
Lab Dept: Microbiology/Virology

Test Name: VIRAL CULTURE, NON-RESPIRATORY

General Information

Lab Order Codes: VIRC

Synonyms: Viral Isolation; Virus Isolation; Virus Culture; Adenovirus Culture; Enterovirus Culture; Cytomegalovirus (CMV) Culture; Poliovirus Culture; Parechovirus Culture; Coxsackievirus Culture; Echovirus Culture; Varicella zoster Culture

CPT Codes: 87252 – Virus isolation; tissue culture inoculation, observation, and presumptive identification by cytopathic effect

The following testing may be added if appropriate based on findings for organism identification (multiple additions are possible if more than one organism is identified).

87253 – Virus isolation; tissue culture, additional studies or definitive identification, each isolate (if appropriate)

Test Includes: Isolation of adenovirus, cytomegalovirus (CMV), coxsackievirus, echovirus, enterovirus, herpes simplex virus, mumps, parechovirus, poliovirus, and varicella-zoster virus.

For Rapid Cultures (refer to the following test listings):

[Herpes Simplex Virus \(HSV\) Rapid FA](#)

[Cytomegalovirus \(CMV\) Rapid FA](#)

[Varicella Zoster Virus \(VZV\) Direct FA](#)

Logistics

Lab Testing Sections: Virology

Phone Numbers: MIN Lab: 612-813-5806

STP Lab: 651-220-6555

Test Availability: Daily, 24 hours

Turnaround Time: 1 – 21 days
Positive results are reported when virus is isolated.
Negative cultures are held for 21 days.

Special Instructions:

- Indicate the virus suspected.
- Requisition must state **specific site** of specimen and **date/time of collection**.
- Collect specimens early in the course of illness to yield highest viral titers.
- **Do Not** use calcium alginate swabs

Specimen**Specimen Type:**

Whole blood, cerebrospinal fluid, dermal, ocular, genital, mucosal, oral, stool, rectal, urine, tissue, biopsy. [See table in Additional Information.](#)

Container:

Swab transport system, sterile container, viral transport media (VTM)

Volume:

Blood:	1 – 5 mL in lavender top (EDTA) tube, See Viral Blood Culture
Bone Marrow:	1 – 5 mL in Lavender top (EDTA) tube
Cervical:	1 swab
CSF:	1 mL
Dermal specimens:	1 swab
Genital specimens:	1 swab
Ocular/Conjunctiva specimens:	1 swab
Oral specimens:	1 swab
Rectal specimens:	1 swab
Stool:	1 gm solid stool/ 1.0 mL liquid stool
Tissue:	Submit as much tissue as possible
Vaginal:	1 swab

Collection:

Blood: [See Viral Blood Culture](#)

Bone Marrow:

Place 1 – 5 mL of bone marrow in a lavender-top (EDTA) tube(s). Invert several times to mix bone marrow. **Do Not** centrifuge. Send in original Vacutainer tube. Forward unprocessed bone marrow promptly at ambient temperature only.

Cervical:

1. If lesions are present, swab vigorously with a sterile swab.
2. If lesions are not present, remove exudates prior to collection of specimen.
3. Gently insert separate large swab into endocervical canal past squamocolumnar junction (1 cm into the cervical canal). Rotate for 5-10 seconds.
4. To avoid contamination, withdraw the swab while avoiding touching any vaginal surfaces.
5. If specimen cannot be transported to the laboratory immediately, place swab in VTM and refrigerate.

CSF:

1. Disinfect skin site with 2% tincture of iodine.
2. Insert needle with stylet at L3 – L4, L4 – L5, or L5 – S1 interspace.
3. Upon reaching the subarachnoid space, remove the stylet and collect 1 – 2 mL of fluid into each of 3 sterile CSF tubes.
4. Deliver tube #2 to Microbiology Lab immediately.
5. **Do Not** place specimen in viral transport media.

Dermal/Skin:

1. Wash vesicles with sterile saline.
2. Unroof the vesicle and absorb vesicular fluid into a dry swab.
3. Vigorously scrape base of freshly exposed lesion with swab to obtain cells which contain virus.
4. If specimen cannot be transported to the laboratory immediately, place swab in VTM and refrigerate.

Ocular/Conjunctiva:

Do Not use a dry swab to collect an eye culture.

1. Moisten swab with sterile saline.
2. Retract lower lid and firmly swab conjunctival surface with enough pressure to collect epithelial cells. Avoid eyelid border and lashes.
3. If specimen cannot be transported to the laboratory immediately, place swab in VTM and refrigerate.

Oral:

1. Firmly sample base of lesion(s) with swab.
2. If specimen cannot be transported to the laboratory immediately, place swab in VTM and refrigerate.

Rectal:

1. Insert swab approximately 1 inch into anal canal.
2. Gently move the swab from side to side to sample the anal crypts.
3. If specimen cannot be transported to the laboratory immediately, place swab in VTM and refrigerate.

Stool:

1. Collect stool in a clean, dry bedpan or on a newspaper over the toilet.
2. Transfer specimen to a plastic, leakproof container. Do not overfill or contaminate the outside of the container.
3. Forward promptly to Microbiology Lab and refrigerate.

Tissue:

1. Submit specimen in a screw capped, sterile container.
2. Maintain sterility and forward promptly.

Urine:Males:

1. Clean glans with soap and water.
2. Rinse area with wet gauze pads.
3. While holding foreskin retracted, begin voiding.
4. After several mL have passed, collect a minimum of 5.0 mL without stopping flow of urine.
5. Maintain sterility and forward immediately to the Microbiology Lab. Refrigerate.

Females:

1. Thoroughly clean urethral area with soap and water.
2. Rinse area with wet gauze pads.
3. While holding labia apart, begin voiding.
4. After several mL have passed, collect a minimum of 5.0 mL without stopping flow of urine.
5. Maintain sterility and forward immediately to the Microbiology Lab. Refrigerate.

Vaginal:

1. Wipe away excessive amount of secretion or discharge.
2. If lesions are present swab vigorously with a sterile swab.
3. If lesions are not present, obtain secretions from mucosal membrane of the vaginal vault with a sterile swab.
4. If specimen cannot be transported to the laboratory immediately, place swab in VTM and refrigerate.

Special Processing:

Lab Staff:

CSF: DO NOT place in VTM. Inoculate directly.

Stool: Place 1 mL of liquid stool or a pea size aliquot of formed stool into a thawed 9 mL VTM to make a 1:10 dilution. Vortex well and refrigerate.

Swabs: Place into VTM upon arrival in the laboratory. Swabs should remain in the VTM.

Tissue: Place tissue into VTM. Refrigerate.

Urine: Add 3 - 5 mL urine to urine VTM. Refrigerate.

Transport/Storage:

Onsite collections: Transport to the Laboratory immediately

Offsite collections: Place swab and tissue specimens in viral transport media (VTM) and refrigerate. Store and ship urine and stool specimens at refrigerated temperature.

Specimens must be promptly transported to the laboratory, with the next available courier, not to exceed 24 hours from the time of collection. However, delayed transport causes a delay in test results.

Sample Rejection:

Specimen with a transit time exceeding 2 hours after collection without refrigeration; calcium alginate or wooden shaft swabs, dry swabs; improperly labeled specimen; insufficient volume; leaking or non-sterile containers; external contamination. If an unacceptable specimen is received, the physician or nursing station will be notified and another specimen will be requested before the specimen is discarded.

Interpretive

Reference Range:

No Virus isolated

Critical Values:

Positive results in systemic infections will be called to the physician or nursing unit.

Limitations:

- A negative result does not eliminate the possibility of viral infection.
- HSV can only rarely be cultured from the CSF. **HSV PCR is the method of choice for detecting HSV in CSF specimens.**
- Isolation of a virus may not be related to the patient's disease.

Methodology:

Conventional cell culture with specific confirmation procedures of viral agent.

Additional information:

• Viruses Typically Isolated From Clinical Specimens	
Specimen Type	Virus

Blood	CMV (Enterovirus#, HSV#, VZV#)
CSF and CNS Tissues	Enterovirus, Mumps#, HSV#, CMV#
Dermal Lesions	HSV, VZV, Adenovirus, Enterovirus, Measles
Eye	HSV, VZV, Adenovirus, Enterovirus, CMV
Genital	HSV, CMV
Oral	HSV, VZV#, Enterovirus
Stool	Enterovirus, Adenovirus
Tissues	CMV, HSV, Enterovirus, Adenovirus
Urine	CMV, Adenovirus, Mumps
Abbreviation Key	
HSV	Herpes Simplex Virus
CMV	Cytomegalovirus
VZV	Varicella-Zoster Virus
Enteroviruses include:	Coxsackie Virus, Poliovirus, Echovirus, Enterovirus
#	Indicates virus specified is less frequently isolated.

References:

Cook, JH, and M Pezzlo (1992). Specimen receipt and accessioning. Section 1. Aerobic bacteriology, 1.2.1-4. In HD Isenberg (ed) Clinical Microbiology Procedures Handbook. American Society for Microbiology, Washington DC

Miller, J Michael (1999) A Guide To Specimen Management in Clinical Microbiology, American Society for Microbiology, Washington DC

Forman, MS and A Valsamakis (2011) Specimen Collection, Transport, and Processing: Virology in J Versalovic, et al, (ed) Manual of Clinical Microbiology, 11th ed, American Society of Microbiology, Washington DC, pg 1276-1286

Updates:

3/25/2010: CPT Updates

8/26/2016: Updated Table, Viruses isolated from clinical specimens

