Acid-fast Bacilli (AFB) Smear & Culture (NTM) (clinical specimen only)

AFB3

Collection / Transport

**Collection Requirements:**
- Indicate specimen source: BAL, CSF, Sputum, Sputum (induced), Stool, Urine, Tissue (specify), Processed Specimen (specify) or Other Body Fluid (specify).
- Indicate if patient is a Cystic Fibrosis patient (will require different decontamination), or if sample is environmental (contact laboratory before collection) or veterinary (animal type).

**Specimen Preparation:**

**Sputum:** >5 mL of unprocessed (raw) sputum. Collect the first early morning expectoration in a sterile 50 mL polypropylene centrifuge tube capable of withstanding 3,000 x g (i.e., Falcon, Greiner, etc).

**Body Fluids or CSF:** As much body fluid as possible is aseptically collected by aspiration or during a surgical procedure. CSF should be maximum volume obtained, ideally at least 2 mL.

**Gastric Aspirates:** Must be neutralized (pH 7) with sodium carbonate if transport time exceeds four hours from collection. Transfer 5-10 mL to a sterile container.

**Tissue:** =10 g or as much as possible with a biopsy. Transfer to a sterile container (without formalin or preservatives).

**Urine:** = 40 mL to a sterile container.

**Stool:** = 1 g in sterile, wax-free disposable container.

**Blood:** =5 mL adult; =1 mL child. If blood has to be transported before inoculation of the medium, sodium polyanethol sulfate (SPS), heparin sodium, or citrate may be used as anticoagulants.

Ship the specimen on the day of collection via airmail or by overnight courier.

**Patient Preparation:**

**Sputum:** Three sputum specimens at 8-24 hour intervals and at least one first-morning specimen. Have patient rinse mouth with water before collecting sputum to minimize contaminating specimen with food particles, mouthwash, or oral drugs, which may inhibit the growth of mycobacteria.

**Induced sputum:** Use sterile hypertonic saline. Avoid sputum contamination with nebulizer reservoir water which may contain saprophytic mycobacteria from tap water. Specify Sputum (Induced) on requisition form, since it may resemble saliva which is not an acceptable specimen.

**Bronchoalveolar lavage (BAL):** Avoid contaminating bronchoscope with tap water.

**CSF:** Use maximum volume attainable, ideally at least 2 mL.

**Gastric lavage:** Aspiration of swallowed sputum from the stomach by gastric lavage may be necessary for infants, young children, and the obtunded. Fasting, early-morning specimens are recommended in order to obtain sputum swallowed during sleep. Samples of 5 to 10 mL, adjusted to neutral pH, should be collected on 3 consecutive days.

**Blood:** Collect specimen directly into container, or transfer from bedpan or plastic wrap stretched over toilet bowl.

**Urine:** Collect first morning specimen on 3 consecutive days to provide the best yield. Accept only one specimen/day.
Unacceptable Conditions:

Swabs are not recommended for the isolation of mycobacteria, since they provide limited material. They are acceptable only if a specimen cannot be collected by other means. Negative results obtained from swab specimens are unreliable.

Samples contained in waxed containers are not acceptable. Waxed containers may produce false-positive smear results.

Tissue specimens submitted in formalin are not acceptable.

Gastric aspirates that have not been neutralized are not acceptable.

Frozen sputum or stool specimen is not acceptable.

24-hour pooled urine or sputum specimen is not acceptable.

Urine from catheter bag is not acceptable.

<40 mL of urine, unless larger volume cannot be obtained, is not acceptable.

Blood collected in EDTA, ACD, or in conventional blood culture bottles and coagulated blood are not acceptable.

Specimen which leaked in transit.

Storage Transport Temp:

If specimen cannot be mailed on the day of collection, keep the specimen refrigerated until the day of shipment. Specimen can be shipped at room temperature or cold, using a cool-pack.

Notes:

- **AFB3 replaces test code 1a, effective February 1, 2013.**
- **AFB smear and culture isolation from sputum or other clinical specimens.** AFB smear performed using fluorescent microscopy. Culture performed using 1 liquid and 3 solid media.
- **The laboratory should be notified when the presence of M. genavense, M. haemophilum and other fastidious mycobacteria are suspected, as these organisms will not grow on media routinely used for mycobacterium growth detection.** AFB identification (AFB4) is performed on culture-positive specimens.
- **All other mycobacteria will be identified using DNA sequencing.**

Overview

**Performed:**

Mon-Sat; Sunday upon request.

**Methodology:**

AFB Smear and growth detection (culture)

**Reported:**

AFB smear reported within 24 hours upon receipt.

Culture isolation reported in two to eight weeks, depending on growth.

Cuture identification dependent on testing methods.

**Lab Department:**

Mycobacteriology Lab (TB)

**Synonyms:**

Environmental Bacteria Smear/Culture/Identification; Nontuberculous mycobacteria Smear/Culture/Identification; NTM
Result Interpretation

Interpretive Data:

Potential AFB smear results are:

- **NOAFB-No AFB seen**
- **TO4-1 to 4 AFB/Field**
- **TO10- 5 to 10 AFB/Field**
- **TO20-11 to 20 AFB/Field**
- **20MORE-Greater than 20 AFB/Field**

4 media are inoculated for growth detection (1 broth, 1 Lowenstein-Jensen slant and a 7H11 biplate). Negative cultures are reported after 6 weeks of incubation; LJ slants are incubated for 8 weeks. In the event of growth detection beyond 6 weeks, an amended report will be issued.

**Results:** Culture negative for AFB or Identification performed on AFB culture positive specimens.

Antimicrobial susceptibility testing (AST) is performed on nontuberculous mycobacterium (NTM) isolates by request only.

Per Official ATS/IDSA Statement: Diagnosis, Treatment, and Prevention of Nontuberculous Mycobacterial Diseases (2007), *M. gordonae* is frequently encountered in the environment and in clinical laboratories but is almost always considered nonpathogenic; therefore, AST for *M. gordonae* is performed by specific request only.

CPT Codes

**CPT Code:**

87015, 87116, 87206

CPT codes for identification vary based on methods (see AFB4). CPT codes for AST vary based on drug panel performed (see MTB1–NTM5).