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Nursing Policy B-20
LSUHSC - Shreveport, LA

BLOOD CULTURES

PURPOSE:

To provide guidelines for the collection of blood cultures.

DEFINITION:

Blood cultures are performed to detect bacterial invasion (bacteremia) and the systemic spread of such an infection (septicemia) through the bloodstream.

POLICY:

1. Physician's Order

A physician's order is required prior to the collection of blood cultures.

2. Timing of Cultures

The clinical presentation, the presumptive diagnosis, and the need to start the patient on antimicrobial therapy will determine the timing of collection. If possible, blood cultures shall be drawn prior to the initiation of antimicrobial therapy. For patients already on antimicrobial therapy, blood cultures shall be collected just prior to the administration of next antibiotics.

Blood cultures should be obtained simultaneously (over a short timeframe). Drawing blood at intervals is only indicated when it is necessary to document continuous bacteremia in patients with suspected infective endocarditis or other endovascular (e.g. catheter-related) infections. (CSLI M47-A)

Acute Infective Endocarditis: Blood cultures should be drawn immediately to avoid unnecessary delays in treatment. Cultures should be obtained 30 minutes to one hour apart.

Sub Acute Infective Endocarditis: For suggestive presentation of sub Acute Infective Endocarditis, blood cultures sets should be obtained with the sets spaced 30 minutes to one hour apart.

3. Number of Cultures

The optima number of blood cultures varies. A single blood culture set is inadequate. Multiple sets would help to distinguish a “false positive” from a “true positive” and increase the volume of blood cultured. Sub acute infective endocarditis has the highest pretest probability of a positive culture a total of three to five blood cultures sets should suffice.

Recommendation: Obtain three blood cultures sets from patients presenting with possible infective endocarditis, if those cultures are negative at 24 hours, obtain two or more sets of cultures. For a total of five sets

4. Pediatric Patients

One or two sets of bottles are optimal for most patients. The BACTEC PEDS PLUS/F aerobic resin bottle can optimally hold from 1 to 3 ml of blood. Since aerobic organisms are suspected in most pediatric bacteremias, two PEDS PLUS aerobic resin bottles collected from different sites or at different times are suggested. If anaerobes are suspected, then the BACTEC PLUS Anaerobic/F, Anaerobic (gold label) resin bottle, which requires at least 3 ml of blood, should be collected.

5. BACTEC Blood Culture Bottles Available

- A. Adult patients: aerobic/anaerobic set, each bottle requires 8 to 10 ml of blood.
 - a. BACTEC PLUS Aerobic/F, aerobic (silver) label) resin bottle.
 - b. BACTEC PLUS Anaerobic/F, anaerobic (gold label) resin bottle.
- B. Pediatric patients: BACTEC PEDS PLUS/F, aerobic (pink label) resin bottle. Each bottle requires 1 to 3 ml of blood.

6. Labeling the Specimen

The label shall be placed on the bottle in a top-bottom orientation **without covering the bottle bar code label or the bottom of the bottle.** The collector’s initials, time of collection, collection site, and order number shall be placed on the bottle.

7. INVISION Order Entry Information

Special coded abbreviations may be used when entering information into INVISION at the specimen, method of collection and body site prompts of the Order Entry Screen. The codes for terms commonly used with blood cultures are listed in the table below.

CODE	TRANSLATES TO
ANCU	Antecubital
ARM	Arm
ALINE	Arterial Line
BLUD	Blood
FEMA	Femoral Artery
HAND	Hand
LEFT	Left (Do Not Use "L")
PRPL	Peripheral
RT	Right (Do Not Use "R")
UMB	Umbilical Artery
UAC	Umbilical Artery Catheter
UVC	Umbilical Venous Catheter
UMBL	Umbilicus
VEN	Vein
VP	Venipuncture
WRIST	Wrist
PICCL	Peripherally inserted central catheter line
PIV	Peripherally inserted venous line
BRPT	Brown Port
REDP	Red port
FML	Femoral
BROV	Broviac-central venous line
MEDI	Medial
PSBC	Peripheral Stem
CVL	Central venous line
INJU	Internal jugular
BLPT	Blue port
WHPT	White port
TLCA	Triple lumen catheter
CHW	Chest wall
DTL	Distal
PMLL	Proximal line
PML	Proximal
DTLL	Distal Line
MEDIL	Medial Line

When more than one entry is required to describe the specimen, method of collection or body site, the codes shown in the table should be strung together using a hyphen. For example, when entering "femoral artery, left" enter FEMA-LEFT. Using the codes will assist the laboratory in recording the information accurately in the computer. A blood culture may be entered into the INVISION system as Blood Culture Set (BAC 0226 or BCS) or Blood Single Vial (BAC 0225 or BSV). Blood cultures shall be hand carried to the clinical laboratory and should not be sent to the lab via the pneumatic tube system.

7. Central Lines

When obtaining blood cultures from central lines the appropriate nursing policies shall be followed.

C-30 Central Venous Catheters

C-31 Clamless Valved Tunneled Central Catheters

H-15 Hickman Catheters

P-36 Peripherally Inserted Central Catheters (PICC)

P-80 Implantable Portal Access Device

NOTE: In order to obtain meaningful results, meticulous care should be observed in preparing the venipuncture site. Arterial lines (A lines) and intravenous lines (IV lines) are not suitable sites for obtaining specimens nor are the umbilical vessels. However, in some instances these may be the only sites available for obtaining a specimen. When that occurs, be sure the method and site of collection are noted in the ordering computer.

If cultures are collected from a Central line, a blood culture by venipuncture shall be paired to assist in interpretation in the event of a positive result.(CLSI M47-A)

If blood cultures for bacteria or fungi are collected 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 anticoagulant. The antimicrobial activity of heparin is effectively eliminated in the protein rich culture media within the blood culture vials.

EQUIPMENT:

Sterile Gloves	Tourniquet
Alcohol Swabs	Butterfly Needles
Blood Transfer Devices	Syringes (10 cc Pediatric or 20 cc Adult)
4x4 Gauze Pads	Tape
Blood Culture Bottles	
Chloraprep	
Blood Culture Kit	

RESPONSIBLE PARTY	ACTION	RATIONALE
MD	1. Writes an order for blood cultures to be drawn.	
MD, RN, RN Applicant, LPN	2. Washes hands. Obtains supplies. 3. Explains the procedure to the patient. 4. Washes hands with antimicrobial soap. 5. Disinfects tops of media bottles with chloraprep sepp alcohol swabs. Note: The septum (bottle top) must be completely dry before inserting the syringe or blood transfer device. 6. Identifies target vein. Dons sterile gloves. 7. Prepares area over vein with chloraprep frepp, by applying solution using back and forth strokes covering a 5 cm area. Allow the chloraprep frepp solution to dry for 15 seconds. Do not palpate the vein after the skin has been disinfected. 8. Using an appropriate size needle and syringe perform the venipuncture and withdraw the amount of blood required to inoculate a bottle set (adult bottle 5 to 10 ml per bottle, pediatric bottle single bottle 1 to 3 ml per bottle).	6. Arterial blood cultures are not associated with higher diagnostic yields than venous blood cultures and are <u>not</u> recommended.

<p>MD, RN RN Applicant, LPN</p>	<ol style="list-style-type: none"> 9. Withdraws the needle and applies a pressure dressing to the site. 10. Using a blood transfer device, transfer specimen into blood culture bottles. Transfer blood to the anaerobic bottle first, then to the aerobic bottle. Keep bottles upright when using the collection device. Invert bottles gently several times to prevent clotting 11. Disposes of all sharps appropriately. 12. Removes gloves and washes hands. 13. Places label on each bottle in a top-bottom orientation <u>without covering the bottle bar code or the bottom of the blood culture bottle.</u> Collector's initials, time of collection, and collection site shall be placed on the bottle. Places each specimen in the appropriate lab bag. 14. Immediately takes the specimen(s) to the Nurses Station and enters appropriate data into the INVISION system. 15. Hand carries specimen(s) to the clinical lab within 2 hours of collection. Do not refrigerate. 	<ol style="list-style-type: none"> 9. Controls bleeding and helps to prevent the formation of a hematoma. 10. Blood should be drawn into a sterile syringe and then transferred to the blood culture vial. (CSLI-47A) It is not necessary to change needles for each bottle. 13. Label the specimen at the patient's bedside using two patient identifiers.
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REFERENCES:

International Emerging Infections Program (IEIP). (2005). Population-Based Surveillance for Microbial Agents of Pneumonia and Sepsis with Detection of Streptococcus Pneumoniae. Center for Disease Control and Prevention. (Standard Operating Procedures for Clinical and Laboratory Staff, v1.2).

LSUMC, University Hospital Clinical Laboratory Information Manual

Principles and Procedures for Blood Cultures; 2008 Approved Guidelines.CSLI M47-A(Formerly NCCLS)

Burger, T.L., Fry, D.A., Gray, E.J., Colasante, G.G., and Vose, C.B. June 2007. You want us to do what? Reducing Blood Culture Contaminates. American Journal of Infection Control. Volume 35, Number 5.

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