

**TITLE: BLOOD CULTURE COLLECTION ACID FAST FUNGUS AND BACTERIAL PROCEDURE (LTR83547)**

AUTHOR: Manager, System

APPROVED BY MEDICAL DIRECTOR

LAST APPROVED BY: Koshar, Kristin (Manager, Technical Services St. Joseph and Oncology) (Electronic Signature Timestamp: 08/13/2024)

FOLDER: Lab St. Joseph Core\Specimen Collection\Phlebotomy Manual\Procedures

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**PURPOSE:**

This procedure provides instructions for collection of Blood Cultures for the isolation of Aerobic bacteria, Anaerobic bacteria, Acid Fast bacteria, and Fungal organisms.

**MATERIALS:****SUPPLIES**

- Medline IV Start Kit (Drape, ChloroPrep, Tourniquet, Medical Tape, 2 x 2 Gauze)
- Alcohol Pads
- Syringe
- Waste Tube
- Butterfly Needle
- Syringe
- Blood Culture Transfer Device
- Blood Culture Collection Bottles
- Waste Tube (3ml SST)

**GENERAL CONSIDERATIONS:**

- Anticoagulants such as citrate, oxalate, EDTA and heparin are NOT suitable because of their toxicity for some bacteria. Sodium Heparin is acceptable for Acid Fast blood culture collections.
- Multiple blood culture orders are to be collected by separate venipuncture sticks.
- Clotted blood specimens are unacceptable.
- Obtaining blood by heel and/or finger stick is unacceptable.
- Collect blood culture sample before antibiotics are started.
- Do not obtain specimens from the line for routine blood cultures. Cultures obtained through a line draw can be misleading in making a diagnosis.
- No more than 3 sets of blood cultures in a 24-hour period should be drawn as it yields little additional information.
- Conversely, a single blood culture may miss bacteremia and may make it difficult to interpret the clinical significance of certain organisms.
- Blood cultures are to be collected at least 1 hour after blood transfusion.
- Volumes for blood culture draws are condition, age, and weight of patient.
- **See Appendix A, B and C for guidance on volumes.**

**TIMING AND FREQUENCY OF BLOOD CULTURES**

**NOTE:** Unless specified otherwise by physician, follow department protocol for blood culture frequency of collection.

<b>Blood for aerobic and/or anaerobic bacteria</b>		
<b>IF</b>		<b>THEN</b>
1	Suspected Septicemia	Collect 2 sets of blood cultures, from separately prepared sites prior to starting antibiotic therapy
2	Suspected Acute Endocarditis or Sub acute Endocarditis	Collect 2 sets of blood cultures with two separate venipunctures over 1 to 2 hours, prior to starting antibiotic therapy.
<b>Blood for Fungus:</b>		
1	Collect 2 sets of blood cultures from separately prepared sites prior to starting antibiotic therapy	
<b>Blood for Acid Fast Bacillus (AFB):</b>		

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1	Collect one to two 5mL draws over a 24-hour period.
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**SPECIAL SAFETY PRECAUTIONS:**

- Do NOT change needle.
- Do NOT force blood into bottle.
- Do NOT overfill.

**PROCEDURE:**

STEP	ACTION	
1	<b>Obtain Blood Culture bottle(s) for the test requested.</b>	
	IF	BOTTLE TYPES
	Blood Bacterial Culture (BLC)	<ul style="list-style-type: none"> <li>Adult: Total 20ml draw with 10 ml in Green Bottle (Aerobic) and 10ml in Orange Bottle (Anaerobic)</li> <li>Pediatric* &lt;= 27 lbs.: Green Bottle (Aerobic) only</li> <li>Pediatric* &gt;27 lbs.: Total 20ml draw with 10 ml in Green Bottle (Aerobic) and 10ml in Orange Bottle (Anaerobic)</li> </ul> <p><b>*Refer to Appendix A, B and C for guidance on pediatric volumes to be collected based on patient weight.</b></p>
	Blood Fungus Culture (BLFU)	<ul style="list-style-type: none"> <li>Adult: Total 20ml draw with 10 ml in Green Bottle (Aerobic) and 10ml in Orange Bottle (Anaerobic)</li> <li>Pediatric* &lt;= 27 lbs.: Green Bottle (Aerobic) only</li> <li>Pediatric* &gt;27 lbs.: Total 20ml draw with 10 ml in Green Bottle (Aerobic) and 10ml in Orange Bottle (Anaerobic)</li> </ul> <p><b>*Refer to Appendix A, B and C for guidance on pediatric volumes to be collected based on patient weight.</b></p>
Blood for Acid Fast Culture (BLDAFB)	<ul style="list-style-type: none"> <li><input type="checkbox"/> Adult 5ml in BD BACTEC Myco/F Lytic Culture Vial or green top sodium heparin tube</li> </ul> <p><b>**Refer to Appendix A, B and C for guidance on pediatric volumes to be collected based on patient weight.</b></p>	
2	<b>Check bottle for acceptability.</b>	
	IF	THEN
	Broth is NOT clear	Do NOT use bottles in which broth is cloudy.
The sensor in the bottom of the bottle is NOT intact and is NOT grey in color.  NOTE: The sensor in the bottom of the BD BACTEC Myco/F Lytic Culture Vial is cream to white in color.	Do NOT use bottle. Notify Technical Specialist.	
3	<b>Choose Skin Antisepsis Procedure to perform.</b>	
	IF	THEN

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	Patient is < 2 months old	70% Isopropyl Alcohol x 2
	Patient is ≥ 2 months old	Prep site with 70% Isopropyl Alcohol until clean, then ChloroPrep from IV start kit.
<b>4</b>	<b>Prepare site for Venipuncture</b>	
a	Choose a vein to be drawn by touching the skin and palpating a vein before the site has been disinfected.	
b	Clean with 70% Isopropyl Alcohol pads until clean.	

c	Press ChloroPrep swab from IV start kit against skin and use back and forth motion to scrub for 30 seconds.
d	<b>IMPORTANT:</b> Allow area to dry completely. It is the change of state from wet to dry of the agent that causes bacterial cell wall disruption.  Do not blot, wipe away, fan, or blow on treated area.
e	While the site is drying, prepare the culture bottles by wiping the top septum of the bottle(s) with an alcohol pad before inoculating.
h	If palpation of the vein is necessary after skin disinfection, the gloved finger should be cleansed with the antiseptic agent and allowed to dry before touching the site. Alcohol pads are sufficient.

**5 Check the fluid level on each blood culture bottle and mark the "Fill to here" line.**

**6 Collect Blood Specimen Option # 1 Syringe Method.**

a	Place tourniquet above the venipuncture site.
b	Insert the needle into the vein, pull up to 1ml blood into waste tube, then withdraw 20 ml for adults <b>NOTE:</b> See appendix A, B and C for blood bottle fill for collections with <20mL per set and pediatric patients

c	Inoculate bottles	
	<b>IF</b>	<b>THEN</b>
	Adult collection	Pierce septum on the anaerobic bottle (orange) with safety transfer device and add 10ml of blood into the bottle. Add the remaining 10mL of blood to the aerobic bottle (green)  <b>NOTE:</b> The bottle will take more than the desired 10ml, you must remove the syringe when the fill line is reached.
	Pediatric collection	Pierce septum on the pediatric bottle (yellow) with safety transfer device and add amount designated by patient's weight into the bottle.

<b>7</b>	<b>Label bottles with appropriate label that has the following information:</b> <ul style="list-style-type: none"> <li>• Patient Name</li> <li>• Medical Record Number</li> <li>• Date of Birth</li> <li>• Collection Date and Time</li> <li>• Name of Collector</li> </ul>
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	<b>NOTE:</b> See Appendix D for appropriate bottle labeling
<b>8</b>	<b>Collect Blood Specimen Option # 2 Collection Adaptor Cap Method.</b>
a	Place tourniquet above the venipuncture site.
b	Tightly connect the Adapter Cap to the luer connector of the butterfly blood collection set.
c	Perform the venipuncture. When the needle is in the vein, pull up to 1ml blood into waste tube.
d	Maintain control of the luer connector by securing it between the thumb and forefinger.
e	Place the adapter cap on the Aerobic bottle (green) bottle septum and press down to penetrate and obtain blood flow. <b>NOTE:</b> The orange (Anaerobic) bottle must never be the first bottle to receive blood from the butterfly when using BC collection caps.
f	Hold the adapter cap down on the bottle during collection until the blood has reached the desired fill mark. <b>NOTE:</b> See appendix A, B and C for blood bottle fill for collections with <20mL per set and pediatric patients
g	Remove the adaptor cap from the bottle.
h	If additional blood is required for other tests, place the Adapter Insert into the Adapter Cap and lock into place. This makes the cap compatible with vacuum collection tubes.
<b>9</b>	<b>Label bottles with appropriate label that has the following information:</b> <ul style="list-style-type: none"> <li>• Patient Name</li> <li>• Medical Record Number</li> <li>• Date of Birth</li> <li>• Collection Date and Time</li> <li>• Name of Collector</li> </ul> <b>NOTE:</b> See Appendix D for appropriate bottle labeling
<b>10</b>	<b>Transport inoculated blood culture bottles to the lab at room temperature within 24 hours of collection.</b>

**APPENDIXES:**

**APPENDIX A: BLOOD CULTURE FILL BASED ON VOLUME - ADULTS**

**NOTE:** Do not overfill bottles with more than 10mL each

Blood Volume	Aerobic Bottle Fill Amount	Anaerobic Bottle Fill Amount
≥20mL	10mL	10mL
11mL – 19mL	10mL	Remainder (1mL-9mL)
≤10mL	Entire collection	None

**APPENDIX B: PEDIATRIC BLOOD CULTURE COLLECTION RECOMMENDATIONS**

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Weight of patient		Recommended volume of blood for culture (mL)		Bottle Type and volume allocation for each draw	Patients total blood volume (mL)	% of total blood volume taken
lb.	kg	Culture # 1	Culture # 2			
2.2	<=1	2	NA	2ml Aerobic (green)	50 - 99	4
2.2 - 4.4	1.1-2	2	2	2ml Aerobic (green)	100 - 200	4
4.5 - 27	2.1-12.6	4	2	4ml Aerobic (green) first draw 2ml Aerobic (green) 2 <sup>nd</sup> draw	> 200	3
28 - 80	12.7-36.3	10	10	10 ml Adult Aerobic (green) or 5ml Adult Aerobic (green) and 5ml Adult Anaerobic (orange)	> 800	2.5
> 80	>36.3	20	20	10ml Adult Aerobic (green) 10ml Adult Anaerobic (orange)	>2,200	1.8

**APPENDIX C: MAXIMUM RECOMMENDED 24HR BLOOD DRAW VOLUMES BASED ON WEIGHT (1 mL/1 lb = .454kg)**

Wt. lbs.	Wt. Kg	Max Blood Draw/ 24 hrs	Wt. lbs	Wt. Kg	Max Blood Draw/ 24 hrs
2.0	.91	2.0 mLs	32.0	14.5	32.0 mLs
3.0	1.4	3.0 mLs	34.0	15.4	34.0 mLs
4.0	1.8	4.0 mLs	36.0	16.3	36.0 mLs
5.0	2.3	5.0 mLs	38.0	17.3	38.0 mLs
6.0	2.7	6.0 mLs	40.0	18.2	40.0 mLs
7.0	3.2	7.0 mLs	42.0	19.1	42.0 mLs
8.0	3.6	8.0 mLs	44.0	20.0	44.0 mLs
9.0	4.1	9.0 mLs	46.0	20.9	46.0 mLs
10.0	4.5	10.0 mLs	48.0	21.8	48.0 mLs
11.0	5.0	11.0 mLs	50.0	22.7	50.0 mLs
12.0	5.4	12.0 mLs	52.0	23.6	52.0 mLs
13.0	5.9	13.0 mLs	54.0	24.5	54.0 mLs
14.0	6.4	14.0 mLs	56.0	25.4	56.0 mLs
15.0	6.8	15.0 mLs	58.0	26.3	58.0 mLs
16.0	7.3	16.0 mLs	60.0	27.2	60.0 mLs
17.0	7.7	17.0 mLs	62.0	28.1	62.0 mLs
18.0	8.2	18.0 mLs	64.0	29.1	64.0 mLs
19.0	8.6	19.0 mLs	66.0	30.0	66.0 mLs
20.0	9.1	20.0 mLs	68.0	30.9	68.0 mLs
21.0	9.5	21.0 mLs	70.0	31.8	70.0 mLs
22.0	10.0	22.0 mLs	72.0	32.7	72.0 mLs
23.0	10.4	23.0 mLs	74.0	33.6	74.0 mLs
24.0	10.9	24.0 mLs	76.0	34.5	76.0 mLs
25.0	11.4	25.0 mLs	78.0	35.4	78.0 mLs
26.0	11.8	26.0 mLs	80.0	36.3	80.0 mLs
27.0	12.3	27.0 mLs	82.0	37.2	82.0 mLs
28.0	12.7	28.0 mLs	84.0	38.1	84.0 mLs
29.0	13.2	29.0 mLs	86.0	39.0	86.0 mLs

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30.0	13.6	30.0 mLs	88.0	40.0	88.0 mLs
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**APPENDIX D: BLOOD CULTURE BOTTLE LABELING**

Spectrum Health Lakeland Laboratory will be utilizing the VIRTUO BacT/ALERT blood culture instrument that has automated loading and unloading of blood culture bottles. Labeling of blood culture bottles must adhere to strict guidelines for proper function of the automation.

- Place patient barcode label vertically on the bottle.
- Do not place it horizontally or at an angle.
- Do not cover the original manufacturer’s bottle ID barcode.
- Do not cover the bottle lot number and expiration date.
- Do not cover the 2D barcode.
- Do not cover the sample fill indicator.
- Do not cover the open area between the edges of the label
- Do not cover the bottle sensor on the bottom of the bottle

**✔ Correct Label Placement ✔**



**✘ Avoid These Errors ✘**



**REFERENCES:**

Blood Cultures IV Cumitech, Ellen Jo Baron, et al, ASM Press, American Society for Microbiology, 2005.  
 CLSI. *Principles and Procedures for Blood Cultures; Approved Guideline*. CLSI document M47-A. Wayne, PA: Clinical and Laboratory Standards Institute; 2007  
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