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Lab Microbiology, Microbiology Specimen Collection and Transport

PURPOSE

To ensure that clinical specimens collected for bacterial evaluation are properly collected and delivered to the Laboratory. The material collected for evaluation should accurately reflect the patient's clinical situation. Therefore, care should be taken to use aseptic technique, to collect or direct the patient to collect the appropriate sample, and to label and deliver the collection container to the Laboratory in a timely manner.

POLICY

Generally, a report from the bacteriology lab can indicate only what has been found by microscopic and cultural examination. An etiologic diagnosis is thus confirmed or denied. Failure to isolate the causative organism, however, is not necessarily the fault of inadequate technical methods; it is frequently the result of faulty collecting or transport technique. The collection of specimens is too often delegated to persons who do not understand the requirements and consequences of such procedures.

Whenever possible, specimens should be obtained before antimicrobial agents have been administered. It is imperative that material be collected where the suspected organism is most likely to be found, with as little external contamination as possible.

Another factor contributing to the successful isolation of the causative agent is the stage of the disease at which the specimen is collected for culture. Enteric pathogens are present in much greater numbers during the acute stage of intestinal infections.

There are occasions when patients must participate actively in the collection of a specimen, such as a sputum sample. They should be given full instructions and cooperation should be encouraged.

Specimens should be of sufficient quantity to permit complete examination and should be placed in sterile containers that avoid hazards to the patient, nurse, ward clerk, and lab worker. Provision must be made for the prompt delivery of specimens to the lab.

It is an essential prerequisite that the lab be given sufficient clinical information to guide the microbiologist in selection of suitable media and appropriate techniques. Likewise, it is important for the clinician to appreciate the limitations and potentials of the bacteriology lab and to realize that a negative report does not necessarily invalidate the diagnosis.

Specimens for testing at the reference laboratory are collected and transported per reference laboratory requirements.

Laboratory personnel should reject specimens not obtained in a proper manner. Specimens that cannot be replaced should be gram stained and cultures interpreted as carefully as possible.

SPECIMEN

Acceptable specimen type(s) are listed in the Procedure Catalog in EPIC.

Basic Concepts for Specimen Collection:

1. Collect the specimen from the actual site of infection, avoiding contamination from adjacent tissues or secretions.
2. Collect the specimen at optimal times (for example, early morning sputum for AFB culture).
3. Collect a sufficient quantity of material. Use appropriate collection devices: sterile, leak-proof specimen containers. Use appropriate transport media (e.g. anaerobe transport vials, culturettes or Eswabs) for bacterial culture, Cary- Blair for stool culture, UTM (Universal Transport Medium) for viruses, chlamydia, mycoplasma and ureaplasma cultures.
   Note: Most bacterial collection devices contain swabs that are used for collection and transport medium at the bottom.
4. Whenever possible, collect specimens prior to administration of antimicrobials.
5. Properly label the specimen and complete the test order. The source of specimen is required on the order and on the specimen label
   ** Note: Order a sputum culture as source sputum, not mouth or lung.
   When ordering a urine culture, indicate the collection method (clean catch, cath, etc.) not bladder or kidney.
6. Minimize transport time. In general specimens should be delivered to the laboratory within 1 to 2 hours unless a transport/collection device with longer stability is used. Maintain an appropriate environment between collection of specimens and delivery to the laboratory. Refrigerate if necessary.
7. If appropriate, decontaminate the skin surface (blood culture collection). Use a chlorhexadine, or alcohol / iodine commercially available product or equivalent to prepare the site. Allow a contact time of two minutes to maximize the antiseptic effect.

SPECIFIC SPECIMEN COLLECTION GUIDELINES:

ABSCESS:

1. Decontaminate the surface with 70-95% ALC and 1-2% TOI.
2. Collect purulent material aseptically from an undrained abscess using a sterile needle and syringe. Open military abscesses with a sterile scalpel and collect the expressed material with a sterile needle and syringe.
3. The collection syringe is the preferred transport device for abscess material. Expel air from the syringe, remove the needle and cap the syringe. Transport to the lab immediately.
4. If a delay in transport to the lab is anticipated, transfer 2-5 mL of the aspirated material to an anaerobic transport vial if available or a small amount to the swabs in an Eswab or anaerobic culturette.
   Note: Routine collection swabs are a poor choice for abscesses because of the limited amount of material obtained but can be used if a transport delay is anticipated.

   Swabs are not acceptable for mycobacterial cultures.

BLOOD:

The present guideline is to collect two to three sets per episode. Single blood cultures should never be collected from adult patients; this practice results in inadequate volume of blood cultured and the results of single blood cultures are more difficult to interpret. Blood cultures should not be repeated for two to five days, because the blood does not become sterile immediately following the start of antimicrobial therapy.

It is recommended that routine blood cultures include paired aerobic/anaerobic culture bottles. When less than the recommended volume of blood is drawn for culture, the blood should be inoculated into the aerobic bottle first.

1. Swab the tops of blood culture bottles with alcohol. Do not allow alcohol to pool, as it could enter the system and kill organisms. Allow to dry while preparing the patient.
2. Cleanse the skin with 70-95% Alcohol.
3. Cleanse the skin with 1-2% Tincture of Iodine. Move in an ever increasing circular pattern, starting at the point of projected needle insertion. An alternate disinfection process is a chlorhexadine product.
4. Apply a tourniquet proximal to the point of venous entry. The venipuncture site should not be palpated following disinfection unless sterile gloves are worn.
5. Use a sterile needle and syringe or closed system blood collection tubing.
6. Collect blood.
   Adults: Fill each bottle with 5 mls. of blood for optimal collection.
   Minimum 2 mls. for each bottle

Children (ages 1-5 years):
Collect 1 ml. per year of age and divide the blood volume equally between the two bottles.

Neonates:
Collect 1 ml of blood and deliver 0.5 mls per bottle.
If 0.5 mls only is collected, inject into the aerobic bottle.

If blood bottles are transported via the tube system in the hospital, they must be place in a purple or blue carrier designed specifically for this purpose. Carriers may be obtained from phlebotomy if needed.

For AFB cultures, collect 5 mL blood into a Bactec Myco/F Lytic aerobic blood culture bottle available from the Microbiology department.

BODY FLUIDS, STERILE (EXCEPT URINE AND CEREBROSPINAL FLUID):

1. Prepare the skin as for blood cultures.
2. Collect the fluid using a sterile needle and syringe. Expel air from the syringe, remove the needle and cap the syringe.
3. Submit 10 mL of the specimen for analysis. Transport the specimen in a capped syringe or sterile container.
    a. For anaerobic organisms, use an anaerobic transport vial or Eswab to ensure the survival of anaerobic organisms.
    b. For viral isolation, send 3 mL or less fluid in viral transport medium (VTM), Universal transport media (UTM) or a sterile vial.
    c. If tuberculosis or fungal infections are suspected, larger volumes are required.
4. Immediately transport fungal specimens at 2-8°C, viral specimens at 2-8°C, and all other specimens at ambient temperature.

BONE MARROW:

1. Physicians should wear gowns, masks, and gloves during specimen collection.
2. Prepare skin as for blood cultures.
3. Drape the surrounding skin with sterile linen.
4. Aspirate the marrow percutaneously using a sterile needle and syringe.
5. Transfer 3-5 mL to a sterile tube for bacterial and fungal cultures .AFB cultures can be performed as a tissue in- house or transfer 1-5mL to a BD BACTEC Myco/F Lytic culture bottle and sent to Quest.
6. Transport specimens for to the laboratory immediately at ambient temperature.

BORDETELLA PERTUSSIS CULTURE AND PCR

Culture:

1. Allow the transport medium (Jones-Kendrick or Regan-Lowe) to equilibrate to ambient temperature.
2. Use a swab on a flexible wire handle to collect the specimen. If PCR testing is also ordered, collect two swabs.
   (Calcium alginate swabs cannot be used for PCR testing.)
3. Seat the patient comfortably. Tilt the head back.
4. If available, insert a nasal speculum. Press the swab through the nares until resistance is met due to contact with the nasopharynx.
5. Rotate the swab gently and allow the swab to maintain contact with the nasopharynx for 20-30 seconds or until coughing is induced.
6. Place the culture swab into the Jones-Kendrick or Regan-Lowe transport medium. Label the tube with the patient's name and identification number. Leave the swab embedded in the tube and transport to the lab at ambient temperature.

PCR (recommended test):
Follow reference lab's acceptable specimen criteria and transport requirements.

BRONCHIAL BRUSH/WASHING/LAVAGE:

1. This technique should be performed by a physician. Descriptions of the methodology are readily available in the literature.
2. Transport to the lab in a sterile container at 2-8°C for cultures, or frozen for molecular tests.

BUFFY COAT (VIRUS AND MOLECULAR TESTS):

1. Cleanse the skin as for blood cultures.
2. Collect blood in a 5 mL EDTA (lavender-top) tube. Use the pediatric size (approximately 3 mL) only when absolutely necessary. Do not use pediatric tubes to collect from adults or children over 2 years of age.
3. Invert tubes several times after specimen collection.
4. Remove the iodine from the skin after collection of the specimen.
5. Document an order that "Buffy Coat" preparation is requested.
6. Transport whole blood (EDTA) specimens immediately. Do not refrigerate or attempt to separate buffy coat from the whole blood sample.

BULLAE, CELLULITIS, VESICLES:

Bullae, Vesicles:

1. Cleanse the skin as for blood cultures.

2. Aspirate the fluid/purulent material using a sterile needle and syringe.
3. If an aspirate is obtained, remove needle from the syringe and cap. Transport to the lab immediately. If a delay in transport is anticipated, place in appropriate viral or bacterial collection and transport media.
4. If no material is obtained, unroof vesicle or bullous lesion and use a swab to collect cells from the base of the lesion. Place in appropriate viral media for viral studies, either UTM or VTM.

Cellulitis:

Swabs and leading-edge aspirates with or without injection of saline fail to yield etiologic agents in the majority of cases. If an unusual organism is suspected, a leading-edge (advancing margin) punch biopsy is the recommended specimen of choice.

CEREBROSPINAL FLUID:

1. Physicians should wear gowns, masks, and gloves to collect the specimen. Because an open tube is held to collect the fluid, other personnel should stand away or wear masks in order to avoid respiratory contamination.
2. Decontaminate the skin with 1-2% TOI, followed by 70-90% ALC using an increasingly outward circular movement.
3. Drape sterile linen over the skin surrounding the puncture site.
4. Insert the needle. Collect the fluid into three sterile leak-proof tubes. Collect an adequate volume of fluid as recommended below.
    a. bacterial culture > 1 mL
    b. fungal culture 8-10 mL
    c. molecular > 1 mL
    d. mycobacterial culture 8-10 mL
    e. viral culture > 2 mL
5. Cap the tubes tightly. Submit the third tube for culture to reduce the possibility of contamination due to skin flora.
6. Transport immediately. If there will be a delay in transport:
    a. Freeze specimens for molecular (PCR) analysis.
    b. For viral culture, if volume is greater than 3 mL, refrigerate and transport at once. If volume is less than 3 mL, add fluid to UTM transport media and transport at 2-8°C.
    c. Transport other bacterial cultures at ambient temperature.

CERVIX (ENDOCERVIX) FOR CULTURE:

For sexually transmitted molecular disease testing, refer to Chlamydia/Gonorrhea/Trichomonas/HPV procedures.

1. Place the patient in the lithotomy position.

2. Prepare the speculum, avoiding the use of a lubricant other than warm water.
3. Insert the speculum and visualize the cervical os.
4. Remove excess mucus with a cotton ball.
5. Insert a Dacron swab or Eswab into the cervical os, rotate gently, and allow to remain for 10 to 30 seconds.
6. Remove swab and place in bacterial transport medium.
7. Transport at ambient temperature or 2-8°C for viral cultures.
8. Vaginal cultures, in general, do not often produce meaningful results and are not recommended, except for Group B Streptococcal screen.

CHLAMYDIA/GONORRHEA/TRICHOMONAS/HPV COLLECTION for in-house molecular testing:

Chlamydia/gonorrhea, Trichomonas and HPV testing is available in-house using the Amplified Probe method. Culture for *Chlamydia trachomatis* or *Neisseria gonorrhoeae* is the method of choice in cases of treatment failure and sexual abuse and for non-genital sources. Specimens for *Chlamydia trachomatis* and *Neisseria gonorrhoeae* can be collected following the procedures below:

1. Genital: Unisex swab collection and transport kits are required for Amplified Probe tests.
    a. Females (endocervical):
        1. Place patient in the lithotomy position.
        2. Insert speculum and visualize the cervical os.
        3. Remove excess mucus from cervical os and surrounding mucosa using the large white swab provided in the kit. DISCARD THIS SWAB.
        4. Insert blue shaft specimen collection swab from kit, 1 to 1.5 cm into endocervical canal.
        5. Rotate swab for 10 to 30 seconds in endocervical canal to ensure adequate sampling.
        6. Withdraw swab carefully, avoiding any contact with vaginal mucosa.

        Note: Vaginal Amplified Probe transfer tubes are also available.)

    b. Males (urethral):
    Note: Male urethral sources are not validated for Trichomonas testing at PAR.
        1. Do not allow patient to urinate for at least one hour prior to collection.
        2. If purulent discharge is present, collect discharge directly on swab.
        3. If no discharge is present, insert smaller swab 2-4 cm into urethra. Rotate gently to ensure contact with all urethral surfaces. Leave inserted for two to three seconds. Rotate gently while withdrawingswab.

    c. Place swab into the test-specific transport tube.
    d. Break swab shaft to fit tube, if required.

e. Cap tube tightly.

f. Transport at room temperature as soon as possible after collection. The specimen is stable for 60 days at room temperature.

2. Urine:
Voided specimens may be used for GC/CT testing, collect the first part of the stream. Send to lab immediately or transport urine specimens for Amplified Probe testing in test specific transport media. See PAR individual procedures for urine collection details.

3. Thin Prep Vial specimens may also be used for GC/CT/Trichomonas/HPV testing. Bring the vial to microbiology before processing in cytology. See cytology manual for collection details.

4. For GC culture, inoculate sample as specified below.
NOTE: *Neisseria gonorrhoeae* has been found to be viable for culture for 6hrs after collection with culturette swabs and 24hrs with an Eswab.

    a. Use Eswab, calcium alginate or Dacron swabs for specimen collection.
    Cotton fibers contain fatty acids which are inhibitory to the gonococcus. Avoid swabs with wooden sticks.

    b. For. Cervical culture. Refer to Cervix (Endocervix) for Culture.

    c. For male patients, also submit a slide of urethral material for Gram stain. Gram stains of specimens from the endocervix are not as reliable.

    d. Rectal culture:

        1. Moisten a swab with sterile water and insert the swab into the anal canal just beyond the Anal sphincter.
        2. Allow 10-30 seconds for absorption of the organisms onto the swab.
        3. Withdraw swab gently and inoculate plate as described above.
        4. Stool is not an acceptable specimen for gonorrheal culture. If disseminated gonococcal infection is suspected, culture blood and suspicious sites such as petechiae or joint fluid.

5. For Chlamydia culture, place swab in Universal Transport Medium (UTM).

CUTANEOUS (FUNGUS ONLY):

1. Hair

    a. Scrape the scalp with a blunt scalpel.

    b. Place specimen in a dry sterile container.

    c. Transport at ambient temperature.

    d. The following specimens are also acceptable:

        1. Hair stubs
        2. Contents of plugged follicles
        3. Skin scales
        4. Hair plucked from the scalp with forceps

Cut hair is NOT an acceptable specimen.

2. Nails
    a. Cleanse the nail with 70-95% ALC.
    b. Remove the outermost layer by scraping with a scalpel.
    c. Place specimen in a dry, sterile container.
    d. Transport at ambient temperature.
    e. The following specimens are also acceptable:
        1. Clippings from any discolored or brittle parts of nail
        2. Deeper scrapings and debris under the edges of the nail
3. Skin
    a. Cleanse the skin with 70-95% ALC.
    b. Collect epidermal scales with a scalpel, at the active border of the lesion.
    c. Place specimen in a dry sterile container.
    d. Transport at ambient temperature.

EAR:

1. External ear cultures are processed as superficial wounds.
2. Middle ear fluid will be processed as a sterile body fluid. If the diagnosis is otitis media, the specimen of choice is middle ear fluid collected by tympanocentesis.
3. See referred procedures and transport to the lab immediately unless transport medium is used.

ENDOMETRIUM:

1. Place the patient in the lithotomy position.
2. Insert speculum and visualize the cervical os.
3. Place a narrow-lumen catheter within the cervical os.
4. Insert the tip of a culture swab or Eswab through the catheter and collect the endometrial specimen. This method prevents touching the cervical mucosa and reduces the chance for contamination.
5. Place the culture swab into bacterial transport media, Eswabs should be placed into the container provided with the swab and transport swabs in VTM or UTM at 2-8°C for viral cultures.

EYE:

1. Cleanse the skin around the eye with a mild antiseptic.
2. Purulent conjunctivitis:

a. Collect purulent material with a regular cotton swab.

b. Place the swab into transport media or Eswab and transport at ambient temperature. Specimens for fungal culture should be transported at 2-8°C in VTM or UTM.

3. Corneal infections:
    a. Swab the conjunctiva as described above.
    b. Collect multiple corneal scrapings and inoculate directly onto bacterial agar media or viral transport media.
    c. Transport at ambient temperature or 2-8°C for viral cultures.
4. Intraocular fluid:
    a. Collect fluid by surgical needle aspiration.
    b. Transport bacterial cultures at ambient temperature, viral cultures at 2-8°C, or frozen for molecular tests.

NASOPHARYNGEAL ASPIRATES/WASHINGS:

1. For aspirate, attach mucus trap to suction pump and catheter, leaving wrapper on suction catheter. Turn on suction and adjust to suggested pressure.
2. Without applying suction, insert catheter into the nose, directed posteriorly and toward the opening of the external ear. Note: Depth of insertion necessary to reach posterior pharynx is equivalent to distance between anterior nares and external opening of the ear.
3. Apply suction. Using a rotating movement, slowly withdraw the catheter.
4. Place aspirate into a suitable, dry, sterile specimen container and transport to lab immediately. If for viral culture only, place in viral transport medium.
5. For washings, suction 3-5 mL of sterile saline into a new sterile bulb.
6. Insert bulb into one nostril until nostril is occluded.
7. Instill saline into one nostril with one squeeze of the bulb and immediately release bulb to collect recoverable nasal specimen.
8. Empty bulb into suitable dry, sterile specimen container and transport to lab immediately. If for viral culture only, add 3 mL or less to viral transport medium.
9. If a delay in transport to the lab, keep at 2-8°C.

NASOPHARYNGEAL SWAB:

1. Seat the patient comfortably and tilt the head back.
2. Insert a nasal speculum.
3. Insert a nasopharyngeal swab (on a malleable wire) or Mini-tip Eswab through the speculum into the nasopharyngeal area.
4. Rotate the swab gently and allow to remain for 20-30 seconds.

5. For **bacterial cultures**: Remove the swab and place in a non-growth-promoting transport medium (such as the culturette container from which the original swab has been removed or the container provided with the Eswab).
   For **viral cultures**, place swab in VTM or UTM.
   For **direct antigen testing for Influenza A and B**, use swab in paper wrapper and insert back into paper
   Wrapper or VTM/UTM.
   For **direct antigen testing for RSV**-place swab in a suitable, dry, sterile container and add 0.75 to 3 ml sterile
   saline or VTM/UTM.
6. Transport at ambient temperature or 2-8°C for viral cultures.
7. If unusual organisms such as *Bordetella pertussis* are suspected, special culture media is necessary for collection and transport. (Refer to *Bordetella pertussis* Culture and PCR.)

NOSE:

1. Collect anterior nares culture with a swab. In small children, use a nasopharyngeal swab or Mini-tip Eswab to facilitate collection.
2. Transport at ambient temperature.
   Note: This is an inappropriate specimen for anything other than assessment of staphylococcal colonization.

PINWORM PREP, FECES:

1. Obtain a pinworm collection device from the Laboratory (inpatients) or from Regional Lab Outreach (outpatients).
2. Specimens are best obtained a few hours after the person has retired, between the hours of 9 p.m. and midnight, or in the morning immediately upon rising before bathing or bowel movement.
3. Hold the paddle by the cap and remove it from the tube.
4. Separate the buttocks and press the tacky surface against several areas of the perianal region.
5. Replace the paddle in the tube for transport to the laboratory; specimens should be refrigerated if examination is to be delayed for more than one day.
6. Collection of 3 to 6 consecutive daily specimens may be necessary to determine the presence of pinworms.

PROSTATE:

1. Cleanse the glans with soap and water.
2. Obtain prostate fluid by digital massage through the rectum.
3. Collect fluid using a sterile swab.
4. Transport at room temperature.
5. Alternatively, a urine specimen obtained immediately before and after massage may be

submitted for culture.

SKIN:

Refer to Abscess; Bullae, Cellulitis, Vesicles; and Wounds.

SPUTUM:

1. Assure patient cooperation to get an adequate specimen. PAR will determine the number of squamous epithelial cells present for specimen adequacy.
2. Instruct the patient as follows:
    a. Rinse mouth with tap water to remove food particles and debris.
    b. Have patient breathe deeply and cough several times to receive deep specimen.
    c. Patient should expectorate into dry, sterile container.
3. If patient is unable to produce sputum, induce using saline nebulization. Consult respiratory therapy for assistance.
4. Transport immediately at ambient temperature. Refrigerate if a delay of more than one hour is anticipated; freeze for molecular tests.

STOOL, FECES:

1. Collect specimen in a clean bed pan or use plastic wrap placed between the toilet seat and the bowl. Do not submit feces contaminated with urine or toilet water.
2. Transfer specimen into a clean, dry container or the appropriate preservative. Assure that the container lid is tightly affixed.
3. Transport raw stool at ambient temperature within two hours of collection. Use appropriate stool preservatives if Possible Cary-Blair for stool culture and Total-Fix for ova and parasite testing. Refrigerated specimens are accepted from outpatient locations but if a transport delay, stool must be frozen for Clostridium difficile culture.

Notes:

- Only loose or diarrheal stools are recommended for routine bacterial and C. difficile culture/ toxin/PCR.
- C. difficile testing will only be performed once every 7 days.
- Place the specimen in an appropriate stool preservative or transport media for the following tests immediately after collection if possible or immediately upon arrival in the laboratory.
  For ova and parasite, use Total-Fix.
  For routine stool culture, use Cary-Blair transport
  media.
- If a stool specimen is not available, the following are suitable alternatives for bacterial culture only:
    1. A swab of rectal mucus, or

2. A rectal swab inserted one inch into the anal canal.

THROAT:

1. Use a cotton, Dacron, Eswab or calcium alginate swab.
2. Use a tongue blade and a good light source to ensure good visualization.
3. Reach behind the uvula and swab:
    a. both tonsillar fauces, and
    b. the posterior pharynx, and
    c. any ulceration, exudate, lesion, or area of inflammation.
4. Place the swab into the transport media and transport at ambient temperature or 2-8°C for viral cultures.

TISSUES:

1. Tissue collection is an invasive procedure and requires surgery by a trained physician.
2. Collect tissue aseptically. Include material from both the center and the edge of the lesion.
3. Place the specimen in a sterile container on sterile gauze moistened with sterile nonbacteriostatic saline.
4. Transport immediately at ambient temperature, in a manner to ensure recovery of anaerobic organisms. For virology cultures, do not allow the tissue to dry and transport at 2-8°C suspended in viral transport media (UTM or VTM); transport frozen for molecular tests.
5. Do not place small bits of tissue inside swab collection devices.
6. Do not submit tissue in formalin.

URETHRA:

Refer to Chlamydia/Gonorrhea

URINE:

Please refer to detailed instructions in PAR nursing procedures for Urine Collections for voided and especially catheters.

Midstream urine is preferred for culture:
Females-separate labia and clean with towelettes.
Males-cleanse the head of the penis (retract foreskin and clean if not circumcised)
After voiding begins, collect urine "midstream" in a sterile, screwcap container.

Urines may be refrigerated 24 hours with little change in flora. Specimens in specific culture transport containers are good for 48 hours.

VAGINAL:

Vaginal cultures do not often produce meaningful results. Group B Streptococcus will be ruled out on all vaginal cultures. If gonorrhea is suspected, testing by nucleic acid detection is recommended. Refer to Chlamydia / - Gonorrhea. If yeast infection is suspected, a fungus culture should be ordered rather than a routine culture.

WOUNDS:

1. For closed wounds, refer to Abscess and Bullae, Cellulitis, Vesicles.
2. For open wounds:
    a. Clean the sinus tract opening of the wound surface mechanically, without using a germicidal agent, to remove as much of the superficial flora as possible.
    b. Attempt to culture the base or edges of the wound to avoid collecting "normal flora" organisms.
    c. The following are preferred specimens for sinus tracts:
        1. Aspiration material obtained by needle or catheterization.
        2. Curettings from the lining of the sinus tract.
    d. Specimen swabbings of sinus tracts are acceptable only if the above cannot be obtained.
    e. Swabs of sinus tracts may not accurately reflect underlying disease process.
3. Do not submit cultures of superficial lesions for anaerobic culture. Biopsy of advancing margin of wound is the preferred specimen for anaerobes, mycobacteria and fungi.

UNIVERSAL TRANSPORT MEDIA (UTM/VTM)/VIRAL CULTURES

Some samples can be submitted, without utilizing a transport media, with a reasonable expectation of virus viability. Specimens in this category include, sterile fluids such as cerebrospinal fluid, pleural fluid, blood submitted in EDTA, urine, as well as some nonsterile specimens such as nasopharyngeal washings, sputum, bronchoalveolar lavage, and feces. Whenever there is a question of stability, the specimen should be placed in a suitable virus transport media such as UTM or VTM. The laboratory will refer to specific transport requirements of the reference laboratory for each specimen submitted.

REFERENCE

Forbes, Betty, Sahm, Daniel, and Weissfeld, Alice**; Bailey and Scott's Diagnostic Microbiology Eleventh Edition,** Mosby, Inc, St. Louis, MO 2002.

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Approval Signatures

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