
Lab Dept: Microbiology

Test Name: AFB CULTURE & SMEAR, OTHER SOURCES (NON-BLOOD)

General Information

Lab Order Codes: AFBB

Synonyms: Culture: Acid-Fast Culture; Culture, AFB; Culture, TB; TB Culture; *Mycobacteria* Culture, *Nocardia* Culture
Smear: Acid-Fast Stain; TB Stain; Atypical *Mycobacterium* Smear; *Mycobacterium* Smear

CPT Codes: Culture:
87116 – Culture, tubercle or other acid-fast bacilli any source, with isolation and presumptive identifications of isolates
87015 – Mycobacteria culture, concentration (if appropriate)
87118 – Id MALDI-TOF Mass Spec AFB (if appropriate)
87150 – Mycobacteria Probe Ident, Solid (if appropriate)
87150 – Mycobacteria probe Ident, Broth (if appropriate)
87150 – Id, Mtb Speciation, PCR (if appropriate)
87150 – Id, Mtb complex Rapid PCR (if appropriate)
87153 – Mycobacteria Identification by Sequencing (if appropriate)
87176 – Tissue processing (if appropriate)

Smear:
87206 – Smear, primary source with interpretation; fluorescent and/or acid fast stain for bacteria, fungi, parasites, viruses or cell types
87176 – Tissue processing (if appropriate)
87015 – Mycobacterium culture, concentration (if appropriate)

Test Includes: Culture for detection and identification of *Mycobacterium* species, *Nocardia* species, and other aerobic actinomycetes. Drug resistance studies can be added when appropriate. When this test is ordered, a reflex test may be performed and charged.

Smear: Auramine-rhodamine fluorochrome stain prepared and read with fluorescent microscope.

Refer to [Blood Culture, Acid-Fast](#) for blood specimens.

All positive results are reported immediately by phone to the physician or patient's nurse.

Logistics

Lab Testing Sections: Microbiology

Referred to: Mayo Medical Laboratories (MML: CTB and SAFB)

Phone Numbers: MIN Lab: 612-813-5866

STP Lab: 651-220-6555

Test Availability: Daily, 24 hours

Turnaround Time: Smear results are available within 24 hours or 1 day.

Positive cultures are reported when detected, negative cultures in 42 days.

Special Instructions: **Specific site** and **date/time of collection** are required for specimen processing. Do not submit specimens on swabs if other sample types are possible. Negative results from swab specimens are unreliable.

Specimen

Specimen Type: Specimens may include body fluids, bone marrow, bronchial wash, bronchoalveolar lavage, gastric aspiration/wash, sputum, tissue, urine and stool.

Note: Swab specimens are not recommended. Only flocked swabs (Eswabs) are acceptable for surgical wounds, tissue and body fluids.

Container: Sterile container

Eswab –regular flocked swab CHC#32447



Volume: See Collection

Collection:

Specimen Type	
Quantity	Special Instructions
Body Fluids	
1.5 mL	Collect aseptically in sterile container
Bone marrow	
Bone marrow: 1-3 mL	Sterile container or Green top (Lithium or Sodium) top tube.

Bronchial wash	
3 mL	<p>Sterile Container</p> <p>Collect 3 respiratory specimens in patients with clinical and chest x-ray findings compatible with TB.</p> <p>These 3 specimens should be collected at 8-24 hour intervals and should include a least 1 first morning specimen.</p>
Gastric Fluid	
5 - 10 mL	<p>Sterile container</p> <p>In lab, specimen will be neutralized with 1.5 mL of sodium bicarbonate within 4 hours of collection. Refrigerate.</p>
Sputum	
3 mL	<p>Sterile Container</p> <p>Collect 3 respiratory specimens in patients with clinical and chest x-ray findings compatible with TB.</p> <p>These 3 specimens should be collected at 8-24 hour intervals and should include a least 1 first morning specimen.</p>
Stool	
5 - 10 gm	Sterile container
Tissue	
5 – 10 mm	Aseptic collection into sterile container.
Urine	
20-50 mL	<p>Sterile container</p> <p>Collect a random urine specimen</p>
Swab Specimens:	

Surgical wound, tissue or body fluid*	<p>Flocked swab (e.g. Eswab) (T583) with entire 1 ml in swab container with swab</p> <p>*Only acceptable if tissue biopsy or fluid aspiration is not possible.</p> <p>Collection instructions:</p> <ol style="list-style-type: none"> 1. Before collecting specimen, wipe away any excessive amount of secretion or discharge, if appropriate. 2. Obtain secretions or fluid from source with sterile swab. 3. If smear and culture are requested or both a bacterial culture and Mycobacterial culture are requested, collect a second swab to maximize test sensitivity.
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Special Processing:

- Refrigerate all specimens for mycobacteria.
- Lab will neutralize gastric fluid specimens within four hours of collection.

Transport/Storage:

Onsite collections: Transport to the Laboratory immediately.

Offsite collections: Specimens must be promptly transported to the laboratory, with the next available courier, not to exceed 24 hours from the time of collection or 4 hours for gastric specimens requiring neutralization.

Sample Rejection:

Improperly labeled specimen; specimens with prolonged transit time (see [Transport/Storage](#)) specimen not submitted in appropriate transport container; insufficient volume; external contamination; 24-hour urine collections; 24-hour sputum collections; specimens submitted in viral transport medium (e.g. M4, M5, BD viral transport media or thioglycolate broth); fixed tissue; saliva, swab sources of respiratory fluids, swab sources of nasal, sinus, outer ear, mouth, throat, or scalp. If an unacceptable specimen is received, the physician or nursing station will be notified and another specimen requested before the specimen is discarded.

Interpretive

Reference Range:

Culture: Negative

Smear: Negative (reported as positive or negative)

Critical Values:

Positive AFB cultures and/or positive AFB smears will be called to the physician or patient's nurse.

Limitations:**Cultures:**

- Negative results are unreliable on specimens obtained on swabs.
- Recovery of mycobacteria is dependent on the number of organisms present in the specimen, specimen collection methods, methods of processing, and patient factors such as the use of anti-mycobacteria therapy.
- The use of BBL MGIT PANTA antibiotic mixture, although necessary for all nonsterile specimens, may have inhibitory effects on some mycobacteria.
- Alert the laboratory if *Mycobacterium genavense* is suspected, as this species requires addition of mycobactin J to the culture medium for optimal growth.

Smears:

- Cultures are more sensitive than smears, therefore, negative acid-fast smears do not exclude a diagnosis of mycobacterial disease.
- Acid-fast stains are not specific for *M. tuberculosis*; other species in the genus *Mycobacterium* will stain acid-fast.
- Definitive identification requires mycobacterial culture or detection with molecular methods. *Mycobacterium tuberculosis* complex PCR is a sensitive and rapid method for detecting *Mycobacterium tuberculosis* complex organisms directly from clinical specimens.
- Acid-fast artifacts may demonstrate non-specific fluorescence and be confused with organisms.

Methodology
:**Culture:**

Automated detection of positive cultures or growth on agar plates followed by organism identification with a variety of techniques as appropriate including rapid PCR methods, MALDI-TOF mass spectrometry, or 500 base pair 16S rRNA gene sequencing.

Smear:

Auramine-rhodamine stain

References:

[Mayo Medical Laboratories](#) May 2025

Updates:

10/15/2012: Removed notification to Infection Prevention on positive results.
2/28/2013: Swab specimens are not acceptable info added.
11/10/2014: Offsite collections added.
5/9/2016: Testing moved from internal test to Mayo.
9/19/2017: Moved to package code AFBB to order both culture and smear.
8/16/2023: updated specimen collection table