Microbiology Sample Collection and Transport

Collection of specimens for culture differs in two ways from collection of specimens for routine analysis:

1. Avoiding contamination by the organisms on the skin is essential if misleading results and inappropriate therapy are to be avoided.
2. Although any small volume can be cultured, the probability of obtaining a "positive" culture increases in proportion to the size of the sample obtained. Sub-optimal samples, whether from blood culture, throat swab or other samples may provide a false negative result which can result in the patient not receiving appropriate therapy.

Aerobic Culture Swab

The use of the aerobic culture swab is recommended for most body sites for which a swab of such size is a suitable method to collect the specimen.

1. Collect the specimen and replace the swab in the plastic cylinder.
2. If the collection swab has an ampule, crush it to ensure that the transport fluid comes into contact with the swab. If the collection swab has a moistened sponge, no action is needed.
3. Label with patient’s name, date of birth, body site, and date and time of collection.
4. Refrigerate specimen for transport. Deliver to lab within 48 hours.

Amniotic Fluid Collection for Microbiological Testing

1. Aspirate fluid by catheter, at cesarean section, or at amniocentesis.
2. Transfer fluid to anaerobic transport system (Port-A-Cul bottle)
3. Swabbing or aspiration of vaginal membrane is not acceptable because of vaginal contamination.
4. Transport specimen at room temperature. Deliver to lab ASAP.

Anaerobic Culture Collection and Transport

Collection
1. The sample should be collected from the active site of infection and precautions should be taken to exclude surface contamination and the aeration of the sample. Whenever possible, specimens should be pus or
fluid obtained by needle aspiration through intact skin or mucosa, which has been cleansed carefully with antiseptic.

2. In situations where material must be obtained from an open foci of infection, sinus tracts or drainage tracts, it is best to aspirate purulent material with a syringe attached a sterile plastic catheter. The assembly can be passed deeply into the sinus tract or wound after the surface opening has been mechanically cleaned with a non-germicidal agent.

3. If irrigation is required to obtain an adequate specimen, lactated Ringer’s or non-bacterostatic normal saline (sterile) may be used. Broth should not be used.

4. Patients with lung abscess or other pulmonary infections should be aspirated directly from the trachea by percutaneous transtracheal needle aspiration.

5. Swabs may be used only as a last resort and submitted in an ESwab system. As much specimen as possible must be taken up on the swab so that the tip is saturated.

6. Tissue suspected of containing anaerobes should be placed in a sterile screw-cap container. If the tissue sample is small it may be placed in an ESwab vial.

**Transport**

1. Do not transport material for culture in the needle and syringe. Needle transport is very unsafe because there is always the risk of a needle stick injury, and syringe transport poses a risk because specimen may be expelled during transport, creating a threat to personnel and environment. Transfer aspirated material to an anaerobic transport device (ESwab).

2. Place tissue samples, biopsy samples or curettings into an ESwab vial or a sterile screw cap container.

3. Refrigerate specimen for transport. Deliver to lab within 48 hours.

4. Specimens will only be cultured for anaerobes when they are transported and requested for anaerobic culture in the proper manner. Refer to the following table for acceptable and unacceptable specimens.

### Acceptable Specimens for Anaerobic Culture

<table>
<thead>
<tr>
<th>Site</th>
<th>Acceptable Specimens</th>
<th>Unacceptable Specimens</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Head and Neck</strong></td>
<td>Abscess aspirate obtained by needle and syringe after surface decontamination. Biopsy material surgically obtained. Anaerobic swab surgically obtained when aspiration is not feasible.</td>
<td>Throat or nasopharyngeal swabs. Gingival swabs. Superficial material collected with swabs.</td>
</tr>
<tr>
<td>Location</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>---------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Thoracotomy specimen</td>
<td>Aerobic swab surgically obtained.</td>
<td></td>
</tr>
<tr>
<td>Central Nervous System</td>
<td>Abscess aspirate obtained by needle and syringe.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Biopsy material surgically obtained.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Anaerobic swabs surgically obtained.</td>
<td></td>
</tr>
<tr>
<td>Abdomen</td>
<td>Peritoneal fluid obtained by needle and syringe.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Abscess aspirate obtained by needle and syringe.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bile.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Biopsy material surgically obtained.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Anaerobic swab surgically obtained.</td>
<td></td>
</tr>
<tr>
<td>Urinary Tract</td>
<td>Suprapubic aspirate.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Voided urine. Catheterized urine.</td>
<td></td>
</tr>
<tr>
<td>Female Genital Tract</td>
<td>Culdoscopy specimens.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Endometrial aspirate obtained by suction or protected collector.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Abscess aspirate obtained by needle and syringe.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Biopsy material surgically obtained.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Anaerobic swabs surgically obtained.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IUD® for <em>Actinomyces</em> species or <em>Eubacterium nodatum</em></td>
<td></td>
</tr>
<tr>
<td>Bone and Joint</td>
<td>Aspirate obtained by needle and syringe.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Biopsy material surgically obtained.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Anaerobic swab surgically obtained.</td>
<td></td>
</tr>
<tr>
<td>Soft Tissue</td>
<td>Aspirate obtained by needle and syringe.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Biopsy material surgically obtained.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aspirate from sinus tract obtained by needle and small plastic catheter.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Deep aspirate of open-wound margin obtained through decontaminated skin.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Deep aspirate of surface ulcer obtained through decontaminated skin.</td>
<td></td>
</tr>
</tbody>
</table>

**Blood Culture Collection Procedure**

1. Remove plastic bottle top from top of vial. Swab septum of blood culture bottle(s) with 70% alcohol (NO IODINE) and allow to dry.
2. Locate an appropriate vein for phlebotomy.
3. Apply Chlorascrub by placing one flat side of foam tip to proposed venipuncture site and prep the skin with a vigorous vertical then horizontal
scrub for one minute. Let air dry for two minutes. Do not blot, blow, or wipe dry.

4. The venipuncture site should not be touched unless the gloved fingers have been decontaminated in the same manner as the patient’s arm.

5. Draw the appropriate amount of blood with a syringe according to the table below. Never draw blood cultures directly from a vacutainer hub.

6. Remove the needle using a sharps container and attach a safety transfer device. Inoculate blood culture bottles using the transfer device. If 2 bottles are used, inoculate the aerobic bottle first, followed by the anaerobic bottle. If there is only enough blood for one bottle, inoculate and submit the aerobic (green) bottle.

7. Label the bottles with patient’s first name, last name, date of birth, collection date and time, and collection site. Do not cover the bar code on the bottle.

8. Transport to lab at room temperature within 24 hours.

Blood Culture Sample Requirements, Adult and Pediatrics >80 lbs

<table>
<thead>
<tr>
<th>Type</th>
<th>Cap Color</th>
<th>Bottle</th>
<th>ML</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular</td>
<td>Green</td>
<td>Aerobic</td>
<td>10.0</td>
</tr>
<tr>
<td></td>
<td>Purple</td>
<td>Anaerobic</td>
<td>10.0</td>
</tr>
<tr>
<td>Hard to get</td>
<td>Green</td>
<td>Aerobic</td>
<td>10.0</td>
</tr>
<tr>
<td>Fungal</td>
<td>Black/Yellow</td>
<td>Isolator Tube-Large</td>
<td>10.0</td>
</tr>
<tr>
<td>AFB</td>
<td>Black</td>
<td>Glass</td>
<td>5.0</td>
</tr>
</tbody>
</table>

Blood Culture Sample Requirements, Neonatal

<table>
<thead>
<tr>
<th>Type</th>
<th>Cap Color</th>
<th>Bottle</th>
<th>ML</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pediatric</td>
<td>Yellow</td>
<td>Pediatric</td>
<td>0.5</td>
</tr>
<tr>
<td>Fungal</td>
<td>Yellow</td>
<td>Small</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Blood Culture Sample Requirements, Pediatric

<table>
<thead>
<tr>
<th>Type</th>
<th>Cap Color</th>
<th>Bottle</th>
<th>ML</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pediatric</td>
<td>Yellow</td>
<td>Pediatric</td>
<td>see chart below</td>
</tr>
<tr>
<td>Fungal</td>
<td>Black/Yellow</td>
<td>Isolator Tube-Small</td>
<td>5.0</td>
</tr>
<tr>
<td>AFB</td>
<td>Black</td>
<td>Glass</td>
<td>5.0</td>
</tr>
</tbody>
</table>

Blood Culture Sample Volumes, Pediatrics <80 lbs

<table>
<thead>
<tr>
<th>Wt of Patient</th>
<th>Volume of Culture 1 ML</th>
<th>Volume of Culture 2 ML</th>
</tr>
</thead>
<tbody>
<tr>
<td>lb</td>
<td>Kg</td>
<td></td>
</tr>
<tr>
<td>≤ 2.2</td>
<td>≤ 1</td>
<td>2</td>
</tr>
<tr>
<td>2.2-4.4</td>
<td>1.1-2</td>
<td>2</td>
</tr>
<tr>
<td>4.5-27</td>
<td>2.1-12.7</td>
<td>4</td>
</tr>
<tr>
<td>28-80</td>
<td>12.8-36.3</td>
<td>10</td>
</tr>
<tr>
<td>&gt; 80</td>
<td>&gt; 36.3</td>
<td>See Adult Chart</td>
</tr>
</tbody>
</table>
Bartholin Gland
1. Disinfect skin with 2 scrubs of 70% alcohol
2. Aspirate fluid from ducts.
3. Transfer fluid to anaerobic transport system.
4. Refrigerate specimen for transport. Deliver to lab within 48 hours.

Body Fluid (Sterile) Culture Collection and Transport
This procedure applies to all specimens except CSF, urine or blood culture. These three specimen types have their own unique procedures.

1. Clean the needle puncture site with 2 scrubs of 70% alcohol
2. Obtain specimen via percutaneous needle aspiration or surgery
3. Expel any air bubbles from the syringe, and immediately inject the specimen into an anaerobic transport system OR sterile screw-cap container.
4. Refrigerate specimen for transport. Deliver to lab as soon as possible.
5. Always submit as much fluid as possible. Never submit swab dipped in fluid. Do not use a red top vacutainer for the sterile container.

Bone Marrow Culture Collection and Transport
Inoculate an aerobic blood culture bottle (green cap) 0.5-3.0 ml, if routine bacterial culture is ordered. In addition to the aerobic bottle, collect a green top tube (1-2ml) if one or more of the following tests are ordered:
   1. Fungus culture
   2. AFB culture
   3. Viral culture
   4. CMV culture
If Minimum volumes are not received for the requested tests, the ordering physician will be contacted and asked to prioritize tests ordered.

Bordetella Pertussis Testing
1. Specimens should be collected 7 to 14 days post onset of pertussis symptoms.
2. Collect two (2) Dacron tipped nasopharyngeal swabs (one from each nostril) by passing the sterile thin wire swab through the nares of the patient until resistance signifies the swab has reached the posterior wall of the pharynx. Rotate the swab axially and hold for 10 - 30 seconds, or until coughing occurs.
3. Place the swab in a sterile container or a Culturette. Do not break the ampule if a Culturette is used.
4. Complete the Viral and Chlamydia Detection & Viral and Bacterial PCR Test Request Form.
5. Transport specimen to lab at room temperature. Deliver to lab within 72 hours.

Testing for Bordetella pertussis by polymerase chain reaction (PCR), a sensitive and specific test that gives results faster than culture. Order this test as “BORDETELLA - PCR” or “BORDETELLA PERTUSSIS PCR.”

**Cerebral Spinal Fluid Collection and Transport**

**Tubes to Use when Collecting CSF**

When ordering routine CSF testing, we recommend that you do not specify which tests are to be performed on specific tubes as this may delay reporting of important CSF tests. If you do not indicate certain tests are to be performed on specific tubes, the laboratory will allocate specimens according to the table below.

**CSF Testing on Specific Tubes**

<table>
<thead>
<tr>
<th>TUBE</th>
<th>TEST GROUP</th>
<th>RATIONALE</th>
</tr>
</thead>
<tbody>
<tr>
<td># 1</td>
<td>Chemistry or</td>
<td>Chemistry tests are least likely to be affected by blood contamination during procedure, compared to Hematology (cell counts).</td>
</tr>
<tr>
<td></td>
<td>Cytology</td>
<td></td>
</tr>
<tr>
<td># 2</td>
<td>Microbiology</td>
<td>This tube is less likely to be subject to skin contamination than is tube # 1</td>
</tr>
<tr>
<td># 3 or Last</td>
<td>Hematology</td>
<td>This tube is less likely to have cell counts increased than tube #1 or #2.</td>
</tr>
<tr>
<td>Tube</td>
<td></td>
<td></td>
</tr>
<tr>
<td># 4</td>
<td>Hematology</td>
<td>This tube is least likely to have cell counts increased.</td>
</tr>
<tr>
<td>Various</td>
<td>CSF Serology</td>
<td>These tests are performed on any combination of tubes having sufficient combined volume after all other tests are completed.</td>
</tr>
<tr>
<td>tubes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Please note:**

- The Laboratory is aware that there are valid reasons for certain tests to be performed on specific specimens (e.g., contamination of tube usually used for culture) and will make every attempt to comply with specific orders for specific tubes.
- All CSF specimens should be transported to the laboratory immediately following collection to ensure accurate testing. Transport specimen at room temperature.

**CSF Cultures, Routine**

- All spinal fluids submitted for culture are processed for routine aerobic culture.
- AFB cultures are done only if at least two of the criteria below are met:
  - CSF protein is greater than 60 mg/dL
  - CSF glucose is either between 40 to 60 mg/dL or is about 50% of serum glucose
CSF cell count is greater than 5 WBCs/mm³ and CSF differential count indicates predominantly mononuclear cells.

**CSF Cultures for Immuno-compromised Patients**

Immuno-compromised patients should have CSF Cultures ordered as:

**CSF CULTURE FOR IMMUNE COMPROMISED HOST**

- These specimens will be processed for Routine, Anaerobic, AFB and Fungus Cultures even if the specimen does not meet the routine laboratory criteria for AFB culture.

**Cervix**

**Do not use lubricant during procedure.**

1. Wipe the cervix clean of vaginal secretion and mucus.
2. Rotate a sterile swab, and obtain exudate from the endocervical canal and rotate the swab.

**Special Considerations:**

- Viral and Chlamydia culture requires M4 transport media. M4 media for culture must be refrigerated for transport. Deliver to lab within 72 hours.
- Chlamydia/gonorhea DNA probe assay requires a Roche swab sample kit. Transport specimens to lab at room temperature. Refrigeration is also acceptable. Deliver to lab within 72 hours.

**Chlamydia Collection and Processing**

<table>
<thead>
<tr>
<th>Site</th>
<th>Pap Smear</th>
<th>Vag/Cervix Female</th>
<th>Urethral Male</th>
<th>Conjunctival (Eye)</th>
<th>NP Swab</th>
<th>Throat Swab</th>
<th>Rectal Swab</th>
<th>Aspirate Fluids</th>
<th>Sputum Culture</th>
<th>Urine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applicable Test</td>
<td>Chlamydia DNA</td>
<td>Chlamydia DNA</td>
<td>Chlamydia DNA</td>
<td>Culture or Chlamydia DNA</td>
<td>Culture or Chlamydia DNA</td>
<td>Culture or Chlamydia DNA</td>
<td>Culture or Chlamydia DNA</td>
<td>Aspirate Fluids</td>
<td>Sputum Culture</td>
<td>Chlamydia DNA</td>
</tr>
<tr>
<td>Acceptable Specimen</td>
<td>Thin Prep PreservCyt</td>
<td>Roche Female Swab Kit</td>
<td>Roche Male Swab Kit</td>
<td>Viral Transport Media</td>
<td>Viral Transport Media</td>
<td>Viral Transport Media</td>
<td>Viral Transport Media</td>
<td>Sterile Urine Container</td>
<td>Chlamydia DNA</td>
<td></td>
</tr>
</tbody>
</table>

- If in doubt of correct collection for any site, please collect specimen in Viral Transport Media unless it is a sexual assault/abuse case, then add Roche Sample Swab Kit.
**Clostridium Difficle Toxin Assay, Feces**

1. Collect in sterile, screw-cap cup or Carey-Blair preservative.
2. Pass liquid or soft stool directly into clean, dry container. Soft stool is defined as stool assuming shape of its container. Formed stools are inappropriate for C. difficile toxin testing and will be rejected.
3. If a patient has had a C difficile test within 7 days the test will be rejected.
4. Refrigerate specimen for transport. Deliver to lab within 72 hours.

**Endometrium**

1. Collect endometrium specimens by transcervical aspiration through a telescoping catheter.
2. Transfer entire amount to anaerobic transport system.
3. Refrigerate specimen for transport. Deliver to lab within 48 hours.

**Feces Culture Collection and Transport**

Routine exam includes check for the following:
- Salmonella
- Shigella
- Campylobacter
- Shiga toxin producing E. coli strains 1 and 2
- Aeromonas
- Plesiomonas
- Please request that Microbiology check for Yersinia or Vibrio if these organisms are suspected clinically, per physician.

Note: No more than two specimens are recommended during the acute stage of diarrheal disease since studies have shown submitting greater than two specimens provides limited additional yield.

1. Collect in sterile, screw-cap cup.
2. Do not contaminate stool with urine.
4. Specimens that will not be transported to the laboratory within 30 minutes must be transferred to a stool transport vial (Orange Cap Para-Pak C&S or Carey-Blair transport).
5. Using the collection spoon attached to the cap, add specimen until the liquid reaches the ARROW on the label. Securely close the lid and mix the specimen thoroughly.
6. Transport specimen at refrigerator temperature. Deliver to lab within 72 hours.
Rejection Criteria: Specimens from patients who have been hospitalized more than 3 days will not be tested unless the physician specifically requests specimen to be tested regardless of rejection criteria.

Fungus Cultures
Most specimens are collected in the same manner, as they would be for a bacteriological culture. The additional specimens that are used for fungal testing should be collected in the following manner.

1. Hair
   A. Pluck out hair by the roots with sterile forceps. Choose hairs that are broken and scaly. Submit the basal portion of the infected hair.
   B. Place the specimen in a sterile petri dish for processing. Transport to the lab.

2. Nails
   A. Clean with 70% alcohol
   B. With a sterile blade, scrape away and then dispose of the outer layers of the nail. Scrape bits of the inner infected nail into a sterile petri dish. Transport to the lab.

3. Skin
   A. Clean with 70% alcohol to remove surface contaminants
   B. If ringworm is present, scrape the outer portions of the red ring with a sterile scalpel or the end of a microscope slide. If there is no ring, scrape the area that looks most infected.
   C. Place the scrapings into a sterile petri dish. Transport to the lab.
   D. Submit visible material.

Genital Tract (Female) Culture Collection and Transport
- Transport all genital cultures at room temperature. DO NOT refrigerate.
- Deliver to lab within 24 hours.
- NOTE: If interested in Neisseria gonorrhea or Chlamydia, a Roche swab or urine specimen is recommended.

Vagina - Use a speculum without lubricant.
   1. Wipe away excessive amount of secretion or discharge
   2. Collect secretions from the mucosa high in the vaginal canal with swab.
Special Considerations

- For intrauterine devices, place entire device into sterile container, and submit at room temperature. Deliver to lab within 24 hours.

Herpes Simplex Virus Culture

- Send swab in viral transport M4. Refrigerate specimen for transport.

Chlamydia/GC DNA Probe

- Assay requires a Roche swab or urine specimen. Refrigerate specimen for transport

Other Sites

- Call the Microbiology laboratory at (515) 247-4450 for collection instructions for other body sites.

Genital Tract (Male) Culture Collection and Transport

- Transport all genital cultures at room temperature. DO NOT refrigerate.
- Deliver to lab within 24 hours.
- NOTE: If interested in Neisseria gonorrhea or Chlamydia, a Roche swab or urine specimen is recommended.

Urethra

1. Collect specimens at least 2 hours after the patient has urinated.
2. Insert a thin urethrogenital swab 2 to 4 cm into the endourethra, gently rotate it, leave it in place for 1 to 2 seconds, and withdraw it.

Special Considerations

Herpes Simplex Virus Culture

- Send swab in viral transport M4. Refrigerate specimen for transport.

Chlamydia/GC DNA Probe

- Assay requires a Roche swab or urine specimen. Refrigerate specimen for transport.

Other Sites

- Call the Microbiology laboratory at (515) 247-4450 for collection instructions for other body sites.

Giardia Antigen and/or Cryptosporidium Antigen, Feces

1. Collect in sterile, screw-cap cup.
2. Keep specimens cool. Do not incubate.
   - Specimens that will not be transported to the laboratory within 30 minutes must be transferred to a stool transport vial (Yellow Cap Para-Pak C&S or Carey-Blair transport).
Using the collection spoon attached to the cap, add specimen until the liquid reaches the arrow on the label. Securely close the lid and mix the specimen thoroughly.

- Transport to lab at refrigerator temperature. Deliver to lab within 1 week.

**Nasal swabs**

Anterior nose cultures are reserved for detecting staphylococcal and streptococcal carriers or for nasal lesions.

1. Insert a sterile swab into the nose until resistance is met at the level of the turbinates (approximately 1-inch into the nose).
2. Rotate the swab against the nasal mucosa.
3. Repeat the process on the other side.
4. Refrigerate specimen for transport. Deliver to lab within 48 hours.

**Nasopharyngeal Wash Collection**

1. Draw 1-2 ml of sterile, non-bacteriostatic saline (0.85% NaCl) into the barrel of a sterile, disposable syringe. Attach a soft (#8 feeding) tube to the syringe.
2. Instruct the patient not to swallow if possible. Tilt the patient’s head back (approximately 70 degree angle) and instill the saline into the nostril and pharynx, holding the second nostril closed.
3. Collect secretions by aspirating out fluid gently while withdrawing the tube. Eject into sterile specimen tube.
   
   Note: If you do not have a feeding tube, you can instill the saline with a syringe barrel or sterile rubber bulb. Then tilt the patient’s head forward, allowing the fluid to run or be blown out the nares into a sterile container.
4. Repeat the procedure with the second nostril. Be sure to use a separate collection device for each patient.
5. Seal and label the container.
6. Refrigerate specimen for transport. Deliver to lab within 48 hours.

**Occult Blood Testing, Feces**

1. Collect in sterile, screw-cap cup.
2. Keep specimens cool. Do not incubate.
3. Specimens that cannot be transported to the laboratory within 4 hours must be transferred to a OC-Auto Polymedco vial.
4. Refrigerate specimen for transport. Deliver to lab within 10 days.

**Outer ear (External meatus)**

1. Use moistened swab to remove any debris or crust from ear canal.
2. Obtain sample by firmly rotating swab in outer canal.
3. Refrigerate specimen for transport. Deliver to lab within 48 hours.

Ova & Parasite Exam, Feces

- A routine O&P exam is composed of a Giardia Antigen and Cryptosporidium Antigen.
- Giardia Antigen and Cryptosporidium Antigen can be ordered individually.
- An expanded O&P exam includes a concentrated preparation and trichrome stain. The expanded O&P exam is only recommended if the patient falls within the following risk groups:
  - A. Residence in or recent travels in a developing country.
  - B. Persistent undiagnosed diarrhea and Giardia/Cryptosporidium screen, C. difficile toxin, Stool culture, and Rotavirus in children <5 years of age are negative.
  - C. If the Giardia Cryptosporidium screen is negative and the patient remains symptomatic, the clinician may call the laboratory within seven days and a complete ova and parasite exam can be performed from the original specimen.

1. Collect in sterile, screw-cap cup.
2. Specimens that cannot be processed within 2 hours in the laboratory need to be transferred to a stool transport vial (Yellow Cap Para-Pak).
3. Using the collection spoon attached to the cap, add specimen until the liquid reaches the ARROW on the label.
4. Thoroughly mix specimen with liquid. It is recommended that to assure recovery of parasitic elements that are passed intermittently and in fluctuating numbers, three specimens should be examined.
5. No more than two to three specimens (one per day) are recommended as studies have shown limited additional yield with greater than three specimens.
6. Transport specimen at refrigerator temperature. Deliver to lab within 1 week.

Perianal Swab for Pinworm Collection and Transport

Collection Device Required: SWUBE disposable paddle, available from MCL

1. Remove paddle from plastic tube.
2. Press sticky surface against several areas of the perianal region. NOTE: Specimens are best obtained a few hours after the person has retired, (perhaps at 11 or 12 midnight) or the first thing in the morning, before a bowel movement.
3. Return paddle to the plastic tube.
4. Label appropriately.
5. Transport specimen at room temperature. Deliver to lab within 1 week.

Rotavirus Antigen, Feces

- Collect in sterile, screw-cap cup. Do not place in preservative.
• Transport to the lab at room temperature. Deliver to the lab within 1 hour.

Sinus Aspirates
• A specially trained physician or an otolaryngologist will obtain material from maxillary, frontal, or other sinuses using a syringe aspiration technique.
• Place the contents of the syringe into an anaerobic transport system or sterile screw-capped container.
• Refrigerate specimen for transport. Deliver to lab within 48 hours.

Sputum Culture Collection and Transport
• Instruct the patient to cough deeply and bring up material from within the lung.
• The best specimen is the early morning specimen that the patient produces. If sputum cultures are ordered times three, it is best to collect three early morning on three consecutive days.
• Do not have the patient expectorate saliva or post-nasal drip into the container.
• If possible, have the patient rinse mouth and gargle with water prior to sputum collection.
• Place specimen in sterile screw-cap container.
• Refrigerate specimen for transport. Deliver to lab as soon as possible.

Rejection Criteria: Sputum culture will be rejected if >25 epithelial cells per low power field are seen on the Gram Stain. Collection of a new specimen will be requested for hospitalized patients. Reference lab specimens will be cultured with a comment be added to the results of reference lab patients.

Mycobacterial Culture: The laboratory recommends collecting 3 sputum specimens for acid-fast smears and cultures in patients with clinical and chest x-ray findings compatible with tuberculosis. These three samples should be collected over an 8-24 hour period of time and should include at least one first morning specimen. Specimens should be collected in a screw cap and leak proof container with no tubing attached. Specimens must be delivered to the laboratory promptly; 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. This will decrease overgrowth with contaminating organisms likely to be present.

Throat (pharyngeal specimen)/Strep Screen
Throat cultures are contraindicated for patient with inflamed epiglottis.
1. Depress tongue gently with tongue depressor.
2. Extend sterile swab between the tonsillar pillars and behind the uvula. (Avoid touching the cheeks, tongue, uvula, or lips.)
3. Sweep the swab back and forth across the posterior pharynx, tonsillar areas, and any inflamed or ulcerated areas to obtain sample.
4. Refrigerate specimen for transport. Deliver to lab within 48 hours.
Note: Throat Cultures are screened for beta strep only. They are reported as no beta strep, Strep pyogenes (group A beta strep) or beta strep, not group A. If Candida is suspected, please order fungal culture.

**Tympanocentesis fluid—Inner ear**
- Tympanocentesis is reserved for complicated, recurrent, or chronic persistent otitis media.
- For intact eardrum, clean ear canal with soap solution, and collect fluid via syringe aspiration technique.
- For ruptured eardrum, collect fluid on flexible shaft swab via auditory speculum.
- Refrigerate specimen for transport. Deliver to lab within 48 hours.

**Upper Respiratory Tract Culture Collection and Transport**
- Upper respiratory tract specimens are to be collected on a swab unless otherwise stated.
- The swab should be sent in a sterile container or similar aerobic culture swab.
- It is important to crush the ampoule in the swab container (if present) after collecting the specimen.
- Refrigerate specimen for transport. Deliver to lab within 48 hours.

**Urine Mid-Stream or Clean-Catch Collection**
Proper collection of urine specimens is vital for accurate results. Contaminated urine submitted for culture wastes time, money and can be clinically misleading. The kit provided by MCL contains towelette, sterile screw-cap urine cup with transfer device, yellow-top conical tube, and gray-top tube.

**Mid-Stream UA: Instructions for Female Patients**
- Properly label the urine container with patient name and date of birth.
  1. Wash hands thoroughly with soap and water, and dry them.
  2. Remove towelette from foil packet.
  3. With one hand, separate folds of the urinary opening with thumb and forefinger. Keep the folds separated continuously while cleaning and until urine is voided.
  4. Clean the inside of the folds well, passing the towelette from front to back.
  5. Discard the towelette.
  6. Repeat the front to back cleaning with the two remaining towelettes, discarding each after it is used.
  7. Begin urination into the toilet, keeping the urinary folds separated. While urination continues, bring the collection jar into the urine stream and fill the jar halfway full.
  8. Screw the cap on the jar, being careful not to touch the inside of the cap or collection jar.
  9. Give the urine container to the nurse.
  10. Keep urine sample refrigerated until delivery to the laboratory.
## Mid-Stream UA: Instructions for Male Patients

- Properly label the urine container with patient name and date of birth.
  1. Wash hands thoroughly with soap and water, and dry them.
  2. Remove towelette from foil packet.
  3. Clean the head of the penis well.
  4. Begin urination into the toilet. While urination continues, bring the collection jar into the urine stream and fill the jar halfway full.
  5. Screw the cap on the jar, being careful not to touch the inside of the cap or collection jar.
  6. Give the urine container to the nurse.
  7. Keep urine sample refrigerated until delivery to the laboratory.

### Instructions for urine transfer into preservative and/or plain tubes:

1. Place cup of urine on a clean, flat surface. Container may be tipped at an angle if volume of urine is limited.
2. Peel back protective sticker on the cup’s lid to expose the rubber-covered cannula inside the vacutainer port (also referred to as an “integrated transfer device”).
3. Fill the appropriate preservative tube(s) and/or plain tube as needed.

<table>
<thead>
<tr>
<th>Sample Submission to Laboratory</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Routine Urinalysis</strong></td>
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<tr>
<td><strong>Urinalysis with reflex Culture</strong></td>
</tr>
<tr>
<td><strong>Urine Culture &amp; Sensitivity</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Urine volume ≥ 20 mls</th>
<th>Urine volume &lt; 20 mls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Send to Lab:</td>
<td>Send to Lab:</td>
</tr>
<tr>
<td>8 ml yellow-top conical tube</td>
<td>Screw-cap collection cup.</td>
</tr>
<tr>
<td>4 ml gray-top tube</td>
<td></td>
</tr>
<tr>
<td>Discard remaining urine and screw-cap collection cup.</td>
<td>Lab staff will appropriately divide sample for testing.</td>
</tr>
<tr>
<td>(Blue lid must be disposed in a designated sharps container.)</td>
<td></td>
</tr>
</tbody>
</table>

For any other urine test orders (HCG, urine drug screens, etc), please submit the screw-cap collection cup to the laboratory.

4. To fill each preservative tube, push the rubber stopper on the top of the tube into the vacutainer port. This will pierce the stopper and allow the tube to automatically fill.
5. Hold the tube in position until the flow stops.
6. Remove the tube and invert 8-10 times until contents and preservative are dissolved (shake the Culture preservative tube vigorously to mix well). If
multiple tubes are needed, fill them in this order: gray-top tube, yellow-top conical tube.

7. Label the tubes with the patient’s complete name, date and time of collection.
8. Refrigerate specimens for transport.
9. Replace the label over the port on the lid. Replace the lid on the cup. If the cup is to be retained or transported, label it with patient’s name, date and time of collection and store in the specimen refrigerator.

Note: If the cup is not to be retained, discard in an appropriate biohazard container approved for its disposal.

Viral Culture, Feces
1. Pass feces directly into a sterile, dry container.
2. Transfer to M4 viral transport media.
3. Label container with patient’s full name and date of birth.
4. Refrigerate specimen for transport. Deliver to lab within 72 hours.

White Blood Cells, Feces
1. Pass feces directly into a sterile, dry container.
2. Do not place in preservative.
3. Label container with patient’s full name and date of birth.
4. Refrigerate specimen for transport. Deliver to lab within 24 hours.

Wound (anaerobic)
See Anaerobic Culture Collection.

Wound (cellulites)
1. The site can be anesthetized, a small volume of sterile, non-bacteriostatic saline injected into the subcutaneous area at the leading edge of the cellulites, and the saline aspirated back into the syringe.
2. Remove needle, cap syringe with a male luer lok plug.
3. Label container with patient’s full name and date of birth.
4. Refrigerate specimen for transport. Deliver to lab within 48 hours.

Wounds (surface lesions)
1. Scrub the area around the wound before sampling with soap towelette.
2. Open the surface lesion and swab the advancing edge of the lesion firmly using a sterile swab.
3. Purulent exudates must be expressed onto the collection swabs.
4. Label container with patient’s full name and date of birth.
5. Refrigerate specimen for transport. Deliver to lab within 48 hours.