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| **Subject:** | Collection and Handling of Specimens for Microbiological Assay | **Origin Date:** | 5/1/1995 |
|  |  |  |  |
| **Reviewed:**  | 6/14/2021 | **Revised:**  | 3/1/99, 4/1/2002, 3/12/2014, 6/27/2016,4/11/2019,10/23/2019,6/14/2021 |
| **Regulatory References:**  | **Cross References:**  |

**Collection and Handling of Specimens for Microbiological Assay**

**General Considerations for Specimen Collection**

1. Follow standard precaution guidelines, treating all specimens as potentially hazardous. Use barrier protection, such as laboratory coat or protective eyewear, at a level appropriate to the risk of splashing or other exposure. Do not contaminate the external surface of the collection container or its accompanying paperwork.

2. Collect specimens before the administration of antimicrobial agents whenever possible.

3. Collect specimens with as little contamination as possible from indigenous microflora. Use sterile equipment and aseptic technique during invasive procedures.

4. Use appropriate collection devices. Collect an adequate amount of specimens to perform the requested tests. Contact the lab with any questions before collecting.

5. Clearly label the collection container with the patient's name, identification number, DOB, physician name, and date and time of collection. Include the specimen site when appropriate.

6. Susceptibility testing is performed on all significant isolates when appropriate. Include any special requests or clinically significant data with the original order.

7. Transport all specimens to the laboratory as soon as possible. If transport is delayed, most specimens can be refrigerated at 2° to 10°C. Refer to specific sections for exceptions.

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**ACID FAST (AFB) CULTURE**

Submission of at least three separate sputum specimens is recommended. There are very few indications for ordering an acid fast stain without accompanying culture.

Expectorated sputum: Instruct patient on how to produce specimen as distinct from saliva or nasopharyngeal specimen. Have patient rinse mouth with water before collecting sputum. Sputum specimens should be deep cough specimens, collected during the first hour the patient is awake , before brushing teeth or eating breakfast. Submit at least 5-10 ml. 3 specimens are needed to rule out Acid Fast bacilli, one specimen must be the first morning specimen and the specimens must be consecutive and at 8-24 hour intervals of each other.

Induced sputum: Use sterile hypertonic saline. Indicate that specimen is induced when ordering test.

Tissue samples: Submit 1 gm of tissue, if possible, in a sterile specimen cup.

Blood: Order as Blood Culture for AFB. Contact Microbiology for the tube type indicated for this testing.. Reference lab is ARUP.

Culturette swabs are NOT acceptable.

Storage: Store specimens refrigerated.

Acceptability: Specimens are not acceptable if they are submitted on swabs, unlabelled, improperly labeled, if quantity is not sufficient for processing or if they have not been stored properly. Store specimens at 2-8 C for up to 24 hours.

CPT CODE: 87118

**ANAEROBIC CULTURES**

The best specimen for anaerobic culture is obtained using a needle and syringe. Transfer the aspirated material to a heparinized (green top) tube for transport. If there is insufficient material to transfer, the specimen can be transported in the syringe. Remove the needle and recap the syringe. DO NOT send specimens in syringes with needles.

Specimens containing formalin are not acceptable for culture.

When a swab must be used to collect the specimen, use an anaerobic Culturette as follows:

A. Peel open anaerobic Culturette package (This is the culturette with the Gel)

B. Remove cap/swab stick and obtain specimens using aseptic technique.

C. Obtain a specimen using sterile technique. Be sure to go below the skin surface as anaerobes will be captured in areas not exposed to O2.

D. Replace cap/swab stick. SEAT CAP LIGHTLY.

Storage: Aspirated material must be transported to the laboratory immediately. Optimal recovery from these specimens depends on a transport time of less than 30 minutes. Specimens collected in anaerobic Culturettes should be stored at room temperature and transported within 30 minutes of collection.

Test information: Test includes culture for aerobic and anaerobic bacteria, and includes a Gram stain

Acceptability: Specimens are not acceptable if they are not labeled, improperly labeled or not stored properly. See storage above. . The following specimens are **not** acceptable for anaerobic culture: **vaginal or cervical specimens, voided or catheterized urine, sputum, superficial material collected with swabs, throat or nasopharyngeal swabs, fecal or rectal specimens.** Contact pathology if special circumstances exist.

CPT CODE: 87075/87070

**ARTHROPOD IDENTIFICATION**

Submission of an arthropod (suspected tick, lice, bedbug, etc) in a clean container free of any artifacts such as, but not limited to, tissues, tape, gauze, fluid etc.

Storage: Store specimens at room temperature.

Acceptability: Specimens are not acceptable if they are unlabeled or improperly labeled. Since they are considered irreplaceable specimens, testing will be performed if the practitioner will vouch for specimen integrity per policy. Obtain name of person vouching for specimen to add to patient report.

Test information: Results will include type of arthropod identified, degree of engorgement and sex if applicable. Testing the arthropod for carriage of Lyme disease is not offered.

CPT CODE: 87168

**BLOOD CULTURE**

Most cases of bacteremia are detected by using 2 or 3 sets of separately collected blood cultures. A single blood culture may miss intermittently occurring bacteremia and make it difficult to interpret the clinical significance of certain isolated organisms. More than three sets of blood cultures yield little additional information. In accordance with hospital policy, no more than 4 blood cultures collected during a 72 hour period will be processed without physician confirmation of the order by a pathologist.

# Collection Technique

**NOTE: Blood cultures may only be collected by phlebotomists specially trained in the proper technique and in the proper handling and preparation of the blood culture bottle. For this reason, patients must be referred to the outpatient laboratory at Lourdes for collection.**

A. Select a venipuncture site. You may tie the tourniquet to select the site. Because the tourniquet cannot be on for longer than 2 minutes, the tourniquet must be released during the cleansing of the site.

B. Cleanse the venipuncture site using the Chloraprep kit.

 1. Remove the Frepp from the package. Squeeze the wings to break the ampule and soak the sponge. Cleanse the site with the chlorahexidine soaked sponge for 60 seconds. Allow the site to dry completely.

C. Wipe the tops of the blood culture bottles with alcohol before using. Allow to dry.

D. Apply the tourniquet and perform venipuncture (**without repalpating the site**), using a butterfly needle assembly and an adapter or a syringe. Collect approximately 8- 10 ml of blood into each culture bottle using the marks on the side of the bottle. Both Aerobic (blue) and Anaerobic (purple) bottles should be collected but in the case of a difficult or Pediatric patient, a Pediatric (pink/glass) bottle can be collected alone. In the case of the Pediatric (pink/glass) bottle, 1-3 ml of blood should be collected. In the case where Aerobic and Anaerobic bottles are being filled directly from the puncture site, always fill the Aerobic (blue) bottle first in case the Anaerobic cannot be drawn. If additional blood work is needed, fill the appropriate tubes in the order of the draw per protocol.

\*\*NOTE: When using a syringe and transferring the blood to the culture bottle, fill the anaerobic bottle first then the aerobic bottle.

E. When the venipuncture is complete, release the tourniquet and apply pressure to the site.

F. Apply bandage if appropriate.

G. Label the bottles and transport to Microbiology. Bottles must be labeled with the patient’s full name, date, time and any pertinent information such as “Line Draw” or “Line draw, used 1st 10 cc’s of blood, checking for line sepsis”.

Storage: Immediate transport to the laboratory is necessary for optimal recovery of organisms. If transport must be delayed, store bottles at room temperature. DO NOT REFRIGERATE OR STORE AT 37 C.

Test Information: Blood cultures are routinely monitored for 5 days. Preliminary results are available after 24 hours of incubation. Results of positive blood cultures are phoned to the nursing unit or physician as soon as they are available. Blood cultures for AFB should be collected in a separate tube, contact Microbiology for information. A separate test code exists for blood cultures for AFB.

Acceptability: Specimens are not acceptable if they are not labeled, improperly labeled or not stored properly. See storage above. Specimens are also not acceptable if they are not collected per policy, the site was not prepared properly, or the volume of blood in the bottle is not adequate (either too much or too little).

CPT CODE: 87040

**BORDETELLA PERTUSSIS**/**PARAPERTUSSIS DETECTION** **by PCR** Methodology:PCR

Obtain a collection swab from the laboratory. The collection swab is Stuarts media transport. Mini tip swabs are available from the microbiology lab. Follow these instructions to obtain specimen:

A. Use the nasopharyngeal swab provided. The sterile swab is passed gently through a nostril into the

 nasopharynx. Induction of a cough increases the chances for a successful result.

B. Place swab into sheath. Replace cap tightly.

C. Fill out a laboratory blue sheet as usual or submit electronic order for Pertussis. Write in the test requested as “Pertussis PCR” when using the paper order.

D. Submit to laboratory as soon as possible. Swabs can be stored at room temperature up to 4 hours. If a delay occurs, refrigerate for up to 24 hours. Specimen may be transported in a cooler.

Acceptability: Specimens are not acceptable if they are not labeled, improperly labeled or not stored properly. See storage above.

CPT CODE: 87798

**CHLAMYDIA CULTURE**

Vials of viral/ chlamydia transport (Universal) medium can be obtained from the Send Out Department. Store vials at room temperature until inoculation. Check the expiration date listed on the vial before use. Use the swab included in the media package to collect the specimen. DO NOT use swabs with calcium alginate tips or wooden shafts. After collection of the specimen, insert the swab into the transport medium and break or cut off the swab. Replace the cap tightly enough to prevent leakage.

Conjunctiva specimens: With the thumb, pull down the lower eyelid. Hold the upper lid with the forefinger to prevent blinking. Gently rub or roll a small sterile moistened swab across the conjunctiva.

Cervical specimens: Clean the endocervix with a swab. Discard the swab or use for GC culture. Insert a swab into the endocervix and rotate with sufficient force to obtain epithelial cells.

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

For specimen collection from other sources, obtain a culturette swab, collect material from the area and place in transport media.

Storage: Store refrigerated for up to 24 hours.

Acceptability: Specimens are not acceptable if they are not labeled, improperly labeled or not stored properly. See storage above.

Test Information: Most common sites are cervical, urethral and conjunctiva. Other sources may also be tested.

Test Performed by: ARUP Labs

CPT CODE: 87110

**CHLAMYDIA PROBE** Methodology: Amplified Nucleic Acid Probe (NAAT)

Obtain specimen collection kits from the Microbiology Department. Specify whether kits for endocervial/urethral collections OR Urine collections are needed. Store collection kits at room temperature until the expiration date.

EndoCervical: Use Unisex collection kit (purple box). Remove excess mucus from cervical os and surrounding mucosa using the **white cleaning swab**. **Discard this swab**. Insert the **BLUE COLLECTION** **SWAB** from the collection kit 1 to 1.5 cm into the endocervical canal. Rotate swab for 30 seconds in endocervical canal to ensure adequate sampling. Withdraw swab carefully, avoid any contact with vaginal mucosa. Insert blue swab into the transport tube. Snap off shaft at score line. Cap tube securely.

Urethral: Use Unisex collection kit (purple box). Patient should not have urinated for at least 1 hour prior to sampling. Insert **BLUE COLLECTION SWAB** 2 to 4 cm into urethra. Rotate to ensure contact with all urethral surfaces. Leave inserted for 2 to 3 seconds. Withdraw swab. Insert blue swab into the transport tube. Snap off shaft at score line. Cap tube securely.

Urine Sample: Have patient void directly into a sterile urine collection cup. NOTE: The first 10-20 mls of urine is the best specimen, the patient does not have to perform the clean catch method. This specimen can be submitted directly to the laboratory within 24 hours of collection. If a delay in delivery to the laboratory is anticipated, Urine transport kits are available from Microbiology (yellow box). The transport tube can be prepared by adding enough urine to fill the tube between the 2 black lines (window area) of the tube.

Liquid Pap Vials (Thin Prep): Collect and inoculate the Thin Prep Vial per protocol. Submit the vial without further manipulation.

Storage: Unisex swab collections can be stored for up to 60 days at room temperature or refrigerated

 Urine transport tubes can be stored for up to 30 days at room temperature or refrigerated

 LPT transport tubes can be stored for up to 30 days at room temperature or refrigerated

Acceptability: Specimens are not acceptable if they are not labeled, improperly labeled or not stored properly. See storage above. Specimens are not acceptable if they are received with the **WHITE CLEANING SWAB.**  Specimens **MUST** be collected with the **BLUE COLLECTION SWAB**.

Test information: Do not use this methodology for cases with medicolegal implications, such as abuse or assault. Chlamydia culture is recommended in those cases. Probe testing is only FDA approved for the following sites: Urethral, cervical, urine and Liquid Pap vials, conjunctival and rectal. If other sources are needed, please collect a chlamydia culture.

CPT CODE: 87491

**CLOSTRIDIUM DIFFICILE TOXIN ASSAY** Methodology: EIA

 Stools specimens should be collected during bowel movement in a clean, wide-mouthed container with a tight fitting lid (containers are available through Central Service or the lab office). A collection of at least 5 ml of liquid stool is the preferred specimen. Submit at least 1 to 2 gm of semiformed specimens

Storage: Specimen is stable up to 48 hours if refrigerated. Specimens may be stored frozen for up to 7 days.

Acceptability: Specimens are not acceptable if they are not labeled, improperly labeled or not stored properly. See storage above. . Specimens are unsatisfactory if: a) The stool contains urine, water, toilet paper or soil. b) The stool was collected within two weeks after barium, bismuth, or oily laxatives. c) A fecal swab is submitted. d) Formed specimens are not acceptable for testing and e) Patients who have tested positive within the last 14 days or negative within the last 7 days will not be repeated. Unacceptable specimens will not be tested.

Test information: Test detects presence of enterotoxin (toxin A &B) as well as GDH antigen produced by the organism. Results indicated the presence of organism (positive GDH) and absence of toxin (Negative toxin) are reported as ‘Indeterminate” and will automatically order a Cdiff PCR test. Interpret results with caution in patients under 2 years of age, as positive results do not necessarily correlate with disease. Testing is performed Mon-Fri at 11am and 7pm and on Saturday at 11am. STAT requests are for inpatients with liquid stools and to diagnose potential life threatening CDiff. A phone call to microbiology X2079 is required.

CPT CODE: 87324, 87449

**CRYPTOCOCCAL ANTIGEN, CSF** **OR SERUM** Methodology: Latex Agglutination

CSF (cerebrospinal fluid) should be collected aseptically into sterile, leakproof tubes, usually via lumbar puncture. Three tubes are generally required for microbiology, chemistry and hematology testing. The second tube drawn will generally go to microbiology, and the last tube drawn will generally go to hematology. NOTE: DO NOT USE TUBE 1 FOR MICROBIOLOGY. ALWAYS USE TUBE 2. Serum should be drawn in a red or marble top tube. Submit to microbiology as soon as possible.

Storage: CSF fluid should be transported immediately. Notify microbiology when dropping off a CSF, as immediate processing of the specimen is required. If transport is delayed, hold CSF specimens at room temperature or incubate at 37C unless they are to be cultured for viruses. Serum specimens are acceptable for up to 7 days refrigerated.

Acceptability: Specimens are not acceptable if they are not labeled, improperly labeled or not stored properly. See storage above.

Test Information: This test will be performed when an India Ink prep is requested.

CPT CODE: 87327

**ENVIRONMENTAL CULTURE**

Submit at least 1 ml water collected in a sterile screw capped tube. Alternatively, Culturette swabs of the surface to be cultured may be submitted or the instrument itself can be submitted. Before submitting environmental cultures, **infection control must be made aware of the problem and must give approval for testing.**

Storage: Transport to laboratory as soon as possible. Specimens are acceptable up to 4 hours at room temperature. Specimens can be refrigerated for up to 24 hours if transport is delayed.

Acceptability: Specimens are not acceptable if they are not labeled, improperly labeled or not stored properly. See storage above.

CPT CODE: 87070

**FLUID CULTURE**

CSF (cerebrospinal fluid) should be collected aseptically into sterile, leakproof tubes, usually via lumbar puncture. Three tubes are generally required for microbiology, chemistry and hematology testing. The second tube drawn will generally go to microbiology, and the last tube drawn will generally go to hematology. *Note: Always send tube 2 for microbiology assay.*

**Other fluid specimens:** may be collected and transported in a sterile container. Transfer a portion of the specimen to a heparinized (green top) tube if clotting is likely. Smaller quantities of fluid specimens may be obtained using a needle and syringe. Transfer the aspirated material to a heparinized (green top) tube for transport. If there is insufficient material to transfer, the specimen can be transported in the syringe. Remove the needle and recap the syringe. DO NOT send specimens in syringes with needles.

Storage: CSF fluid should be transported immediately. Notify microbiology when dropping off a CSF, as immediate processing of the specimen is required. If transport is delayed, hold CSF specimens at room temperature or incubate at 37C unless they are to be cultured for viruses.

Other fluids should be refrigerated and transported as soon as possible. Prompt transport is imperative if anaerobes are suspected. Specimens must be submitted with 24 hours of collection.

Acceptability: Specimens are not acceptable if they are not labeled, improperly labeled or not stored properly. See storage above.

Test information: Test includes a Gram stain.

CPT CODE: 87070

**FUNGUS CULTURE**

Superficial or Cutaneous Mycoses: Scales from active borders of the lesion are scraped with a scalpel and placed between two glass slides which are taped together. Larger quantities of skin scrapings, portions of hair follicles, hair shafts, or infected nails may be placed in a sterile container for transport. A swab of the affected area may be taken if no other specimen is available.

Systemic Mycoses: Collect respiratory, tissue, urine, CSF, or blood specimens in accordance with the instructions for bacteriological culture.

Storage: Superficial specimens may be stored at room temperature. Store other specimens in accordance with the instructions for bacteriological culture. Cultures for fungal analysis should not be refrigerated.

Acceptability: Specimens are not acceptable if they are not labeled, improperly labeled or not stored properly. See storage above.

Test information: Test includes a KOH prep of skin, hair and nail specimens, when quantities are sufficient.

When submitting Skin, Hair, or Nails order a Culture Fungus Skin/Hair/Nails instead of Culture Fungus.

CPT CODE: 87102 or 87101

**GASTROINTESTINAL PANEL (GIPCR)** Methodology: Amplified Nucleic Acid Probe (NAAT)

Stool specimens are to be collected and submitted to the lab as soon as possible after collection. Stool samples are to be free of urine, barium or any other artifact or chemical. Submit a minimum of 5g of formed stool (size of a walnut) or 5 ml of liquid specimen.

Storage: Stool specimens should be submitted as soon as possible. Specimens can be refrigerated for up to 24 hours if transport to the laboratory is delayed. Once submitted, the specimen will be placed in a preservative. Once in the preservative they are acceptable for testing for 4 days if stored either at room temperature or refrigerated.

Acceptability: Specimens are not acceptable if they are not labeled, improperly labeled or not stored properly. See storage above.

Test Information: This panel includes the following targets: Camplyobacter, Cdiff Toxin A/B, Plesiomonas, Salmonella, Vibrio, Yersinia enterocolitica, Enteroaggregative Ecoli, Enteropathogenic Ecoli, Enterotoxigenic, Ecoli, Shiga like producing Ecoli, Shigella, Cryptosporidium, Cycolspora, Entamoeba histolytica, Giardia lamblia, ADenovirus, AStrovirus, Norovirus, Rotavirus, Sapovirus

CPT CODE: 87507

**GC (*Neisseria gonorrhoeae)* PROBE** Methodology: Amplified Nucleic acid probe (NAAT)

Obtain specimen collection kits from the Microbiology Department. Specify whether kits for endocervial/urethral collections OR Urine collections are needed. Store collection kits at room temperature until the expiration date.

EndoCervical: Use Unisex collection kit (purple box). Remove excess mucus from cervical os and surrounding mucosa using the **white cleaning swab**. **Discard this swab**. Insert the **BLUE COLLECTION** **SWAB** from the collection kit 1 to 1.5 cm into the endocervical canal. Rotate swab for 30 seconds in endocervical canal to ensure adequate sampling. Withdraw swab carefully, avoid any contact with vaginal mucosa. Insert blue swab into the transport tube. Snap off shaft at score line. Cap tube securely.

Urethral: Use Unisex collection kit (purple box). Patients should not have urinated for at least 1 hour prior to sampling. Insert **BLUE COLLECTION SWAB** 2 to 4 cm into urethra. Rotate to ensure contact with all urethral surfaces. Leave inserted for 2 to 3 seconds. Withdraw swab. Insert blue swab into the transport tube. Snap off shaft at score line. Cap tube securely.

Urine Sample: Have patient void directly into a sterile urine collection cup. NOTE: The first 10-20 mls of urine is the best specimen, the patient does not have to perform the clean catch method. This specimen can be submitted directly to the laboratory within 24 hours of collection. If a delay in delivery to the laboratory is anticipated, Urine transport kits are available from Microbiology (yellow box). The transport tube can be prepared by adding enough urine to fill the tube between the 2 black lines (window area) of the tube.

Liquid Pap Vials (Thin Prep): Collect and inoculate the Thin Prep Vial per protocol. Submit the vial without further manipulation.

Storage: Unisex swab collections can be stored for up to 60 days at room temperature or refrigerated

 Urine transport tubes can be stored for up to 30 days are room temperature or refrigerated

 LPT transport tubes can be stored for up to 30 days at room temperature or refrigerated

Acceptability: Specimens are not acceptable if they are not labeled, improperly labeled or not stored properly. See storage above. Specimens are not acceptable if they are received with the **WHITE CLEANING SWAB.**  Specimens **MUST** be collected with the **BLUE COLLECTION SWAB**.

Test information: Do not use this methodology for cases with medicolegal implications, such as abuse or assault. Chlamydia culture is recommended in those cases. Probe testing is only FDA approved for the following sites: Urethral, cervical, urine and Liquid Pap vial, conjunctival or rectal. If other sources are needed, please collect a GC culture.

CPT CODE: 87591

**GC (*Neisseria gonorrhoeae)* CULTURE**

The most common sites for *Neisseria gonorrhoeae* infection include vagina, cervix, urethra, rectum, throat, and conjunctiva. Collect specimen using an aerobic Culturette swab. Direct inoculation of the specimen onto prewarmed modified Thayer-Martin medium is required. Media is available from the laboratory and should be refrigerated until use. This medium expires quickly; keep only very limited supplies on hand and check the expiration date before use.

Storage: Insert the carbon dioxide tablet in the circular receptacle within the Thayer-Martin plate. Place the plate into the plastic transport bag and seal. Incubate at 35 to 37C, if possible. Otherwise, leave at room temperature and transport within 1 hour to the laboratory. DO NOT refrigerate inoculated media.

Acceptability: Specimens are not acceptable if they are not labeled, improperly labeled or not stored properly. See storage above.

Test information: If a smear for GC is desired, collect an additional swab and request a Gram stain. See specimen collection information for GC probe if media storage or specimen transport are a problem.

CPT CODE: 87081

**GENITAL CULTURE**

Collect vaginal, cervical, or urethral specimens using an aerobic Culturette swab. Whenever appropriate, please state pathogens you are looking for.

Storage: Swabs may be stored at room temperature for up to 4 hours. *Neisseria gonorrhoeae* is especially sensitive to refrigeration, so alternate testing such as nucleic acid probe, is recommended if transport is delayed. Specimens may be refrigerated for up to 24 hours if determination of *N. gonorrhoeae* is not needed.

Acceptability: Specimens are not acceptable if they are not labeled, improperly labeled or not stored properly. See storage above.

Test information: Test includes Gram stain with Bacterial Vaginosis (BV score).

CPT CODE: 87070

**GRAM SMEAR**

Obtain a specimen on routine Culturette swab. A prepared smear on a glass slide is also acceptable. Do not use fixative on the slide. Be sure to label the slide with the patient's name and transport in a container which will protect the smear from abrasion and contamination.

Storage: Store at room temperature. Specimens are stable for 72 hours if culture is not needed. If culture is needed, refer to storage requirements for each bacterial culture.

Acceptability: Specimens are not acceptable if they are not labeled, improperly labeled or not stored properly. See storage above.

Test information: Many microbiological cultures include a Gram smear as part of the test battery. Please check test information to determine if a separate Gram smear needs to be ordered.

CPT CODE: 87205

**GROUP A STREP CULTURE**

Pharyngeal specimens are collected by having the patient open his or her mouth widely, depressing the tongue to improve visibility, and inserting a Culturette swab so that the tip makes contact with exudative, inflamed regions of the posterior pharynx and the tonsils. Replace swab into culturette tube before transporting.

Storage: Store at room temperature for up to 4 hours or refrigerated for up to 24 hours.

Acceptability: Specimens are not acceptable if they are not labeled, improperly labeled or not stored properly. See storage above.

Test information: Specimen screened for Group A streptococci only and requires approximately 24 hours of incubation. Request a throat culture if other causes of pharyngitis are being considered.

CPT CODE: 87081

**GROUP A STREP, RAPID** Methodology: EIA

Pharyngeal specimens are collected by having the patient open his or her mouth widely, depressing the tongue to improve visibility, and inserting a Culturette swab so that the tip makes contact with exudative, inflamed regions of the posterior pharynx and the tonsils. Replace swab into culturette tube before transporting. NOTE: Culturette swabs containing gel (like the blue capped Amies transport swab) or charcoal are not acceptable for testing as the gel/charcoal can cause false negative results.

Storage: Store at room temperature for up to 4 hours or refrigerated for up to 24 hours.

Acceptability: Specimens are not acceptable if they are not labeled, improperly labeled or not stored properly or received on a swab with gel or charcoal. Gel or charcoal swabs may alter results. See storage above.

Test Information: Results are available within 20 minutes of receipt to laboratory. All rapid streps include a backup culture for Group A Streptococcus and if the Rapid Strep is negative but the backup culture is positive, the provider will be notified.

CPT CODE 87430

**GROUP B STREP DETECTION** Method: Culture and Amplified DNA Probe

Collect vaginal, rectal or combination vaginal/rectal specimens using a Culturette swab. Place swab into culturette tube before transporting.

Storage: Store at room temperature for up to 4 hours or refrigerated for up to 24 hours.

Acceptability: Specimens are not acceptable if they are not labeled, improperly labeled or not stored properly. See storage above.

Test information: Specimen screened for Group B streptococci only.

CPT CODE: 87653

**HERPES CULTURE**

Obtain Viral/Chlamydia (Universal) transport medium from the Microbiology or Send Out Department.

Cervical: Swab the endocervix as well as the exocervix with sufficient force to obtain epithelial cells. Utilize an additional swab to perform a "vulvar sweep". Break swab tip(s) off into transport medium.

Urethral: Insert swab at least 2 cm into urethral orifice. Rotate gently to obtain epithelial cells. Break swab tip(s) off into transport medium.

Cutaneous lesion: If present, wash vesicle with sterile saline and aspirate fluid with a tuberculin syringe. If vesicle is absent, vigorously swab base of lesion. Break swab tip(s) off into transport medium.

Storage: Refrigerate if transport is delayed for up to 24 hours

Acceptability: Specimens are not acceptable if they are not labeled, improperly labeled or not stored properly. See storage above.

Test Performed by: ARUP Labs

CPT CODE: 87253

**HUMAN PAPILLOMA VIRUS EVALUATION** Methodology: Amplified DNA Probe

Collect an endocervical specimen as for pap smear determination using the Thin PrepR vial. Specimens from other sources or from male patients are not acceptable for testing by this method. Please refer to the sendout department for information on testing for these circumstances.

Storage: Samples may be held up to 30 days at room temperature. Once placed in the LPT transport tube the specimen is acceptable for up to 30 days at room temperature or refrigerated.

Acceptability: Specimens are not acceptable if they are not labeled, improperly labeled or not stored properly. See storage above.

CPT CODE: 87621

**INDIA INK PREP**

See Cryptococcal Antigen testing.

**INFLUENZA A and B SCREEN** Methodology: PCR

Obtain nasopharyngeal swab per protocol. Transport to the Microbiology department. If transport is delayed, M4, UTM, or saline can be used to preserve the specimen.

Storage: Nasopharyngeal swabs in the culturette are stable for 2 hours at room temperature. Swabs in transport media may be refrigerated if transport is delayed for up to 24 hours.

Acceptability: Specimens are not acceptable if they are not labeled, improperly labeled or not stored properly. See storage above.

Test information: Test detects and differentiates both Influenza type A and type B.

CPT CODE: 87502

**KOH PREP**

Superficial or Cutaneous Mycoses: Scales from active borders of the lesion are scraped with a scalpel and placed between two glass slides which are taped together. Larger quantities of skin scrapings, portions of hair follicles, hair shafts, or infected nails may be placed in a sterile container for transport. A swab of the affected area may be taken if no other specimen is available.

Storage: Store at room temperature or refrigerate. Specimen stable for 72 hours.

Acceptability: Specimens are not acceptable if they are not labeled, improperly labeled or not stored properly. See storage above.

Test Information: Included with Culture is specimen quantity is sufficient.

CPT CODE: 87220

**LEGIONELLA CULTURE**

Expectorated sputum: Instruct patient on how to produce specimens as distinct from saliva or nasopharyngeal specimen. Have patient rinse mouth with water before collecting sputum. Sputum specimens should be deep cough specimens, collected during the first hour the patient is awake , before brushing teeth or eating breakfast. Submit at least 5-10 ml.

Induced sputum: Use sterile hypertonic saline. Indicate that specimen is induced when ordering test.

Tissue samples: Submit 1 gm of tissue, if possible, in a sterile specimen cup.

Storage: Store specimens refrigerated for up to 24 hours

Acceptability: Specimens are not acceptable if they are not labeled, improperly labeled or not stored properly. See storage above.

CPT CODE: 87070

**LEGIONELLA URINARY ANTIGEN**

See specimen collection instructions for urine culture. Do not collect urine in a collection kit containing preservatives (gray top tube).

Storage: Refrigerate specimen if transport is delayed for up to 24 hours

Acceptability: Specimens are not acceptable if they are not labeled, improperly labeled or not stored properly. See storage above. Specimens submitted in preservatives are not satisfactory for testing.

Test method: EIA

CPT CODE: 87449

**MALARIA PREP**

Draw 1 EDTA purple top tube AND collect 4 fingerstick blood film smear slides (blood film smeared like that of a hematology differential.)

Storage: Transport to lab as soon as possible at room temperature. DO NOT REFRIGERATE. Specimens that have not been received in the lab within 4 hours will be rejected.

Acceptability: Specimens are not acceptable if they are not labeled, improperly labeled or not stored properly. See storage above.

Test Information: Slide will be reviewed for malaria as well as other blood parasites such as Babesia, microfalaria, anaplasma, Ehrlichia, etc.

Test method: Microscopy

CPT CODE: 87207

**MENINGOENCEPHALITIS MOLECULAR PANEL** Methodology: PCR

CSF (cerebrospinal fluid) should be collected aseptically into sterile, leakproof tubes, usually via lumbar puncture. Three tubes are generally required for microbiology, chemistry and hematology testing. The second tube drawn will generally go to microbiology, and the last tube drawn will generally go to hematology. NOTE: DO NOT USE TUBE 1 FOR MICROBIOLOGY. ALWAYS USE TUBE 2.  Submit to microbiology as soon as possible. 0.2ml is the minimum amount of sample needed for testing.

Storage: CSF fluid should be transported immediately. Notify microbiology when dropping off a CSF, as immediate processing of the specimen is required. If transport is delayed, hold CSF specimens at room temperature until delivery. Once in the lab, samples should be tested within 1 day if stored at room temperature or up to 7 days if stored refrigerated.

Acceptability: Specimens are not acceptable if they are not labeled, improperly labeled or not stored properly. See storage above.

Test Information: This test includes the following targets: Ecoli K1, Haemophilus influenzae, Listeria monocytogenes, Neisseria meningitidis, Streptococcus agalactiae, Streptococcus pneumoniae, CMV, Enterovirus, HSV 1 and 2, HHV 6, Human parechovirus, VZV, Cryptococcus neoformans/gattii

CPT CODE: 87483

**MRSA SCREEN—SEE STAPH SCREEN**

**MYCOPLASMA CULTURE, GENITAL** *(Mycoplasma hominis/ Ureaplasma urealyticum)*

Obtain mycoplasma transport medium (Universal transport) from the Send Out laboratory. Store transport media at room temperature until use.

Collect cervical, vaginal or urethral swabs. Do not use swabs with wooden shafts. Break off swab in transport vial and close top securely.

Storage: Refrigerate until transport for up to 24 hours.

Acceptability: Specimens are not acceptable if they are not labeled, improperly labeled or not stored properly. See storage above.

CPT CODE: 87109/Test performed at ARUP Labs

**OVA & PARASITE EXAM**

 Stool specimens should be collected during bowel movement in a clean, wide-mouthed container with a tight fitting lid (containers are available through Central Service or the lab office). A collection of at least 5 ml of liquid stool is the preferred specimen. Submit at least 1 to 2 gm of formed or semiformed specimens. The collection of at least 3 specimens over a period of days is recommended to rule out a diagnosis of intestinal parasitic infection. Ticks or other arthropods should be collected whole and intact, if possible, and submitted in a clean, dry screw-capped container.

Storage: Delivery of the specimen to the laboratory within 2 hours is required for optimal analysis of many intestinal parasites. If transport is delayed, the specimen may be refrigerated for up to 24 hours.

Acceptability: Specimens are not acceptable if they are not labeled, improperly labeled or not stored properly. See storage above. Specimens are unsatisfactory if: a) The stool contains urine, water, toilet paper or soil. b) The stool was collected within two weeks after barium, bismuth, antibiotics or oily laxatives. c) A fecal swab is submitted.

Test Information: The most common parasites found in the Northeastern region of the United States are *Giardia lamblia* and Cryptosporidium. Cryptosporidium analysis is not performed with routine Ova and Parasite evaluation and will need to be ordered specifically. Circumstances in which complete O&P testing are needed must accompany the order. **Please include travel history or other circumstance on the order.** If this information is not provided, the Microbiology Department will cancel the testing and perform the GI PCR molecular panel. Canceled specimens will be preserved and held for at least 7 days. NOTE: If the patient passes material resembling worms, please instruct the patient to submit the suspect items along with the stool sample.

CPT CODE: 87177

**PINWORM EXAM**

Obtain pinworm collection kit from microbiology laboratory. Collect specimen in the early morning, before the patient has arisen. Unscrew cap to remove paddle. Press sticky side of clear paddle on the anal opening. Return paddle to container and replace cap firmly.

Storage: Store at room temperature for up to 3 days. May be transported in cooler.

Acceptability: Specimens are not acceptable if they are not labeled, improperly labeled or not stored properly. See storage above. If scotch tape is to be used, it must be CLEAR tape and not frosted. Microscopy is limited by frosted tape.

CPT CODE: 87172

**RESPIRATORY CULTURE**

Expectorated sputum: Instruct patient on how to produce specimens as distinct from saliva or nasopharyngeal specimen. Have the patient rinse mouth with water before collecting sputum. Sputum specimens should be deep cough specimens, collected during the first hour the patient is awake , before brushing teeth or eating breakfast. Submit at least 5-10 ml.

Bronchoscopy:Submit at least 5-10 ml in a sterile container.

Induced sputum: Use sterile hypertonic saline. Indicate that the specimen is induced when ordering the test.

Tissue samples: Submit 1 gm of tissue, if possible, in a sterile specimen cup.

Storage: Store specimens refrigerated for up to 24 hours.

Acceptability: Specimens are not acceptable if they are not labeled, improperly labeled or not stored properly. See storage above.

Test information: Test includes Gram stain.

CPT CODE: 87070

**ROUTINE CULTURE AND GRAM STAIN**

Sterile Aerobic Culturette collection technique: Store sterile Culturettes at room temperature and check expiration date before use. Remove culturette from package. Remove cap/swab from tube. Obtain specimen from the most purulent site, being careful to avoid contamination with indigenous microflora whenever possible. Return cap/swab to tube and transport. Label the swab with patient identification and site of collection.

Storage: Store at room temperature for up to 4 hours or refrigerated for up to 24 hours.

Acceptability: Specimens are not acceptable if they are not labeled, improperly labeled or not stored properly. See storage above.

 Test Information: Use this test code ONLY for culturette collections. If submitting a tissue or fluid, order as Tissue Culture and Fluid Culture, respectively. Includes a gram stain for most body sites.

CPT CODE: 87070

**ROTAVIRUS ANTIGEN DETECTION** Methodology: PCR

See Gastrointestinal Molecular Panel

**RSV ANTIGEN SCREEN** Methodology: PCR

Obtain nasopharyngeal swab per protocol. Transport to the Microbiology department. If transport is delayed, M4 or UTM can be used to preserve the specimen.

Storage: Nasopharyngeal swabs are stable for 2 hours at room temperature. Swabs in transport media may be refrigerated if transport is delayed for up to 24 hours.

Acceptability: Specimens are not acceptable if they are not labeled, improperly labeled or not stored properly. See storage above.

CPT CODE: 87801

**SARS CoV-2 (COVID-19)** Methodology: NAAT

Obtain nasopharyngeal or throat swab per protocol. Transport to the Microbiology department. Specimens for rapid testing must be dry swabs (swab placed into wrapper, no transport media). Swabs for routine screening are to be collected into M4, M5, UTM or saline tubes.

Storage: Dry swabs are acceptable for 1 hour only stored at room temperature prior to testing. Specimens for routine testing are to be tested within 1 day if stored at room temperature or up to 6 days if refrigerated.

Acceptability: Specimens are not acceptable if they are not labeled, improperly labeled or not stored properly. See storage above.

CPT CODE: 87635 or U0004

**STAPH (MRSA) SCREEN**

Sterile Aerobic Culturette collection technique: Store sterile Culturettes at room temperature and check expiration date before use. Remove Culturette from package. Remove cap/swab from tube. Obtain specimen from the area to be screened, being careful to avoid contamination with indigenous microflora whenever possible. Sites most often screened are axilla, anterior nares, groin, and any site previously positive for *S. aureus*. Collect only a single swab for each site, swabbing both the left and right sides with the same swab, i.e. left and right axilla, left and right groin, left and right nares. Collect nasal swab by inserting a swab about 1 inch into the nostril, turning it several times and withdrawing. Return cap/swab to tube. Label the swab with patient identification and site of collection.

Storage: Store specimens at room temperature for up to 4 hours or refrigerated for up to 24 hours

Acceptability: Specimens are not acceptable if they are not labeled, improperly labeled or not stored properly. See storage above.

Test information: Test screens for methicillin-resistant or susceptible *S. aureus*. Since this testing is done for cases of inpatient isolation, outpatient orders for staph screening will be performed as a Routine Culture.

Contact Infection Control with any patient isolation issues.

CPT CODE: 87081

**STREPTOCOCCUS PNEUMONIAE URINE ANTIGEN**

See specimen collection instructions for urine culture. Do not collect in urine culture collection kit containing preservatives (gray top tube).

Storage: Refrigerate specimen if transport is delayed for up to 24 hours

Acceptability: Specimens are not acceptable if they are not labeled, improperly labeled or not stored properly. See storage above. Specimens submitted in preservatives are not satisfactory for testing.

Test method: EIA

CPT CODE: 87449

**STOOL CULTURE**

See Gastrointestinal Molecular panel

**THROAT CULTURE**

Pharyngeal specimens are collected by having the patient open his or her mouth widely, depressing the tongue to improve visibility, and inserting a Culturette swab so that the tip makes contact with exudative, inflamed regions of the posterior pharynx and tonsils.

Storage: Store at room temperature for up to 4 hours or if transport is delayed, refrigerated for up to 24 hours.

Acceptability: Specimens are not acceptable if they are not labeled, improperly labeled or not stored properly. See storage above

Test information: A throat culture includes screening for Group A streptococci, as well as other upper respiratory tract pathogens.

CPT CODE: 87070

**TISSUE CULTURE**

Tissues or biopsy samples should be collected aseptically and placed in a sterile cup. A small amount of sterile normal saline should be added to very small specimens to prevent drying during transport. Specimens containing formalin or any other preservative are not acceptable for culture.

Please indicate the specific specimen source or site when ordering.

Storage: Tissue specimens must be transported to the laboratory immediately. Optimal recovery from these specimens depends on a transport time of less then 30 minutes. Store specimens refrigerated in extreme circumstances when transport must be delayed for up to 24 hours.

Acceptability: Specimens are not acceptable if they are not labeled, improperly labeled or not stored properly. See storage above.

Test information: Test includes culture for aerobic and anaerobic bacteria and includes a Gram stain.

CPT CODE**:** 87070,87176

**TRICHOMONAS PROBE** Methodology: NAAT

CPT CODE: 87661

**URINE CULTURE**

Clean-voided midstream urine: Provide instructions to the patient prior to specimen collection. Thoroughly wash hands with soap and water.

Female- Remove urine cup from plastic bag and open cleansing towelette. Using a towelette, wash the genital area passing the towelette from front to back. Discard the towelette. Void a small amount of urine into the toilet, then catch the urine in the sterile cup. Avoid touching the cup to legs, vulva, clothing or fingers. Once the specimen has been collected, screw the cap back on the cup tightly. Wash hands. Replace the cup in the plastic bag. Thoroughly wash hands with soap and water.

Male- Remove urine cup from plastic bag and open cleansing towelette. Retract the foreskin and, using a towelette, cleanse the penis thoroughly. Discard the towelette. Void a small amount of urine into the toilet, then catch the urine in the sterile cup. Avoid touching the cup to legs, clothing or fingers. Once the specimen has been collected, screw the cap back on the cup tightly. Wash hands. Replace the cup in the plastic bag.

 Collect voided urine directly into a sterile container; do not use urinals or bedpans for collection.

Catheter urine: Indwelling catheters increase the risk of urinary tract infections; only closedsystemsshould be used. Avoid contamination during urine collection; remove specimen through the collection port using a syringe. *Foley catheter tips are unacceptable for culture.* A straight catheter may be used by a physician or trained practitioner to obtain urine directly from the bladder.

Urine from an ileal conduit must be collected after removal of the external device and insertion of a catheter into the cleansed stoma.

Urine collected by suprapubic needle aspiration of the bladder avoids contamination associated with the collection of voided urine. This is the preferred method for infants and for patients for whom the interpretation of results of voided urine is difficult.

Obtain early-morning specimens whenever possible because of increased bacterial counts after overnight incubation in the bladder. Do not force fluids in order to have the patient void urine. Excessive fluid intake will dilute the urine and decrease the colony count. Collect three consecutive early-morning specimens from asymptomatic patients.

Storage: Culture urine specimens within 2 hours after collection, or refrigerate and culture them within 8 hours whenever possible. Refrigerated urine specimens may be held for 24 hours because bacterial counts usually remain stable for 24 hours at 4 C.

Refrigeration is not necessary if urine specimens have been collected in transport tubes with preservatives. Place at least 3 ml of urine into transport tube containing a preservative to avoid an inhibiting or diluting effect.

Acceptability: Specimens are not acceptable if they are not labeled, improperly labeled or not stored properly. See storage above.

CPT CODE: 87086

**VANCOMYCIN RESISTANT ENTEROCOCCCUS SCREEN (VRE)**

Sterile Aerobic Culturette collection technique: Store sterile Culturettes at room temperature and check expiration date before use. Remove Culturette from package. Remove cap/swab from tube. Obtain specimen from area to be screened, being careful to avoid contamination with indigenous micro flora whenever possible. Sites most often screened are axilla, umbilicus,rectum, groin, and any site previously positive for VRE. Collect only a single swab for each site, swabbing both the left and right sides with the same swab, i.e. left and right axilla, left and right groin. Return cap/swab to tube. Label the swab with patient identification and site of collection. Tests for Enterococci including Vancomycin Resistant Enterococci. Contact Infection Control with any patient isolation issues.

Storage: Store specimens at room temperature for 4 hours or refrigerated for up to 24 hours.

Acceptability: Specimens are not acceptable if they are not labeled, improperly labeled or not stored properly. See storage above.

CPT CODE: 87081

**VIRAL CULTURE**

Obtain viral transport medium (Universal Transport) from the Send Out Laboratory.

Specimens should be collected early in the acute phase of infection. Collect material from site or specimen using a sterile swab. Do not use swabs with wooden shafts or calcium alginate tips. Break off swab in transport vial and close top securely.

 Storage: Refrigerate until transport for up to 24 hours.

 Test Performed by ARUP Labs

 Acceptability: Specimens are not acceptable if they are not labeled, improperly labeled or not stored properly. See storage above.

 CPT CODE: 87252

**VIRAL RESPIRATORY PANEL** Methodology: PCR

Obtain nasopharyngeal or throat swab per protocol. Swabs are to be collected into M4, M5, UTM or saline tubes. Transport to the Microbiology department.

 Storage: Specimens for routine testing are to be tested within 4 hours if stored at room temperature or up to 3 days if refrigerated.

Acceptability: Specimens are not acceptable if they are not labeled, improperly labeled or not stored properly. See storage above.

Test information: Panel includes the following targets: Adenovirus, Coronavirus 229E, HKU1, NL63, OC43, Sars CoV-2, Human Metapneumovirs, Human Rhinovirus/Enterovirus, Influenza Aand B, Parainfluenza Virus types 1-4, RSV, Bordetella pertussis, Bordetella parapertussis, Chlamydia pneumoniae, Mycoplasma pneumoniae

CPT CODE: 87633

**SEROLOGY**

Serology testing that is offered through the microbiology department includes: Anti-Nuclear antibodies, Centromere antibodies, DNA antibodies, SSA, SSB, Smith/RNP, Scleroderma, Lyme, Varicella zoster, Rubeola, and Mononucleosis antibodies. Serum specimens should be collected via venipuncture into red top vacutainer tubes either with or without a serum separator. Specimens should be spun and separated as soon as possible. Specimens can be refrigerated up to 48 hours prior to testing. Specimens that are grossly lipemic, hemolyzed, icteric or have excessive particulate matter may not be acceptable for testing. Contact microbiology with any specific questions.

**Electronic Authorizations:**

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