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**Lab Dept:** Microbiology

**Test Name:** CSF CULTURE AND GRAM STAIN

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**General Information**

**Lab Order Codes:** CSC

**Synonyms:** Culture, CSF; Culture, Cerebrospinal Fluid; Culture, Lumbar Puncture; Culture, Reservoir Tap CSF; Culture, Shunt Fluid; Culture, Subdural Fluid; Culture, Ventricular Fluid; Culture, VP Shunt

**CPT Codes:** 87070 – Culture, bacterial; any other source except urine, blood or stool, aerobic, with isolation and presumptive identification of isolates  
87205 – Smear, primary source with interpretation; Gram or Giemsa stain for bacteria, fungi or cell types

The following testing may be added if appropriate based on the specimen submitted, findings for organism identification (multiple additions are possible if more than one organism is identified) and to aid in patient treatment management.

87075 – Culture, bacterial; any source, except blood, anaerobic with isolation and presumptive identification, each isolate

87015 – Concentration (any type), for infectious agents

87076 – Anaerobic isolate, additional methods required for definitive identification of isolates

87077 – Aerobic isolate, additional methods required for definitive identification, each isolate (if appropriate)

87106 – Culture, fungi, definitive identification, each organism, yeast (if appropriate)

87107 – Culture, mold, definitive identification, each organism, mold (if appropriate)

87147 – Culture, typing; immunologic method, other than immunofluorescence (e.g., agglutination grouping), per antiserum (if appropriate)

87184 – Susceptibility studies, disk method, per plate (if appropriate)

87185 – Enzyme detection (eg, beta lactamase), per enzyme (if appropriate)

87186 – Susceptibility studies, microdilution or agar dilution, each multi-antimicrobial, per plate (if appropriate)

87076 – Anaerobic isolate, additional methods required for definitive identification of isolates

87206 – Smear, primary source with interpretation, fluorescent and/or acid fast stain for bacteria, fungi or cell types (if appropriate)

**Test Includes:** Aerobic culture with isolation and identification of isolates. Susceptibility testing will be performed on significant isolates. All positive results are reported immediately by phone to the physician or patient's nurse.

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**Logistics**

<b>Lab Testing Sections:</b>	Microbiology
<b>Phone Numbers:</b>	MIN Lab: 612-813-5866 STP Lab: 651-220-6555
<b>Test Availability:</b>	Daily, 24 hours
<b>Turnaround Time:</b>	Gram stain results are reported within 1 hour. Preliminary culture results are available at 24 hours. Negative cultures are final at 7 days.
<b>Special Instructions:</b>	<ul style="list-style-type: none"> <li>• If only one tube of CSF is collected, submit to Microbiology first, otherwise submit tube #2. Tubes should be numbered 1, 2, 3, with tube #1 representing the first portion of the sample collected. Tube #2 or tube #3 are less likely to be contaminated by normal skin flora.</li> <li>• <b>Specimen site</b> and <b>date/time of collection</b> are required for specimen processing.</li> </ul>

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### ***Specimen***

<b>Specimen Type:</b>	Cerebrospinal fluid
<b>Container:</b>	Sterile tube
<b>Volume:</b>	2 mL (Minimum 0.5 mL) CSF
<b>Collection:</b>	<ol style="list-style-type: none"> <li>1. Disinfect skin site with 2% tincture of iodine.</li> <li>2. Insert needle with stylet at L3–L4, L4–L5, or L5–S1 interspace.</li> <li>3. Upon reaching the subarachnoid space, remove the stylet and collect 1–2 mL of fluid into each of 3 sterile CSF tubes.</li> <li>4. Deliver tube #2 to Microbiology immediately.</li> </ol>
<b>Transport/Storage:</b>	Transport to the Microbiology Laboratory immediately (<15 min) at room temperature and give to a technologist.
<b>Special Processing:</b>	<b>Never refrigerate.</b> If the specimen cannot be processed immediately, it should be kept at room temperature or placed in an incubator. Refrigeration may prevent the recovery of <i>Neisseria meningitidis</i> and <i>Haemophilus influenzae</i> .
<b>Sample Rejection:</b>	Specimen not submitted in appropriate transport container; improperly labeled specimen; insufficient volume. If an unacceptable specimen is received, the physician or nursing unit will be notified.

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### ***Interpretive***

<b>Reference Range:</b>	No growth
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<b>Critical Values:</b>	<ul style="list-style-type: none"> <li>• Any bacterial isolate should be considered significant and evaluated clinically. All positive results will be called to the physician or patient's nurse. Susceptibilities will be performed on significant isolates.</li> <li>• Infection Prevention will be notified with gram stain results that appear to be gram-negative cocci/diplococci.</li> </ul>
<b>Limitations:</b>	<p>Cultures may be negative in partially treated cases of meningitis. If anaerobe infection is suspected, specifically request an <a href="#">Anaerobic Culture</a>.</p>
<b>Methodology:</b>	Culture of spun sediment
<b>Additional Information:</b>	Obtain blood culture as well. Blood cultures are often positive in patients with bacterial meningitis.
<b>References:</b>	<p>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</p> <p>Miller, J Michael (1999) A Guide To Specimen Management in Clinical Microbiology, American Society for Microbiology, Washington DC</p> <p>Miller, J Michael, and HT Holmes (1999) Specimen Collection, Transport, and Storage In PR Murray et al, (ed), Manual of Clinical Microbiology, 7<sup>th</sup> edition, American Society for Microbiology, Washington DC, pp 33-104</p>
<b>Updates:</b>	<p>3/23/2010: CPT Updates</p> <p>3/7/2011: CPT Updates</p> <p>6/20/2012: Amended Critical Value statement</p> <p>10/18/2018: CPT update</p> <p>11/14/2018: Updated information on anaerobes</p>