


Specimen Collection – Blood Culture Collection

 NMC <small>NORTHWESTERN MEDICAL CENTER</small>	Document Classification	<input type="checkbox"/> Policy <input type="checkbox"/> Procedure <input checked="" type="checkbox"/> Policy and Procedure <input type="checkbox"/> Guideline
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Purpose:

To ensure proper blood culture collection using best practice for optimized recovery of potential pathogens and to minimize or eliminate the possibility of contamination.

Target Users:

Phlebotomist, MA, LNA, LPN, RN, ED Tech, and all clinical staff trained and authorized to collect blood culture specimens

Background:

Blood cultures detect the presence of bacteria in the blood (bacteremia) and a systemic spread of such an infection (septicemia) through the bloodstream. To optimize the recovery of potential pathogens, it is essential that samples be collected from two or three blood draws from separate venipuncture sites with all bottles properly filled. Each set should be collected simultaneously or within a few hours.

For patients with signs and symptoms of sepsis, at least two blood culture sets should be obtained as soon as possible and before antimicrobial agents are administered. If endocarditis is suspected, a third blood culture set may be obtained.

Improper collection techniques increase the possibility of blood culture contamination. False positives have a significant clinical and economic impact to the patient and the organization. Adverse effects include increased overall length of inpatient Hospitalization as well as increased antibiotic exposure leading to allergic reactions, drug-drug interactions, antibiotic resistance emergence, and risk for hospital acquired C. difficile infection. Various studies of false positives have attributed an average increase in length of stay of 3.4 days and an average increase in hospital cost of \$4,162.

Strategies to reduce the possibility of blood culture contamination include the following:

- Patient Selection - Performing blood cultures unnecessarily on patients with a very low likelihood of bacteremia results in positive cultures more frequently representing false positives

- Proper Skin Antisepsis
- Blood Culture Bottle Disinfection
- Hand hygiene
- Peripheral venipuncture has been shown to have significantly lower contamination rates than intravenous catheters.

Definitions:

None

Policy:

Blood Cultures may only be collected by staff who have received training specific to blood culture collections.

Procedure:

Refer to [Lippincott Procedures – Blood Culture sample collection](#)

Essential Elements:

- When preparing the venipuncture site, use the supplied BD Chloraprep FREPP Clear applicator antiseptic agent. These are included in the blood culture collection kits which are supplied by the Lab to all hospital patient care units.
- Peripheral venipuncture is the preferred collection method.
 - If collecting via an IV catheter, the site must be prepared with antiseptic agent in the same manner as a venipuncture site prior to IV insertion. Aseptic technique for handling tubing and transfer devices is essential.
 - If the IV insertion site was not prepared in the same manner as outlined in this policy, the sample should be collected by peripheral venipuncture.
- In all cases, it is essential that the site be prepared with antiseptic agent and allowed to dry completely without fanning, wiping, or blowing.
- The diaphragm tops of the blood culture bottles must be disinfected with alcohol pads and allowed to dry. Do not use iodine containing products.
- The order of tube collection is critical. Blood Culture Bottles are collected first (aerobic then anaerobic bottle). See NMC Policy “Blood Draw Tube Order”.
- Bottles must be properly filled. Overfilled and underfilled bottles may decrease the recovery of potential pathogens and may be rejected.
- Bottles must be labeled at the patient’s bedside. When applying the label, do not obstruct the bottle’s barcode or the fill window.
- The collector must LEGIBLY initial and date each bottle.

Monitoring Plan

- The Laboratory works collaboratively with the Infection Control Coordinator, Pharmacy,

and the Antibiotic Stewardship Committee to track contamination rates. NMC has adopted the Clinical Laboratory Standards Institute's target of reducing contamination rates below 1%.

- The blood culture collector's identity is tracked for all sample collections.
- The Laboratory notifies the department manager for all blood culture contaminants with the expectation that the collector will receive direct feedback about the quality of specimen collection.

Related Policies:

NMC Policy - Blood Draw Tube Order

References:

"A Comprehensive Update on the Problem of Blood Culture Contamination and a Discussion of Methods for Addressing the Problem", Doern GV et al., Clinical Microbiology Reviews, American Society for Microbiology, January 2020, Volume 33, Issue 1.

Lippincott "Blood Culture sample collection" procedure.

"Principles and Procedures for Blood Cultures – 2nd Edition", M47Ed2, Clinical Laboratory Standards Institute, Volume 42, Number 10, April 2022.

"Laboratory General Checklist" GEN.40580 and GEN.40590, CAP Accreditation Program, College of American Pathologist.