TRAINING UPDATE

Lab Location:	SGAH & WAH	**Date Distributed:**	8/1/2013
Department:	Phlebotomy	**Due Date:**	8/31/2013
		Implementation:	**9/1/2013**

DESCRIPTION OF PROCEDURE REVISION

Name of procedure:

Blood Culture Protocol, Phlebotomy SGAH.P25, WAH.P23 v001

Description of change(s):

Section 4: Add Myco/F Lytic bottle to volume table

Section 5: Add transfer device, single use holder and ChloraPrep to part A. Add steps for ChloraPrep as primary product and iodine as alternate product.

Section 6: Add website ChloraPrep.com

This revised SOP will be implemented on September 1, 2013

Document your compliance with this training update by taking the quiz in the MTS system.

Approved draft for training all sites (version 001)

Non-Technical SOP

Title	**Blood Culture Protocol, Phlebotomy**	
Prepared by	Leslie Barrett	Date: 10/19/2009
Owner	Ron Master	Date: 10/19/2009

Laboratory Approval		
Print Name and Title	**Signature**	**Date**
Refer to the electronic signature page for approval and approval dates.		
Local Issue Date:	Local Effective Date:	

Review:		
Print Name	**Signature**	**Date**

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TABLE OF CONTENTS

1. PURPOSE

To describe the process to collect blood culture specimens.

2. SCOPE

This document applies to all personnel who collect blood cultures.

3. RESPONSIBILITY

It is the responsibility of trained Client Representative and Phlebotomy staff to collect blood cultures and comply with this procedure.

4. DEFINITIONS

Blood Culture

The detection of viable organisms in a patient's blood has great diagnostic and prognostic importance. When bacteria or fungi multiply at a rate that exceeds the capacity of the reticuloendothelial system to remove microorganisms, bacteremia or fungemia results. Persistent bacteremia occurs with failure to localize a bacterial infection in the extravascular tissues or failure to remove, drain, or adequately treat a focus of infection.

The major pitfall in interpretation of blood cultures is their contamination by microbial flora of the skin. This problem is overcome best by **meticulous** preparation of the skin with a bactericidal agent (ChloraPrep / tincture of iodine). Since infective enodcarditis, especially on prosthetic heart valves, may be caused by microorganisms indigenous to the skin, contamination of blood cultures during collection must be reduced to a minimum. **Blood for culture should not be drawn through indwelling intravenous or intra-arterial catheter unless it cannot be obtained by venipuncture or unless it is being drawn to specifically evaluate a potential catheter–related infection, in**

which case blood should be simultaneously drawn by venipuncture from another site.

Orders

- Blood cultures for routine workup should be drawn in aerobic and anaerobic blood cultures bottles or Pediatric bottles if a child.
- Blood cultures to rule out Fungus or Mycobacteria (AFB) should be drawn in a Myco/ F Lytic blood culture bottle. Only one bottle is required.

Blood Volume

A blood culture is defined as the blood withdrawn from a single venipuncture, whether that blood is inoculated into one or multiple bottles. The volume of blood withdrawn per culture is the single most important variable in recovering organisms from the blood of bacteremic patients.

Patient	Media	Draw Total	Optimum/bottle	Minimum/bottle
Adult	Aerobic (blue)	16-20 ml	8-10 ml	8 ml
Adult	Anaerobic (purple)	16-20 ml	8-10 ml	8 ml
Children	Peds (pink)	1-5 ml	1-3 ml	0.5 ml
	Myco/ F Lytic (white)	3-5 ml	3-5 ml	3 ml

Number and timing of Cultures

Multiple bottles (aerobic and anaerobic) filled from a single venipuncture should be regarded as a single blood culture. In practice, blood cultures are usually obtained after the onset of fever or chills. Since bacteria are rapidly cleared from the blood it is imperative that blood cultures be drawn as soon as possible after the onset of fever or chills.

Two studies have demonstrated that, with adequate volumes of blood, two to three blood cultures are sufficient to detect nearly all episodes of bacteremia (3, 4). One draw of 3-5ml is adequate for fungemia.

It is not necessary to draw blood cultures at arbitrary times during a 24 hour period. Since blood cultures should, whenever possible, be collected prior to administration of antimicrobial agents we recommend simultaneous collection of two or three 16 to 20 ml blood specimens in the initial evaluation.

Transport

Blood culture bottles should be transported immediately to the laboratory. Bottles can be kept at room temperature for short periods of time without affecting microbial recovery; they should **never** be refrigerated. If blood cultures must be held before being transported to the laboratory prior to being place in automated instruments, they should be kept at room temperature.

Contamination Rates

False-positive blood cultures may be associated with increased length of stay and charges, increased pharmacy costs, and increased laboratory charges. If blood cultures are collected properly no more than 2-3% of all blood cultures should be contaminated.

Blood cultures obtained from catheters are more often contaminated than blood cultures obtained from venipuncture.

Quality Control

Each case of media has a manufacturer's Quality Control certificate indicating the organisms tested and the acceptability of those tests. These certificates must be maintained as quality assurance/quality control documentation. Deliver certificates to Microbiology whenever a case of blood culture bottles is opened.

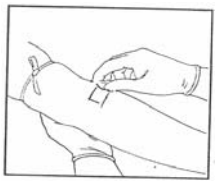
5. PROCEDURE

A. Reagents, Equipment, Supplies

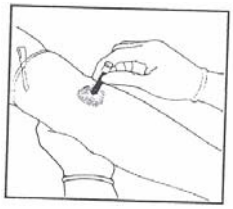
- Blood Culture Bottles
  - Aerobic bottles (blue top)
  - Anaerobic bottles (purple top)
  - Pediatric bottles (pink top)
  - Myco F/Lytic Bottle for AFB and Fungus (white top)
- Blood collection sets – 21 or 23 gauge winged sets.
- Single use holder
- Blood Transfer Device
- Syringe
- ChloraPrep Applicators (primary method)
- Tincture of Iodine Applicators (backup method)
- 2x2 sterile gauze
- Alcohol prep (70% alcohol)
- Blood culture requisition and/or LIS collection labels
- Latex free tourniquet
- Latex free gloves
- Tape
- Blood Culture Bottle Carrier (WAH)
- Biohazard zip-lock bags

B. Collection Steps using ChloraPrep Applicators

1. Universal precautions should be followed in handling all items contaminated with blood.
2. Perform positive patient identification as per SOP Patient Identification, Phlebotomy procedure manual.
3. Wash hands. Apply gloves.
4. Prior to use inspect all bottles for expiration date and discard any vials showing evidence of contamination, damage, or deterioration (chipped bottle, turbid media, etc). Notify supervisor before discarding.
5. Inquire if patient has known allergies to Chlorhexidine gluconate (CHG). If so, use 70% Isopropyl Alcohol scrubs, two times and allow to air dry in place of ChloraPrep applicator.
6. Do not use product on premature infants or infants under 2 months of age because of the potential for excessive skin irritation and increased drug absorption. Use 70% Isopropyl Alcohol scrubs, two times and allow to air dry in place of ChloraPrep applicator.

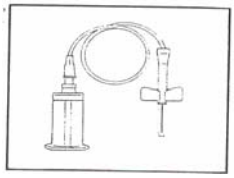


5. Skin preparation
   - locate the vein to be used by palpitation.
   - clean the venipuncture site with ChloraPrep by pinching the barrel on the applicator to break the ampule and release the antiseptic. Do not touch the applicator tip.



   - Press the applicator tip against the treatment area until liquid is visible on the skin. Use a back and forth motion to scrub the site for at least 30 seconds. Completely empty the antiseptic from the applicator.
   - Allow to air dry for 30 seconds. Do not blot or wipe away.
   - Do NOT touch or palpate the area after cleansing.

6. Remove flip-off caps from culture vials.
   - Wipe tops of bottles with a single alcohol swab and allow to dry 1 minute.



7 Prepare blood collect set
   - Peel apart package and remove blood collection set.
   - Thread the Luer end of tubing set into vacutainer holder.
   - Remove sheath covering needle at wings

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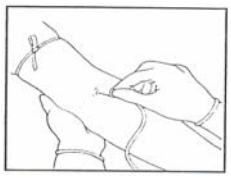
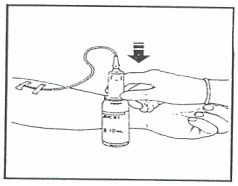
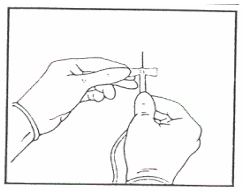
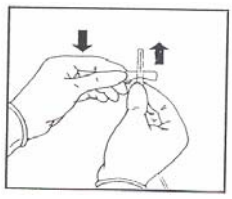




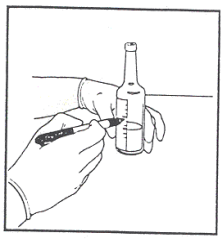
8. Collect Blood Sample
   - Perform venipuncture by holding wings as shown. **DO NOT hold by grasping the yellow safety shield.**
   - **Select aerobic bottle first**. Hold the bottle upright.
   - Push and hold vacutainer holder over the top of vial to puncture septum.
   - Collect blood to desired fill level on vial. Monitor to ensure proper blood flow and fill level.
   - Remove holder from bottle. Immediately push and hold holder onto second bottle to collect blood to desired fill level on second bottle. Remove holder from bottle.



9. Remove needle from venipuncture site.
   - When final vial is filled, withdraw the needle from the puncture site by grasping the wings and gently pulling. **DO NOT withdraw by holding yellow safety shield.**
   - Cover the puncture site with sterile gauze pad and apply mild pressure.
   - To activate safety shield, grasp either wing with one hand and grip the yellow safety shield base with other hand. Slide the wings back into the rear of the safety shield until a snap is felt to ensure that the needle is retracted and completely locked in place.



10. Patient skin care.
    - Apply gauze and tape or Band-Aid on venipuncture site after bleeding has stopped.



11. Label bottles
    - Label bottles with appropriate patient or LIS label. DO NOT write or place labels over the vial barcode, as this is used by the instrument to process the specimen.
    - Indicate date and time of collection as well as collector's initials/code on the bottles. Document site of draw as right arm/vein, forearm, dorsal side of left hand etc., allowed sites

12. Disposal
    - Dispose of the safety-lock blood collection set into the nearest sharps container. DO NOT disassemble the blood collection set.

- Dispose of all other used materials in appropriate container and wash hands.

13. Transporting Specimens to the Lab
    - Place each bottle in a designated blood culture carrier in separate biohazard bag and send via pneumatic tube system (WAH)
    - Bottles may also be hand carried to the lab, received into the LIS and immediately loaded in the BACTEC Analyzers (preferred method). Do NOT load Myco/ F Lytic bottles in the analyzers. Deliver these to the microbiology section after LIS receipt.

Procedure Notes:

- If only enough blood is obtained for one bottle, the aerobic bottle is to be utilized for adults.
- **Do not remove needle set from venipuncture site and use to inoculate blood culture bottle. Use Blood Transfer Device (see Needle-Sharps training documents for proper use of Blood Transfer Device)**
- For patients with hard to find veins (difficult draws) a 20-cc syringe with a 21 or 23 gauge-winged set attached may be used for one set of adult draws. (5cc syringe for pediatric patients using a Pediatric bottle ONLY). Follow the same site preparation, venipuncture and Sharps removal procedures. Attach a Blood Transfer Device to the syringe and inoculate the aerobic bottle then the anaerobic bottle without changing the Blood Transfer Device between bottles. Label as outlined in above procedure. Repeat steps for the second set draw with new equipment.
- Blood should be obtained for culture prior to the administration of systemic antimicrobial therapy

C. Collection Steps using 2% Tincture of Iodine Applicators

1. Identify the patient and prepare for collections as described in steps B.1 - 4.
2. Inquire if patient has a history of adverse reaction to iodine.
3. Skin Preparation:
   - Locate the vein to be used by palpitation.
   - Clean the venipuncture site with alcohol and let dry 30 seconds. If patient has a history of adverse reaction to iodine, substitute a second alcohol swab and scrub in place of iodine.
   - Hold the applicator in downward position and squeeze until the iodine ampule within is crushed to release the iodine.
   - Apply the iodine to venipuncture site starting at center and moving outward in concentric circles to periphery for 30 seconds. Allow to air dry.
   - Do NOT touch or palpate the area after cleansing.

4. Proceed with venipuncture and additional steps as described in Section 5 (B) Steps 6- 13.

6. RELATED DOCUMENTS

Patient Identification, Phlebotomy procedure
Venipuncture, Phlebotomy procedure

7. REFERENCES

1. Cumitech 1B, Blood Cultures III, April 1997
2. Bactec 9000 Series User Training Guide
3. Washington, J. A. 1975. Blood cultures: principles and techniques. Mayo Clin. Proc. 50:91-95.
4. Weinstein, M. P., L. B. Reller, J. R. Murphy, and K. A. Lichtenstein. 1983. The clinical significance of positive blood cultures; a comprehensive analysis of 500 episodes of bacteremia and fungemia in adults. I. Laboratory and epidemiologic observations. Rev. Infect. Dis. 5:35-53.
5. Reisner, B. S. & Woods, G. L. 1999. Times to detection of bacteria and yeasts on Bactec 9240 blood culture bottles. Journal of Clinical Microbiology, June 1999, p. 2024-2026.
6. www. ChloraPrep.com

8. REVISION HISTORY

Version	Date	Reason for Revision	Revised By	Approved By
		Supersedes SOP P026.001		
000	7/16/2013	Section 4: Add Myco/F Lytic bottle to volume table Section 5: Add transfer device, single use holder and ChloraPrep to part A. Add steps for ChloraPrep as primary product and iodine as alternate product. Section 6: Add website ChloraPrep.com	Samson K	R Master N Cacciabeve

9. ADDENDA AND APPENDICES

None

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