

Collection of Specimen for Culture

The proper collection of a specimen for culture is possibly the most important step in the ultimate confirmation that a microorganism is responsible for the infectious disease process. A poorly collected specimen may not only result in failure to recover important microorganisms, but may also lead to incorrect or even harmful therapy if treatment is directed toward a commensal or contaminant.

The clinical specimen must be material from the actual infection site and must be collected with a minimum of contamination from adjacent tissues, organs, or secretions. Common problems encountered are:

- Salivary contamination of sputum and lower respiratory specimens
- Inadequate cleansing of the periurethral tissue and perineum prior to collecting a clean-catch urine specimen from a female
- Failure to culture the depths of a wound or draining sinus without touching the adjacent skin
- Contamination of an endometrial specimen with vaginal secretions
- Failure to reach deep abscesses with aspirating needles or cannulas
- Failure to use appropriate swab (cotton swab with wooden shaft is not acceptable)

It is of utmost importance to cleanse the area with appropriate disinfectant prior to collection of the specimen for culture.

Generally, specimens should be obtained prior to the onset of antimicrobial therapy. Some specimens may be obtained as a means of monitoring the success of antimicrobial therapy. The laboratory should be made aware that the specimen was collected during a regime of antimicrobial therapy.

Directions for Collection of Cultures

Anaerobes

Preferred specimen is tissue or aspirate using a needle and syringe under strict aseptic conditions and hand delivered to the laboratory immediately.

Swabs from abscess cavities that have been incised under aseptic conditions may be used if immediately placed into anaerobic conditions (ie, using anaerobic culture tube and swab), and sent to the laboratory immediately. **Aerobic Culturettes® are not acceptable for recovery of anaerobes.**

Blood

See "Blood Culture for the Phlebotomist - Routine and Fungal Procedures" in "Specimen Collection" in "General Information" for further information.

Body Cavity Fluid

Acceptable specimens: thoracentesis, paracentesis, pericardial, ascites, and amniotic fluids.

Aseptically collect aspirate in needle and syringe, and hand deliver to the laboratory immediately. Swabs are not recommended.

Bone Marrow

At least 0.5 mL of bone marrow is collected after aseptic preparation of biopsy site. Submit in sterile glass tubes and deliver to the laboratory immediately.

Cerebrospinal Fluid

Aseptically collect 2 mL to 5 mL of spinal fluid and place into sterile, numbered, plastic, screw-capped tubes. The highest number tube (last part of specimen obtained) is used for culture. Prompt hand delivery to the laboratory is mandatory since fastidious organisms may not survive storage or variations in temperature. **Do not refrigerate.**

Ear

Specimen is exudate or scrapings of ear canal with sterile Culturette®.

Genitalia

Urethral - collected at least 1 hour after urinating. Collect discharge onto sterile Culturette® swab. If no discharge is present, a sterile Mini-Tip CULTURETTE™ swab may be used to collect specimen from the anterior urethra.

Female genital specimens are collected on a sterile Culturette® swab via speculum. Lubricants and jellies should be avoided.

Nasopharyngeal

Insert Dacron/rayon flexible shaft swab through the nares parallel to the palate (not upwards) until resistance is encountered or the distance is equivalent to that from the ear to the nostril of the patient. Gently rotate the swab and leave in place several seconds before removing. Other acceptable specimens include: nasal swab and nasal wash/aspirate.

Sputum

In the early morning, have patient gargle with water immediately prior to obtaining specimen. Instruct patient to cough deeply and expectorate sputum into the proper container. If patient is unable to produce a sputum specimen, Respiratory Care may induce patient per physician's orders.

Stool

Collect stool specimen in a leakproof container. Specimens not transported to the lab within 1 hour must be transferred to a stool transport vial of Cary Blair Transport Media (Orange cap Para-Pak). Do Not overfill.

Throat

Two swab collection recommended.

Using a sterile Culturette® swab and tongue blade, patient is instructed to breathe deeply, and tongue is gently depressed with the tongue blade. Have patient say “ah” while sweeping back and forth across the posterior pharynx and tonsils. Avoid the lateral walls of the buccal cavity, tongue and teeth.

Urine

Specimen is most commonly collected by obtaining a midstream flow by the clean-catch technique. The clean-catch technique is described in “Urine Collection” in “Special Instructions.” Urine may be stored at ambient temperature for 30 minutes, refrigerated for [24 hours, and for [48 hours if in C & S preservative tube.

- Females

- Periurethral area and perineum are first saturated with soapy water, using a forward to back motion, followed by a rinse with sterile saline or water.

- Labia should be held apart during voiding, and the first few milliliters (mL) should be voided into a bedpan or toilet to flush out bacteria from the urethra.

- Midstream portion of urine is then collected in a sterile, wide-mouthed container that can be covered with a tightly-sealing lid.

- Males

- Cleaning the urethral meatus with a saturated wipe or soap and water, starting at meatus and washing outward, followed by rinsing well with wet sponges immediately before voiding. The first few mL should be voided and discarded. Then collect midstream urine into a sterile container.

- Catheterization - This procedure should be restricted to patients unable to produce a midstream specimen, and it should be performed aseptically to avoid inducing nosocomial infection.

- The first few mL of urine from the catheter should be discarded** to wash out any organisms that may have lodged in the catheter tip during transit through the urethra.

- Urine specimen may be obtained from an indwelling catheter using a needle and syringe after disinfection of the puncture site.

- Urine can be collected from the soft rubber connector between the catheter and the collecting tubing.

- Urine specimen should not be taken from catheter bags except in the case of neonates or young infants when special precautions have been taken.

- Foley catheter tip is unsuitable for culture because they are invariably contaminated with urethral organisms.

- Suprapubic Aspiration - This procedure is reserved almost exclusively for neonates and small children or, occasionally, for adults with clinically suspected urinary tract infections in which clean-catch specimens have failed to establish a diagnosis.

- About 10 mL of urine is collected with a needle and syringe, and hand delivered to the laboratory immediately.

- This is the only acceptable specimen for anaerobic culture of urine.

Wound

The best specimen for collecting cutaneous specimens that are pustular or vesicular is to aspirate the loculated fluid or pus from the depths of the wound with a needle and syringe after specimen site is appropriately disinfected. Hand deliver to the laboratory immediately.

If a swab must be used:

- It may be necessary either to separate wound margins with thumb and forefinger of 1 hand (wearing a sterile glove), or make a small lance in a closed abscess before extending tip of swab deeply into wound with other hand.

- Care should be taken not to touch adjacent skin margins.

- An Anaerobic Specimen Collector must be collected if specimen is being submitted for both aerobes and anaerobes.

For any sources not listed here, please call Bacteriology at extension 57311 for instructions.

References

1. CAP Clinical Laboratory Handbook for Patient Specimen and Preparation, 1983
2. Koneman EW: In Diagnostic Microbiology, 3rd Edition, JB Lippincott, 1988
3. Forbes B Sahn Weissfeld A: In Bailey & Scott's Diagnostic Microbiology, 10th Edition, 1998