



Microbiology Guidelines for Collection and Transportation of Specimens

General Guidelines

The first step toward ensuring accurate and reliable results begins with proper specimen collection and continues with appropriate handling and timely transport to the laboratory.

- Select the proper specimen and collect an adequate sample for examination.
- Specimens should be of sufficient quantity to permit completion of all tests ordered
- All specimens must be properly labeled with 2 patient identifiers or they will be rejected.
- Transport the specimen in the appropriate container that will maintain viability, prevent drying out of the specimen, and prevent overgrowth of nonpathogenic organisms.
- The containers/specimens should show NO signs of leakage.
- Whenever possible, specimens should be obtained before antimicrobial agents have been administered.
- Specimens should be delivered within one-two hours of collection.
- **For outpatient settings:** Most clinical material can be held for several hours in a refrigerator. This includes: urine, sputum, feces and viral specimens. **DO NOT refrigerate** body fluids, CSF, blood for cultures, eye/ear swabs or specimens for anaerobes. **DO NOT refrigerate** cultures for *Neisseria gonorrhea*. Please call the microbiology laboratory at (816) 691-1302 with any questions regarding the storage and/or transportation of specimens.

For Bioterrorism Agents: If environmental contamination with a CDC Select Agent is suspected, please contact your local Public Health Department for more details on how to handle this sample type. Please **DO NOT** submit environmental samples to North Kansas City Hospital.

Specimen Collection and Handling by Source

Anaerobic Culture

Acceptable specimens:

- eSwab; (deep wounds, surgical specimens)
- Tissue and body fluids in sterile containers or syringes with the needle removed.
- Abscess: aspirate with a syringe after surface decontamination
- Uterine infections: aspiration by syringe or cannula
- Trans-tracheal aspirations
- Suprapubic urines (not supra-pubic catheter)

Unacceptable specimens:

- Throat, gingival specimens
- Nasopharyngeal swabs
- Gastric, small bowel contents, colostomy sites
- Feces and rectal swabs
- Sputum and bronchoscopy specimens

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- Urine (except supra-pubic)
- Vaginal or cervical swabs
- Superficial wounds
- Decubitus ulcers

Blood Cultures: use Versa Trek 40ml Aerobic and Anaerobic bottles

For adults and children >2 months

1. Locate venipuncture site.
2. Open Chloraprep applicator.
3. Hold applicator with sponge facing downward and gently squeeze wings, releasing solution (chlorhexidine).
4. Press sponge against skin and apply Chloraprep solution using back and-forth friction. Scrub for at least 30 seconds. Refer to manufacturer's recommendations for dry time. **NOTE:** Clinical evidence supports the importance of applying antiseptics with sufficient friction to ensure the solution reaches into the cracks and fissures of the skin.
5. Clean the tops of blood culture bottles with alcohol. **DO NOT USE IODINE**
6. Perform venipuncture.
7. **Collect 5 mls per bottle. Do NOT collect more than 5 mls per bottle.**
NOTE: You may use the volume markings on each bottle as a guide when filling. Each volume mark equals 2.5 ml of blood. Bottles will draw more blood than required. Always fill the Aerobic bottle (silver cap) first. If collecting blood using a syringe, place 5 mls per bottle. If less than 10 mls is obtained, place 5 mls in the aerobic bottle (silver cap) and the remainder in the anaerobic bottle (red cap). If less than or equal to 5 mls is obtained, place all of the blood into the aerobic bottle. The aerobic bottle must be filled with a minimum of 1ml. Aerobic bottles filled with less than 1 ml will be rejected.
8. Invert bottles gently to mix blood with media.
9. Affix the patient label vertically on the bottle, taking care to not cover the manufacturer's barcode.
10. Document employee ID, time of draw, and collection site on the label.
11. Because of the need to start antibiotics as soon as possible, the laboratory allows the collection of multiple blood culture sets at once; however, each culture set should be collected from separate venipunctures. **DO NOT** perform one venipuncture and fill more than one set of culture bottles. The same arm may be used for multiple venipunctures.

For <2 months of age: refer to Nursing policy *MCH: Blood Culture Procedure for Infants*

Rejection Criteria:

- Blood cultures from a central line have a higher contamination rate; therefore, two peripheral specimens are preferred. After two unsuccessful venipuncture attempts, the nurse will contact the physician to obtain order to draw the blood cultures from the central line or arterial line (by the nurse).
- Aerobic bottles with less than 1 ml of blood will be rejected.

Blood Fungal Culture

Follow the above procedure, substituting Versa Trek bottles with an **Isolator tube**. For adult patients, a 10 mL Isolator tube should be collected (min ≥5 mls). For pediatric patients, a 1.5 mL Isolator tube should be used. (min: ≥1 m)

Stable <16 hrs ambient

Blood AFB Culture

Follow the above procedure, substituting Versa Trek bottles with a 10 ml **SPS tube**. prefer 7 mL, Mmn 1 ml

Stable <24 hrs ambient

Body Fluids

- Acceptable for aerobic, anaerobic, AFB, and Fungal cultures.
- Minimum of 1.0 ml should be collected.
- Fluids should be aspirated into a sterile syringe or sterile, leak-proof container.
- **NEVER TRANSPORT SYRINGE WITH NEEDLE ATTACHED.**
- If received > 2 hour after collection a time delay disclaimer will be noted on the final report.

CSF - Cerebrospinal Fluid

- Collect and transport in sterile, leak-proof, screw top tube.
- Deliver immediately after collection due to the fastidious nature of the organisms that may be present.
- If received >1 hour after collection, a time delay disclaimer will be noted on the final report.
- Do **NOT** refrigerate.

Bone marrow

- Collect in a pediatric 1.5 ml Isolator tube.
- Minimum of 0.5 ml is required for testing.

Joint Fluid for *Neisseria gonorrhea* must be received <1 hr of collection.

Catheter Culture

- Provide 2 inch segment of catheter in sterile container.
- If received > 2 hour after collection a time delay disclaimer will be noted on the final report.

Feces**C difficile**

- Transport stool in a sterile, leak-proof container with lid.

C diff Rejection Criteria:

- Formed specimens
- patient has had laxatives within 48 hours and <3 loose stools within 24 hours of collection.
Exceptions include ED specimens, new admits and rectal tubes
- Colon aspirates or swabs
- Stool contaminated with urine
- Repeat testing requested within 2 weeks of a positive result or Repeat testing requested within 48 hours of a negative result.
- >5 days if refrigerated

Fecal occult, Fecal lactoferrin (WBC)

- Transport in sterile, leak-proof container with lid
- Replaces stool culture and Giardia/Cryptosporidium and O&P

Enteric Pathogen Panel by PCR

- Stool culture transport media if transport to the laboratory will be >2 hour from time of collection.

Rectal swab

- For *Neisseria gonorrhea* must be received <1 hr of collection.
- For VRE, received <2 hr of collection.

Rejection Criteria:

- Specimens containing barium or oily cathartics.
- Rectal swabs and colon aspirates are acceptable for aerobic culture only and will only be tested for *Salmonella* and *Shigella*.
- Specimens from patients who have been in the hospital for >72 hours will be rejected for stool culture and parasitology testing.
- Stool contaminated with urine.
- Delivered >2 hours after collection if not in preservative.

Genital Sources

- Specimens for *Neisseria gonorrhoeae* culture and/or Wet Prep testing should be brought to the lab immediately.
- Wet Prep: Collect cervical or vaginal swab in 0.5 ml sterile saline- Do NOT put in eSwab transport media
- GBS- Strep B PCR: vaginal/rectal swab collected with a red-cap Copan swab.
- Culture
 - ✓ Urethral(male): NP or eSwab
 - ✓ Cervical/vaginal: eSwab
 - ✓ IUD sent in sterile container.
 - ✓ Throat, anus, eye for *Neisseria gonorrhoeae* send in eSwab

Rejection Criteria:

- Delivered >1 hour after collection

Chlamydia/ Gonorrhea PCR

- Cervical, vaginal or urethral swab samples in Xpert CT/NG Swab Transport Reagent tubes
- Dirty urine collection:

Collection Instructions: Note: This is not the same collection procedure as a clean catch urine collection. If both types of specimens must be collected, the dirty urine collection should be performed first. For midstream urine collection instructions, refer to the Random Urine Collection Guidelines accessible through the test directory home page.

- Do not urinate for at least one hour prior to collection
- Wash hands thoroughly before collection.
- Do **NOT** cleanse genital area prior to specimen collection.
- Collect the first portion of the urine stream in the provided sterile cup.
- Place lid tightly on the provided sterile cup.
- Ensure specimen container is labeled with the patient's name and date of birth.
- Sample should be returned to the laboratory as soon as possible. If immediate delivery is not possible, please contact the laboratory at (816) 691-1302.

Gram Stain

- Gram stains are included in the following cultures: body fluid, CSF, ear, eye, respiratory, sputum, tissue and wound

Mycobacteria (AFB) Culture*

- All specimens should be collected in a sterile, leak-proof container and refrigerated if not delivered within 2 hours of collection.

Sputum

- Three early morning sputum specimens are recommended.
- If needing to R/O TB- 3 specimens collected 8 hours apart are acceptable. (Example: acceptable collection times 0600, 1400, 2200)

Gastric specimens, Bronchoscopy specimens, Tissues, Body fluids, etc.

- Collect in sterile, leak-proof container.

Swabs

- Swabs are not acceptable for AFB culture and will be rejected.

Mycology (Fungal) Culture*

- All specimens are to be collected in sterile, leak-proof containers and are stable <2 hrs ambient.
- Specimens collected using a swab are acceptable but not recommended. The raw specimen, fluid, or tissue is preferred

*NOTE: AFB and Fungal cultures collected from the same site and same date/time will be pooled for culture to optimize the recovery of these organisms.

MRSA Screening

Nasal Swab for MRSA

For culture: Using a single eSwab insert one inch into anterior nares, rotate (5) times clockwise and another five (5) times counter-clockwise prior to removing swab. Place the same eSwab in other nares and repeat.

For PCR: Using a single red-capped COPAN culturette, insert double swab 1-2 cm inside of nares. Rotate swab for at least 3 seconds while gently applying pressure on the outside of the nostril. Repeat with the opposite nares using the same swab.

Groin Culture for MRSA

Using a single eSwab, place the swab on the left groin and rotate (5) times. Repeat the process with same swab on the right groin.

Respiratory Tract

Lower Respiratory tract

- Collect and transport specimen in a sterile, leak-proof container.
- A minimum of 1.0 ml is required for aerobic culture. Minimum of 3.0 ml is required for fungal and AFB cultures.
- Sputum- Instruct the patient to first rinse their mouth with water and spit out water. Second, expectorate material from a deep cough into a sterile container. Do not collect saliva. Early morning specimens are recommended.
- Bronchoscopy specimens and Tracheal aspirates- These are collected by trained respiratory care personnel.

Rejection Criteria:

- Specimens delivered >2 hours after collection.
- Obvious saliva, as determined by gram stain.
- Specimen in cytology preservative.

Upper Respiratory Tract

- Throat culture: With the patient's tongue depressed, rub an eSwab firmly over the back of the throat, tonsils, and tonsillar fossae where areas of inflammation, exudation, or ulceration are evident. Care should be taken not to touch the tongue or mouth. NOTE: A throat culture will only check for Strep Group A (*S. pyogenes*), **Strep A PCR** is the preferred test over a culture- Collect with eSwab
 - Throat culture for *Neisseria gonorrhea* must be received <1 hr of collection.
- Mouth, Eye, Ear: eSwab
- Nasopharyngeal: NP or mid-turbinate swab

Rejection Criteria:

- Delivered >2 hours after collection.

Tissue

- Tissue samples should be taken from the leading edge of infection, the most viable portion of the tissue.
- Collect and deliver in sterile, leak-proof container. Sterile saline may be added to keep specimen moist.

Rejection Criteria:

- Specimen in formalin.
- If received >2 hour collection, a time delay will be noted on the final report.

Urine

- **Supra-pubic aspirate:** Collected by physician by inserting a sterile needle/syringe directly into the bladder.
- **Catheterized:** collected by trained personnel by inserting a sterile needle/syringe into catheter tubing.
NOTE: Catheter specimens should never be taken from the bag.
- **Midstream, voided, clean catch:** Instruct the patient to collect mid-stream specimen.
See Random Urine Collection Guidelines for collection instructions and Urine Collection System Guidelines for transport criteria.

Urine Rejection Criteria:

- Preserved specimen >24 hours
- Unpreserved specimen: >1 hr ambient, >24 hr refrigerated
- <3 mls in boric acid preservative tube.
- Specimens collected by **hat, bedpan, bag or urinal**
- Leaking containers.
- Frozen samples.

Wet Prep and Vaginosis Evaluation

- Collect cervical or vaginal swab in 0.5 ml of sterile saline
- Must be delivered <1 hr.

Wound, Lesion or Abscess

- An aspirate or tissue sample is preferred over a swab collection.
- eSwab is acceptable for aerobic and anaerobic cultures. The eSwab is preferred but any Dacron or rayon polyester swab that is acceptable for aerobic/anaerobic cultures can be used. (Cotton swabs are inhibitory to many bacteria)

Open Wound:

- Superficial material and pus should be removed with sterile gauze to remove contaminating skin microorganisms. Samples should include pus from deeper within the wound and from the base or wall of the wound.

Closed Wound:

- Disinfect the surface before collection with a suitable skin disinfectant, such as alcohol. If the wound can be opened, collect as above. If the wound cannot be opened, aspirate with a syringe.
- If received > 2 hour after collection, a time delay disclaimer will be noted on the final report.

****Please call (816)691-1302 with any questions regarding the collection and/or transportation requirements for microbiology testing. ****