5/26/2023



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## BLOOD CULTURE HANDLING, SPECIMEN REQUIREMENTS, & ASEPTIC COLLECTION

### 1.0 PURPOSE

- 1.1 Diagnosis of septicemia is one of the most important functions of the microbiology laboratory. Left undetected and untreated, septicemia can be fatal.
- 1.2 The introduction of contaminants into blood culture media can be reduced by careful skin preparation.

### 2.0 SUPPLIES AND MATERIALS

- 2.1 Butterfly collection sets
- 2.2 Blood collection trays
- 2.3 Blood Transfer Device
- 2.4 Sterile syringes
- 2.5 Band-Aids/tape/coflex
- 2.6 Latex-free tourniquets
- 2.7 Antiseptics
  - 2.7.1 Chlorhexidine Gluconate
  - 2.7.2 Isopropyl Alcohol Swab
  - 2.7.3 Isopropyl Alcohol Wipes
- 2.8 Blood Culture Bottle(s)
  - 2.8.1 Aerobic - BacT/ALERT FA
  - 2.8.2 Anaerobic - BacT/ALERT FN
  - 2.8.3 1 red top tube
- 2.9 Gauze pads
- 2.10 Hand sanitizer
- 2.11 Gloves
- 2.12 Sharps Container

### 3.0 SPECIMEN

#### 3.1 Collection

- 3.1.1 Use standard precautions
- 3.1.2 Strict aseptic technique should be used throughout the collection procedure to reduce the incidence of contamination.
- 3.1.3 Blood for culture should be drawn through veins and not arteries.
- 3.1.4 Cultures obtained from indwelling intravascular devices are associated with greater contaminations rates. These cultures should always be paired with a peripheral draw to assist in interpretation of a positive culture.
- 3.1.5 No venting of bottles is needed.
- 3.1.6 The practice of drawing cultures in SPS vacutainer tubes and then transferring sample to blood culture bottles is not performed at this facility.

#### 3.2 Frequency of Blood Culture:

- 3.2.1 Collect 2 or 3 sets in a 24 hour period.
- 3.2.2 Draw red top tube then blood culture bottles.
- 3.2.3 **SINGLE BLOOD CULTURES SHOULD NEVER BE DRAWN. If the provider orders a single blood culture, still draw 2 sets and add another accession**

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**number to the lab order for the second set of bottles.** This is to obtain proper culture volume.

3.2.4 Blood cultures should not be repeated for 2-5 days, because the blood does not become sterile immediately following the start of antibiotic therapy.

3.3 **Volume of Blood Culture: The volume of blood drawn for blood culture is the most important variable in detecting bacteremia or fungemia**

3.3.1 Recommended volume is 20 ml per set (10 ml aerobic/10 ml anaerobic)

3.3.2 When less than 20 ml drawn for culture (10 ml aerobic/10 ml anaerobic), the blood is to be inoculated into the aerobic bottles first. Any remaining blood will then be inoculated into the anaerobic bottles.

3.4 **Timing:**

3.4.1 Blood cultures should be obtained simultaneously (or over a short time frame) in the septic unstable patient so that antibiotics can be given promptly.

3.4.2 **Exception:** Drawing blood at spaced intervals is indicated when it is necessary to document continuous bacteremia in patients with infective endocarditis or catheter related infections.

3.5 **Transport:**

3.5.1 Bottles should be sent to the Microbiology lab within 2 hours of collection.

3.5.1.1 **NOTE:** A delay beyond 2 hours in incubating cultures usually results in a delay of the detection of positives.

3.5.1.2 Blood cultures should never be refrigerated or frozen after they have been inoculated.

3.5.1.3 Plastic bottles are used in this facility. They can be transported through the pneumatic tube system, when enclosed in a plastic biohazard bag and cushioned by the foam in the carrier.

3.6 **Specimen Rejection:**

3.6.1 Incorrectly labeled or any unlabeled bottles

3.6.2 Broken, damaged, or leaking bottles

3.6.3 Clotted bottles

3.6.4 Short draw (<5 ml). Another culture should be obtained.

3.6.5 **Whenever rejection is being considered, the provider and collector will be notified immediately so that the sample can be recollected, or other options discussed.**

4.0 **PROCEDURE – STEPWISE:**

4.1 **Step One: Venipuncture Site Preparation**

4.1.1 Locate vein to be used

4.1.2 Remove Chlorhexidine swab from sleeve

4.1.3 Place sponge on selected venipuncture site and saturate site

4.1.4 Scrub vigorously for at least **30 seconds**

4.1.5 Allow to dry

4.1.6 Do not touch the venipuncture site after it has been cleaned. You may palpate the vein with sterile gloves, ONLY if you have not touched a non-sterile item or surface.



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## 4.2 Step Two: Collection of Blood Specimen

### 4.2.1 Direct Draw with Butterfly: (Preferred Method)

- 4.2.1.1 Inspect the blood culture bottles making sure that the bottles are not expired.
- 4.2.1.2 Cleanse the stopper of the blood culture bottles with an alcohol swab. Let dry 1 minute.
- 4.2.1.3 Firmly tighten the luer lock connector of the butterfly collection set to the blood culture adaptor.
- 4.2.1.4 Perform venipuncture
- 4.2.1.5 Collect red top tube, remove insert, and then fill blood culture bottles to the indicated fill line (The fill line is 10 ml above the broth fill line).

**NOTE:** Monitor the direct draw process closely at all times during collection to assure that proper flow is obtained and avoid FLOW OF THE BOTTLE CONTENTS INTO THE ADAPTER TUBING. Due to the presence of chemical additives in the culture bottle, it is important to prevent possible backflow and subsequent adverse reaction by following the steps below:

- 4.2.1.6 Do not use a bottle that contains media exhibiting turbidity, a yellow sensor, or excess gas pressure; these are signs of possible contamination.
- 4.2.1.7 Hold the culture bottle at a position below the patient's arm with the bottle in an upright position.
- 4.2.1.8 Collect the blood using a butterfly blood collection set and the BacT/ALERT Blood Collection Adapter Cap and inoculate directly into the culture bottle.
- 4.2.1.9 After obtaining the specified amount of blood, move the Adaptor Cap from the aerobic (GREEN) bottles to the anaerobic (ORANGE) bottles and continue the collection. The **GREEN** bottles are **ALWAYS** drawn **FIRST**.
- 4.2.1.10 If additional blood is required for other tests, place or replace the adaptor insert into the Adaptor Cap and snap it into place. This makes the cap compatible with vacutainer tubes.
- 4.2.1.11 Do not cover the bottle barcode with the accession label.

### 4.2.2 **Needle and Syringe**

- 4.2.2.1 Cleanse the stopper of the blood culture bottles with an alcohol swab.
- 4.2.2.2 Use a 20 cc syringe to collect blood samples for both blood culture bottles and vacutainer tubes all in one venipuncture.
- 4.2.2.3 Once the venipuncture is completed, inoculate the anaerobic (ORANGE) bottles first, then the aerobic (GREEN) bottles, and then fill any additional vacutainer tubes.

## 5.0 DIFFICULT DRAW:

- 5.1 Always collect the aerobic (GREEN) bottles if possible.



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**6.0 PROCEDURE NOTES:**

- 6.1 Great care must be taken to prevent contamination of patient sample during venipuncture and during inoculation of culture bottles. False positive cultures can lead to the use of unneeded antibiotics, additional laboratory tests, increased hospital charges, and a longer length of hospital stay.
- 6.2 Obtain blood samples prior to antibiotic therapy. If this is not possible, draw blood immediately before the next antibiotic dose.
- 6.3 If the venipuncture proves difficult and the vein must be touched again, the site must be cleansed again using the steps listed above.

**7.0 REFERENCES AND ADDITIONAL RESOURCES:**

- 7.1 The Facilitator's Guide to BacT/ALERT® Blood Culture Collection ©bioMerieux, January 2006.
- 7.2 BacT/ALERT FA Package Insert, bioMerieux Durham N.C. 27704
- 7.3 NCCLS document H3-A4 "Procedures for the Collection of Diagnostic Blood Specimens by Venipuncture-4<sup>th</sup> Edition, Page 9.
- 7.4 Miller, J. M. Specimen Management in Microbiology 2<sup>nd</sup> ed. ASM Press. 1999 page 54.
- 7.5 M47A, Vol. 27 No. 17, Principles & Procedures for Blood Cultures, CLSI, March 2008.
- 7.6 Baron, E.J. Cumitech 1C, Blood Cultures IV, 2005, ASM Press, Washington DC.

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