ORLANDO HEALTH®

1414 Kuhl Ave.
Orlando, Florida 32806
321.843.7000

Type of Policy:	**PATIENT CARE**	Category:	**PROVISION OF CARE, TREATMENT, AND SERVICES (PC)**

Title:	***Blood Culture Test Collection Indicators and Collection Procedure***	Policy #:	**3625**
		Replaces #:	2290
Page:	1 of 4	Developed By:	Infection Control, Laboratory
Issue Date:	**4/01**	Approved By:	Patient Care Executive
Revision Dates:	12/12, 1/16, 9/16, 12/16, 3/19, 1/22, 9/24		Laboratory Director

I. PURPOSE:

This policy outlines the process for the ordering frequency and collection procedure for blood cultures. It delineates recommended guidelines for all OH sites and St. Cloud Hospital due to differences in instrumentation brands used between sites.

II. DEFINITIONS:

When used in this policy these terms have the following meaning:

A. Adult blood culture set: A set of supplies that includes 1 aerobic bottle and 1 anaerobic bottle
B. For best results in adults, an optimal volume of 8mL-10mL (acceptable volume is 6-10mL) of blood per aerobic and anaerobic bottle is recommended for all Orlando Health facilities, except at St. Cloud Hospital. Optimal volume for St. Cloud Hospital is 8-10mL for aerobic bottle and 5-7mL for anaerobic bottle.
C. Pediatric aerobic blood culture bottle: A set of supplies that includes 1 pediatric aerobic bottle
D. For best results in pediatrics, an optimal volume of 1-4mL of blood for patients up to 36.3kg (80 lbs.) is recommended at all OH facilities, except St. Cloud Hospital. Pediatric optimal volume for St. Cloud Hospital is 3mL of blood for up to 30kg (66 lbs.).
E. OH – Orlando Health

III. POLICY:

It is the policy of Orlando Health that:

A. Blood Cultures are to be ordered and collected in a minimum of two sets from two different sites. If two sets of blood cultures cannot be collected from two different sites, documentation in the patient's medical record is required to explain variance. Additional sets will be collected as indicated (exception: pediatric patients). Some septic conditions/suspected diagnosis require a maximum of three blood culture sets. (*Attachment A*).
B. The first set of blood cultures shall be time-based as determined by the provider. A minimum waiting time between collecting blood cultures is not necessary unless specifically indicated and ordered (*Attachment A*).
C. Blood Cultures are collected and timed (on label and computer status):
    1. Prior to the initial antibiotic therapy, unless otherwise ordered.
    2. By peripheral venipuncture below any existing intravenous (IV) sites (peripheral or central), unless otherwise ordered by a provider.
    3. From a central venous line (CVL) device if ordered by the provider. Only one set of the two sets is to be drawn from a CVL device.
    4. By peripheral venipuncture at the time of insertion of a peripheral IV catheter and only if the skin site prep is performed in accordance with the blood culture collection procedure and a second venipuncture is not possible (excludes neonates in the Neonatal Intensive Care Unit).
D. If you do not collect the required amount of blood, contact the laboratory for further direction.
E. Health Central and South Lake Hospital Laboratory Blood Culture Systems are only validated for blood specimens, not any type of fluid. At ORMC only, in addition to blood, cellular therapy (stem cell) products

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have been validated for use in blood culture bottles. Specimens collected from any sources/sites not validated for blood culture bottles will be rejected.

IV. PROCEDURE:

A. Check expiration dates of blood culture bottles to ensure the date of use is not beyond the expiration date:

B. Required site preparation:

1. Must use 2 % Chlorhexidine/alcohol product (to scrub the area with one pad using a back and forth, up and down motion (like a surgical scrub) for a full timed 30 seconds.
2. Must air dry completely for a full timed 30 seconds.
3. Must not touch the venipuncture site after skin preparation or prior to venipuncture. If it is necessary to re-palpate the vein before performing the venipuncture, the skin preparation must be completely re-prepped (as above) to prevent contamination.

C. Venipuncture specimen collection:

1. Adult and Pediatric weighing greater than or equal to 36.3kg for all OH sites (greater than or equal to 30kg for St. Cloud Hospital):
   a. Blood Culture Bottle Prep:
      1. Remove caps from blood culture bottle(s)
      2. Scrub top of blood culture bottle(s) with alcohol pad and discard immediately
      3. Allow alcohol to air dry
      4. Immediately fill blood culture bottle with blood specimen
   b. Collection using a syringe:
      1. After venipuncture, with a butterfly needle attached to the syringe, withdraw an optimal volume of 18mL–21mL of blood (will use a 20mL syringe or two 12mL syringes for collection).
      2. Using a blood transfer device, transfer an optimal volume according to your site-specific volume that is required. Starting with the anaerobic bottle, except at St. Cloud hospital where you would start with the aerobic bottle first, leaving 1mL in the syringe to avoid injecting air into the anaerobic bottle.
   c. Collection using a safety transfer device:
      1. The optimal volume to mark the bottles is 8-10ml for all sites, except St. Cloud Hospital. At St. Cloud Hospital, mark the bottles to show an 8mL-10mL fill for aerobic and a 5mL –7mL fill for anaerobic.
      2. After venipuncture with a butterfly needle attached to the transfer device and adapter, push the aerobic bottle onto the transfer needle.
      3. Watch as the vacuum draws the blood to the marked fill line.
      4. Pull the bottle off and push the anaerobic bottle onto the transfer needle.
      5. Fill to the marked line and pull the bottle off the needle. Always hold the bottles upright to prevent reflux of the liquid media into the needle/tubing.

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d. 8-10mL of blood per bottle is the optimal amount. If less than 8-10mL total amount is obtained, place the total amount of blood into the aerobic bottle only. If the amount obtained is less than 6mL, or less than 3mL for St. Cloud Hospital, a comment will be added in the patient's electronic medical record.

e. For pediatric patients greater than or equal to 36.3kg for all OH sites, and greater than or equal to 30 kg for St. Cloud Hospital: obtain cultures using the adult aerobic blood culture bottle only. Any volume under 6ml collected in the adult aerobic bottles will be noted. Obtain anaerobic cultures per provider discretion. Indications include, but are not limited to:

- Intraabdominal or pelvic infection, necrotizing enterocolitis in neonates
- Mouth/neck infection, including septic thrombophlebitis (e.g. Lemierre's)
- Necrotizing soft tissue infection
- Infected bite wounds
- Prolonged fever of unknown origin with negative aerobic cultures

2. For pediatric patients weighing less than 36.3kg (less than 30 kg and/or when collecting less than 3ml for St. Cloud Hospital) utilize the pediatric aerobic blood culture bottle.

a. Collection using a syringe: After appropriate venipuncture with a butterfly needle attached to the syringe, withdraw 1 mL-4 mL of blood (1-3 mL for St. Cloud Hospital). Using a blood transfer device and adapter, transfer the blood into the pediatric aerobic culture bottle.

b. Alternate collection using a safety transfer device and adapter: Mark the bottle to show a 1mL-4 mL fill (1 mL– 3 mL for St. Cloud Hospital). After appropriate venipuncture with a butterfly needle attached to the transfer device and adapter, push the pediatric aerobic bottle onto the transfer needle. Watch as the vacuum draws the blood to the marked fill line. Fill to the marked line and pull the bottle off the needle. Always hold the bottle upright to prevent reflux of the liquid media into the needle/tubing.

c. If unable to obtain greater than 4mL of blood (greater than 3 mL for St. Cloud Hospital), the pediatric aerobic blood culture bottle is used exclusively utilizing appropriate specimen collection process.

d. The adult anaerobic bottle will be drawn in addition to the pediatric aerobic bottle at the discretion of the provider.

D. Central Line specimen collection if not contraindicated to stop infusion(s):

1. Collect blood culture specimen through central line only if specifically ordered by the provider.
2. Pause any infusion(s) through the central line used for blood culture specimen collection.
3. Clamp IV tubing at the nearest Y-site port to patient.

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4. Change and replace neutral displacement valve (i.e. MicroClave®, OneLink®) prior to blood culture specimen collection.
5. Do not flush line or waste any blood prior to specimen collection.
6. From the nearest Y-site port to patient below the clamp, aspirate the blood culture specimen through the new neutral displacement valve using syringe or safety transfer device as described above.
7. At the nearest Y-site port to patient below the clamp, flush IV line with Normal Saline and unclamp IV tubing.
8. Restart any paused infusions as per orders to central line used for blood specimen collection.

E. Labeling:
1. Label the blood culture bottles at the bedside using the laboratory Specimen ID label. Label must include date and time blood sample was collected, specimen source, body site, device if one was used, and the initials/name of person who collected specimen.
2. When attaching labels, ensure all barcodes (laboratory Specimen ID label and the bottle's barcode on label) are visible for scanning into the laboratory system.
3. Place and align the patient's lab Specimen ID label onto the designated label area of each blood culture bottle. Do not apply labels over the fill volume window or over the bottle's barcode on label. Both bottle barcode and Specimen ID label must be visible for the laboratory to scan and read it.
4. Remove "extra" Specimen ID labels such as the "tags" that are loose or hanging off of lab Specimen ID labels.

F. Electronic Statusing of Specimen:
1. Date and time of blood culture draw
2. Person's name/initials that collected the specimen
~~3~~ Specimen source
4. Device blood is drawn from, if applicable
5. Body site from which the specimen was drawn

G. Notify the laboratory when an Acid Fast Bacilli (AFB) or a fungal culture is ordered. The appropriate culture bottle (red with a white plastic cap) will be sent to the unit by the laboratory.

V. DOCUMENTATION:

As appropriate in the comprehensive health record.

VI. REFERENCES:

A. Biomerieux, Package Insert, 2020.
B. BACT/ALERT® VIRTUO® Blood Culture Bottle Label Placement, Flyer, 2020.
C. Biomerieux, Blood Culture Collection Basics: Understanding Adapters, Inserts, & Luers, 2020
D. Preventing Contamination of Blood Cultures, Orlando Health, PowerPoint, August 2024
E. American Society for Microbiology Cumitech – Blood Cultures IV, (2005).
F. Clinical Microbiology Procedures Handbook. (2023) (5thEd.).

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G. College of American Pathologists Laboratory Standards. (2023).
H. Forbes, B.A., Sham, D.F., & Weissfeld, A.S. (2007). Bloodstream infections. Bailey & Scott's Diagnostic Microbiology (2022) (15th e. d.), St. Louis, MO. Mosby Elsevier, 784-789.
I. Manual of Clinical Microbiology. (2023) (13th ed). Versalovic Press.
J. Septimus, M.D. (2015). CDC Clinician Guide for Collecting Cultures
K. The Joint Commission. (2024). Hospital accreditation standards: PI.01.01.01. Oakbrook, IL: Joint Commission Resources
C. .

VII. ATTACHMENTS:

A. Test Collection Indicators, one page.

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Title: ***BLOOD CULTURE TEST COLLECTION INDICATORS AND COLLECTION PROCEDURE*** Policy #: **3625**

Attachment A-Test Collection Indicators

INDICATORS FOR BLOOD CULTURE TEST COLLECTION

	Condition/Suspected Diagnosis	*Collection Timing*	*Site*
I	**UNKNOWN**	3 bottle sets before start of antibiotic therapy	Each from a different venipuncture site
II	**ACUTE INFECTIONS** Active Sepsis Meningitis Osteomyelitis Arthritis Acute Untreated Pneumonia Pyelonephritis	2 bottle sets collected before start of therapy	Two different venipuncture sites
III	**SUSPECTED ENDOCARDITIS**		
	a.) Acute	3 bottle sets first 1-2 hours of evaluation drawn 15 – 30 minutes apart	Each from a different venipuncture site
	b.) Sub-Acute	3 bottle sets on day one (15 minutes apart) If all are negative, repeat on day two	Each from a different venipuncture site
	c.) Endocarditis patients on antibiotics	2 bottle sets on each of three successive days collected immediately before dose of antibiotic is given.	Each from a different venipuncture site
IV	**ENDARTERITIS** Uncontrolled Infection Early Typhoid Fever Brucellosis	2 – 3 bottle sets at 1 hour intervals	Each from a different venipuncture site
V	**FEVER of UNKNOWN ORIGIN**	2 bottle sets initially After 24 – 36 hours, 2 more sets before fever spike (if possible). Maximum sets = 4/36 hrs. (No more than four unless indicated.)	Each from a different venipuncture site if possible.
VI	**TRANSIENT or INTERMITTENT BACTEREMIA**	3 bottle sets at ½ - 1 hour intervals	Each from a different venipuncture site

*American Society for Microbiology (ASM) Cumitech – Blood Cultures IV, 2005.