MAYO CLINIC LABORATORIES

Test Definition: CTBBL

Mycobacterial Culture, Blood

Overview

Useful For

Diagnosing mycobacteremia

Reflex Tests

Test Id	Reporting Name	Available Separately	Always Performed
ISMY	ID by 16S Sequencing	No, (Bill Only)	No
RMALM	Id MALDI-TOF Mass Spec AFB	No, (Bill Only)	No
RTBSP	Id, Mtb Speciation, PCR	No, (Bill Only)	No
LCTB	Id, MTB complex Rapid PCR	No, (Bill Only)	No

Testing Algorithm

When this test is ordered, the reflex tests may be performed at an additional charge.

Method Name

Continuously Monitored Automated Broth Culture Instrument with Conventional Methods for Identification of Mycobacteria

NY State Available

Yes

Specimen

Specimen Type

Whole blood

Shipping Instructions

Specimen must be processed within 7 days of collection.

Necessary Information

Specimen source is required.

Specimen Required

Container/Tube:

Preferred: Green top (sodium or lithium heparin)

Acceptable: SPS (sodium polyanethol sulfonate)

Specimen Volume: 8 to 10 mL per culture

Collection Instructions:

1. Send whole blood specimen in original tube.
2. SPS tubes are acceptable, but not preferred.
3. Note: SPS tubes must be clearly labeled as SPS. If label is obscured, sample may be canceled, as ACD (yellow top) is not an acceptable tube type.

Forms
If not ordering electronically, complete, print, and send a Microbiology Test Request (T244) with the specimen.

Specimen Minimum Volume
5 mL

Reject Due To

Blood Culture bottles (eg, BACTEC mycoF Lytic, VersaTrek) Isolator Clotted	Reject

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Whole blood	Ambient (preferred)	7 days	
	Refrigerated	7 days	

Clinical & Interpretive

Clinical Information
Mycobacteremia occurs most often in immunocompromised hosts. The majority of disseminated mycobacterial infections are due to *Mycobacterium avium* complex but bacteremia can also be caused by other mycobacterial species including, but not limited to, *Mycobacterium tuberculosis* complex, *Mycobacterium kansasii*, *Mycobacterium fortuitum*, *Mycobacterium chelonae*, *Mycobacterium scrofulaceum*, *Mycobacterium szulgai*, and *Mycobacterium xenopi*.(1)

Mycobacterial blood cultures may be indicated for patients presenting with signs and symptoms of sepsis, especially fever of unknown origin.

Reference Values
Negative
If positive, mycobacteria are identified.
A final negative report will be issued after 42 days of incubation.

Interpretation
A positive result may support the diagnosis of mycobacteremia.

Cautions

Results must be interpreted in conjunction with the patient's history and clinical picture.

A negative result does not rule out mycobacteremia. The organism may be present at quantities below the limit of detection or may be transiently present.

If *Mycobacterium genavense* is suspected, indicate on request form or contact laboratory. Mycobactin J (an iron supplement) will then be added to the culture to support growth.

Supportive Data

During validation of this test, a variety of mycobacteria were recovered from spiked blood specimens. These mycobacteria were *Mycobacterium fortuitum*, *Mycobacterium intracellulare*, *Mycobacterium kansasii*, *Mycobacterium tuberculosis,* and *Mycobacterium xenopi*. *Mycobacterium genavense* was recovered when the medium was supplemented with mycobactin J (an iron supplement). In addition, aerobic actinomycetes including *Nocardia farcinica*, *Gordonia terrae*, *Rhodococcus equi,* and *Tsukamurella paurometabola* were also recovered when spiked into blood. The limit of detection was determined to be less than or equal to 10(2) colony forming units (CFU)/mL for *Mycobacterium fortuitum* and *Mycobacterium tuberculosis*, 10 CFU/mL for *Mycobacterium intracellulare*, and 1 CFU/mL for *Nocardia farcinica*.

Clinical Reference

1. Martin I, Pfyffer GE, Parrish N. *Mycobacterium*: General characteristics, laboratory detection, and staining procedures. In: Carroll KC, Pfaller MA, Landry ML, et al, eds. Manual of Clinical Microbiology. 12th ed. ASM Press; 2019:558-575
2. Crump JA, Morrissey AB, Ramadhani HO, et al. Controlled comparison of BacT/Alert MB system, manual myco/f lytic procedure, and isolator 10 system for diagnosis of mycobacterium tuberculosis bacteremia. J Clin Microbiol. 2011;49(8):3054-7. doi:10.1128/JCM.01035-11
3. Reimer LG. Laboratory detection of mycobacteremia. Clin Lab Med. 1994;14(1):99-105

Performance

Method Description

The blood is processed per the manufacturer's instructions before adding it to a VersaTREK Myco bottle and plating onto Middlebrook 7H10 agar. The agar plate is incubated at 37 degrees C with 5% to 7% carbon dioxide for 42 days. The VersaTREK Myco bottle is incubated on the automated VersaTREK 528 instrument for 42 days. If the bottle signals as positive on the instrument, it is removed, and a smear is performed to look for acid-fast organisms. Acid-fast organisms are identified using conventional methods including real-time PCR, matrix-assisted laser desorption/ionization time-of-flight mass spectrometry, and 16S rDNA gene sequencing.(Mirrett S, Hanson KE, Reller LB. Controlled clinical comparison of VersaTREK and BacT/ALERT blood culture systems. J Clin Microbiol. 2007;45[2]:299-302; Buckwalter SP, Olson SL, Connelly BJ, et al. Evaluation of Matrix-Assisted Laser Desorption Ionization-Time of Flight Mass Spectrometry for the Identification of Mycobacterium species, Nocardia species, and Other Aerobic Actinomycetes. J Clin Microbiol. 2016;54[2]:376-384. doi:10.1128/JCM.02128-15; Hall L, Doerr KA, Wohlfiel SL, Roberts GD. Evaluation of the MicroSeq system for identification of mycobacteria by 16S ribosomal DNA sequencing and its integration into a routine clinical mycobacteriology laboratory. J Clin Microbiol. 2003;41[4]:1447-1453)

PDF Report
No

Day(s) Performed
Monday through Sunday

Report Available
49 days

Specimen Retention Time
24 days

Performing Laboratory Location
Mayo Clinic Laboratories - Rochester Main Campus

Fees & Codes

Fees
- Authorized users can sign in to Test Prices for detailed fee information.
- Clients without access to Test Prices can contact Customer Service 24 hours a day, seven days a week.
- Prospective clients should contact their account representative. For assistance, contact Customer Service.

Test Classification
This test has been cleared, approved, or is exempt by the US Food and Drug Administration and is used per manufacturer's instructions. Performance characteristics were verified by Mayo Clinic in a manner consistent with CLIA requirements.

CPT Code Information
87116-Mycobacterial Culture
87118-Id MALDI-TOF Mass Spec AFB (if appropriate)
87150-Id, Mtb Speciation, PCR (if appropriate)
87153-Mtb PZA Confirmation, pcnA sequence (if appropriate)
87153-Mycobacteria Identification by Sequencing (if appropriate)
87150- Id, MTB complex Rapid PCR (if appropriate)

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
CTBBL	Mycobacterial Culture, B	64412-0

Result ID	Test Result Name	Result LOINC® Value
CTBBL	Mycobacterial Culture, B	64412-0