MICROBIOLOGY GUIDELINES FOR COLLECTION AND TRANSPORTATION OF SPECIMENS

Purpose

This procedure provides instructions for the proper collection of specimens for the microbiology laboratory.

Audience

Laboratory personnel, nursing personnel and physicians

Policy

This policy should be followed anytime a specimen is collected for microbial studies.

Principle

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. Most specimens are collected by non-laboratory health care personnel unfamiliar with the consequences associated with poor-quality specimens. It is the responsibility of the laboratory to provide clear, concise directions to ensure the best possible sample is collected and submitted without delay.

Select the proper specimen and collect an adequate sample for examination. Transport the specimen in the appropriate container. All specimens must be properly labeled, or they will be rejected. See Specimen Criteria for general laboratory labeling requirements. All specimens are to be submitted in a plastic bag which is placed into another plastic bag with a biohazard symbol on it. Standard/Universal Precautions are to always be observed.

Supplies

- eSwab (white swab) – Central Supply #3900
- Sterile specimen cups –Central Supply#3890
- COPAN swabs (red cap) –Central Supply#9300
- Urine collection system – Central Supply

The Microbiology laboratory is responsible for ordering the following and providing to the floors as needed.

- FLU/SARS/RSV Cepheid NP swab/transport (SWAB/B-100)
- CT/NG Endocervical Collection Swab and Transport media
- Blood culture bottles (Versa-Trek Redox 1 and 2, Fungal and AFB tubes)

Procedure

Steps	Actions
1.	• 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, or they will be rejected. See Specimen Criteria. • Whenever possible, specimens should be obtained **before** antimicrobial agents have been administered. • Transport the specimen in the appropriate container that will maintain viability, prevent drying out of the specimen and prevent overgrowth of nonpathogenic organisms. All specimens should be delivered to the lab as soon as possible after collection (within 1-2 hours). Any delay in transporting the specimen only increases the changes that the pathogenic organism will not be isolated. • The containers/specimens should show NO leakage. • All specimens should be identified with a specific source description. • Refer to Viral Testing Addendum.dc.r • Refer also to Specimen Collection By Nursing Staff **NEVER TRANSPORT SYRINGE WITH NEEDLE ATTACHED.** If a needle is received, please call the collector to come and remove the needle, then fill out an occurrence report.

	Specimen Storage Guidelines (if it cannot be processed immediately) • For **outpatient** settings: Most clinical material can be held for several hours in a refrigerator. This includes: urine, sputum, feces and viral specimens. o **DO NOT refrigerate** body fluids, CSF, blood for cultures, eye/ear swabs or specimens for anaerobes. DO NOT refrigerate cultures for *Neisseria gonorrheae.* • For inpatient settings: ➢ Specimens need to be delivered within 2 hours of collection. ASAP is preferred. Please call the laboratory with any questions on storage of specimens
	Anaerobic Collection The majority of anaerobic infections involve organisms which constitute the patient's normal flora. Since there is no way to distinguish normal flora from potential pathogens, it is essential that only specimens that do not contain normal anaerobic flora be submitted for culture. **Acceptable Specimens** for anaerobic culture: • eSwabs are acceptable for anaerobic culture • Tissue and body fluids can be collected in sterile containers or syringes with the needle removed. • Supra-pubic urines (not a supra-pubic catheter). • Any swab labeled acceptable for anaerobic cultures The following specimens are **preferred** for anaerobic culture: • Suspected anaerobic pulmonary infection: empyema fluid or percutaneous transtracheal aspiration in adults, lung tissue • Abscess: aspirate with a syringe after surface decontamination • Uterine infections: aspiration by syringe or cannula All specimens for anaerobic culture should be brought to the laboratory as soon as possible. **Unacceptable Specimens** for anaerobic culture: • Throat, gingival specimens • Nasopharyngeal swabs • Gastric, small bowel contents, colostomy sites • Feces and rectal swabs • Sputum and Bronchoscopy specimens • Urine (except supra-pubic) • Vaginal or cervical swabs • Superficial wounds • Decubitus ulcers
	BLOOD CULTURE See Blood Culture Collection
	BODY FLUIDS (pleural, pericardial, peritoneal, synovial, amniotic etc.) Minimum 1.0 ml Transport Container: Fluids should be aspirated into a sterile syringe or sterile leak-proof container. If sending in a syringe, replace needle with tip cap. Bone marrow - Collect in a pediatric 1.5 ml Isolator tube, Minimum of 0.5 ml Rejection Criteria: **NEVER TRANSPORT SYRINGE WITH NEEDLE ATTACHED.** Specimens will not be rejected if received after the 2 hour collection time limit; however, a time delay will be noted on the final report. **Joint Fluid** for *Neisseria gonorrhea* must be received <1 hr of collection. **Laboratory Instructions:** *All fluids should have a body fluid routing sticker placed on their requisition or obtain the form *Body Fluid Routing.* The specimen should go to all

	departments listed so that no tests are missed. A "Hold Specimen" should be ordered on all fluids. See Body Fluid Routing Process.dc.r See Culture - Body Fluid and Bone Marrow
	Catheter Culture • 2 inch section of catheter in sterile container • If received > 2 hour after collection a time delay will be noted on the final report.
	CSF - Cerebrospinal Fluid Transport Container: CSF is collected in sterile, leak-proof, screw top tubes. It needs to be delivered to the laboratory immediately after collection due to the fastidious nature of the organisms that may be present. Rejection Criteria: CSF will not be rejected if received after the 1 hour collection time limit; however, a time delay will be noted on the final report. Refer to Mislabeled Specimen Exception Request Form as CSF will not be rejected due to labeling issues Do NOT refrigerate before processing culture and gram stain. **Laboratory Instructions**: All CSF specimens must be routed through the laboratory with the body fluid routing sticker unless otherwise specified by the attending physician or pathologist. A "Hold Specimen" should be ordered on all CSF fluids. See below for which tube each department uses unless the physician specifies another order. **Tube 1 For chemistry** **Tube 2 For microbiology** **Tube 3 For hematology** **Tube 4 For Reference lab/histology**
	FECES **See: Fecal Specimen Protocol for Processing for details.** Transport Container: -Disposable, wide-mouth container with lid. Bring specimens to the lab immediately. Pathogenic *Shigella* and many *Salmonella* cannot survive the pH change that occurs in standing feces. -Specimens in Cary-Blair transport media are acceptable. **Rejection Criteria:** **-**Delivered >2 hours after collection. -Specimens containing barium or oily cathartics will interfere with testing. Several days must lapse after barium is administered before acceptable for testing. -Stool contaminated with urine -Rectal swabs and colon aspirates are acceptable for aerobic culture only and will only be tested for Salmonella and Shigella. -Colon aspirates/rectal swabs will **not** be examined for C. difficile toxin by PCR or Enteric pathogen PCR **-Specimens from patients who have been in the hospital for >72 hours will be rejected for testing involving enteric pathogens including parasites.** **C difficile protocol** -testing will be canceled if specimen is formed, patient has had laxatives within 48 hours and <3 loose stools within 24 hours of collection and repeat testing. Exceptions include ED specimens, new admits and rectal tubes. Refer to **Fecal Specimen Protocol for Processing**

	GENITAL • 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. • Chlamydia/ Gonorrhea PCR ➢ Cervical or vaginal swab samples in CT/NG Swab Transport ➢ Dirty urine • Culture ➢ Urethral(male): NP swab ➢ IUD sent in sterile container. ➢ Throat, anus, eye for *Neisseria gonorrhoeae* send in eSwab. Rejection Criteria: Delivered >1 hour after collection.
	MRSA Screening **Nasal Swab for MRSA** For culture: Using a single eSwab, insert one inch into anterior nares, rotate (5) times clockwise, five (5) times counter clockwise, remove, using same swab place in other nares and repeat. For PCR (nares only): Using a single red cap COPAN swab hold the applicator by the red cap, insert both swabs 1-2 cm inside nares. Rotate swabs for at least 3 seconds while gently applying pressure on the outside of the nostril. Repeat with the opposite nares. **Groin Swab for MRSA** Using an eSwab, place the swab on the left groin and rotate (5) times, repeat process with same swab on the right groin.
	Mycobacteria (AFB) Culture • All specimens should be collected in leak-proof screw-cap containers and sent to the laboratory within 1 hour of collection. Specimens that cannot be processed within one hour of the time of collection should be refrigerated during transport to and storage in the laboratory prior to processing. 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 containers. Swabs • Swabs of any nature are **not** acceptable for AFB culture and will be rejected. **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.**
	Mycology (Fungal) Culture • All specimens are to be collected in sterile containers and stable <2 hrs ambient. • Specimens collected using an eswab 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.**

Respiratory Tract

Lower Respiratory tract

- **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. Improper instruction leads to an improperly collected specimen. Early morning specimens are usually the most productive.

- **BRONCHOSCOPY SPECIMENS**

  These are collected by trained respiratory care personnel.

Transport Container:
Sterile, leak-proof container. Minimum of 1.0 ml for aerobic culture. Minimum of 3.0 ml for fungus and AFB.

Rejection Criteria:
Delivered >2 hours after collection.
Obvious saliva, as determined by gram stain (sputum only)
Specimen in cytology preservative.

Laboratory Instructions:
*All bronchoscopy specimens should have a body fluid routing sticker placed on their requisition or obtain the form *Body Fluid Routing.* The specimen should go to all departments listed so that no tests are missed. A "Hold Specimen" should be ordered on all bronch specimens.

Upper Respiratory Tract

- **THROAT**

  Transport Container: eSwab
  With the patient's tongue depressed, rub the swab firmly over the back of the throat, tonsils, 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

- **NASOPHARYNGEAL, MOUTH, EYE, EAR:**

  Transport Container:
  - Mouth, eye, ear: eSwab
  - Nasopharyngeal swab: NP or midturbinate swab

Rejection Criteria:
Delivered >2 hours after collection.

TISSUES

Tissue samples should be taken from the leading edge of infection, the most viable portion of the tissue.

Transport Container:
Sterile container. May contain a small amount of sterile saline to keep specimen moist.

Rejection Criteria:
Specimen in formalin.
Specimens will not be rejected if received after the 2 hour collection time limit; however, a time delay will be noted on the final report.
Refer to Mislabeled Specimen Exception Request Form as tissues will not be rejected due to labeling issues

URINE

There are three basic types of urine specimens:

- **Supra-pubic aspirate**: collected by physician by inserting a sterile

	needle/syringe directly into the bladder. • **Catheterized:** collected by nurse by inserting a sterile needle/syringe into the catheter tubing. See: Specimen Collection By Nursing Staff *NOTE: If foley present 14 days or greater and not inserted by urology, contact physician to change foley catheter prior to collecting sample. Catheter specimens should never be taken from the bag.* • **Midstream, voided, clean catch**: Instruct the patient to collect mid-stream specimen. See Procedure for Midstream Clean Catch Urine Sample.dc.r **Container:** All specimens should be transported in the urine collection tube designated for culture (includes preservative). Specimens should be received in the laboratory within 30 minutes to1 hour of collection but are stable in the preservative for up to 24 hours. The preservative tube requires the 3 mls or else the preservative may be toxic to certain bacteria. If the laboratory does not receive the culture tube or the culture tube is <3 mls, the technologist working in Urinalysis will pour off at least 0.5 mls into a capped sterile tube. If an aliquot is not poured off as stated above and if the round bottom tube has not been entered and no chemistry/ref lab tests are ordered, this tube may be used for culture. Specimens stating they were collected by "hat, bedpan, bag or urinal" will be rejected and the nurse notified that recollection is needed by the methods listed above. **Note:** Be specific as to source (mid-stream, catheterized or supra-pubic) Transport Container: All urine specimens for culture should be transported in the urine tube with preservative. Rejection Criteria: • Preserved specimen >24 hours • Unpreserved specimen: >1 hr ambient, >24 hr refrigerated • <3 mls in preservative tube. • Specimens stating they were collected by "**hat, bedpan, bag or urinal**" • Leaking samples. • Frozen samples
	WOUND, LESION or ABSCESS An aspirate or tissue sample is preferred over a swab but if not possible, collect as follows: • The wound should first be cleansed with sterile saline or alcohol to eliminate commensal, bacterial flora • Lesions, wounds and abscesses should be collected by needle aspiration whenever possible, rather than a swab. The specimen should include pus from the advancing margin of the wound. • If a swab is used, 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) • Specimens received in the lab greater than two hours after collection may be rejected (eSwabs are acceptable for 24 hours). Specimens that cannot be recollected may be accepted for culture; however, the final report should include the time delay. • Swabs are acceptable for aerobic, anaerobic and fungal cultures. AFB cultures will not be performed on a swab.

	Transport Container: eSwab (acceptable for both aerobic and anaerobic cultures) Rejection Criteria: delivered >2 hours after collection, Improper source for anaerobic isolation

Related Documents	Specimen Criteria Specimen Collection By Nursing Staff Culture - Body Fluid and Bone Marrow Body Fluid Routing Process.dc.r Fecal Specimen Protocol for Processing Blood Culture Collection Procedure for Midstream Clean Catch Urine Sample.dc.r Viral Testing Addendum.dc.r
References	1.ASM Manual of Clinical Microbiology, 12th ed. 2019. ASM Press, Washington D.C. 2. CLSI, document H56A, page 5, June 2006, CLSI M56A 2014, M54 2021. 3.Textbook of Diagnostic Microbiology,6th ed.Mahon, 2019, Elsevier,St. Louis, MO.
Appendices	N/A
Accrediting Agency	College of American Pathologist (CAP), The Joint Commission (TJC)
Standard and/or Checklist Item	COM 06000 COM 06300 MIC 13250 MIC 22675 MIC 22700 MIC 31100