

## Overview

### Useful For

Diagnosis and treatment of the etiologic agents of fungemia

Select patient population that presents with signs and symptoms of sepsis, especially fever of unknown origin

### Testing Algorithm

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

### Reflex Tests

Test Id	Reporting Name	Available Separately	Always Performed
D2F	D2 Fungal Sequencing Identification	No, (Bill Only)	No
FUNA	Fungal Ident Panel A	No, (Bill Only)	No
FUNB	Fungal Ident Panel B	No, (Bill Only)	No
LCCI	Ident Rapid PCR Coccidioides	No, (Bill Only)	No
LCHB	Id, Histoplasma/Blastomyces PCR	No, (Bill Only)	No
RMALF	Id MALDI-TOF Mass Spec Fungi	No, (Bill Only)	No
RMALY	Id MALDI-TOF Mass Spec Yeast	No, (Bill Only)	No
LCCA	Id, Candida auris Rapid PCR	No, (Bill Only)	No

### Method Name

Conventional Broth Culture/Macroscopic/Microscopic/Nucleic Acid Hybridization/D2 rDNA Gene Sequencing/Real-Time Polymerase Chain Reaction (rtPCR)/Matrix-Assisted Laser Desorption/Ionization-Time of Flight Mass Spectrometry (MALDI-TOF MS)

Dimorphic Pathogen Identification Confirmation: Nucleic Acid Hybridization/D2 rDNA Gene Sequencing/rtPCR/MALDI-TOF MS

### NY State Available

Yes

## Specimen

### Specimen Type

Whole blood

### Specimen Required

#### Container/Tube:

**Preferred:** Green top (heparin)

**Acceptable:** SPS/Isolator tube

**Specimen Volume:** 10 to 30 mL

#### Collection Instructions:

1. Send specimen in original tube. **Do not aliquot.**
2. If collecting in an Isolator tube, draw blood in tube, and send 8 mL of whole blood in the original Isolator tube.

### Forms

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

### Reject Due To

No specimen should be rejected.

### Specimen Minimum Volume

5 mL

Pediatric: 1.5 mL

### Specimen Stability Information

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

## Clinical & Interpretive

### Clinical Information

Due to the high mortality rate from fungemia, the expeditious detection and identification of fungi from the patient's

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blood can have great diagnostic prognostic importance. Risk factors for fungemia include, but are not limited to, extremes of age, immunosuppression, and those individuals with burns or indwelling intravascular devices.

**Reference Values**

Negative

If positive, notification is made as soon as the positive culture is detected or identified.

**Interpretation**

Positive cultures of yeast and filamentous fungi are reported with the organism identification.

Positive cultures are usually an indication of infection and are reported as soon as detected. Correlation of culture results and the clinical situation is required for optimal patient management. A final negative report is issued after 30 days of incubation.

**Cautions**

No significant cautionary statements

**Clinical Reference**

1. Reimer LG, Wilson ML, Weinstein MP: Update on detection of bacteremia and fungemia. Clin Microbiol Rev. 1997 Jul;10(3):444-465
2. Procop GW, Cockerill FR III, Vetter EA, Harmsen WS, Hughes JG, Roberts GD: Performance of five agar media for recovery of fungi from isolator blood cultures. J Clin Microbiol. 2000 Oct;38(10):3827-3829
3. Procop GW, Church DL, Hall GS, et al: Mycology. In: Koneman's Color Atlas and Textbook of Diagnostic Microbiology. 7th ed. Walters Kluwer; 2017:1322-1416

**Performance****Method Description**

Blood is inoculated into MycoF Lytic (Becton Dickinson) and Isolator (Wampole) tubes. Continuously monitored blood culture instruments provide for the detection of bloodstream infections due to most *Candida* species and *Cryptococcus* species. The Isolator tube contains saponin to lyse the blood cells, enabling the release of intracellular organisms. Centrifugation generates a concentrated layer of organisms that is inoculated onto solid media for recovery of fungi and this appears to be the most sensitive method for recovery of *Histoplasma capsulatum*, other dimorphic fungi, and filamentous fungi. (Sutton DA: Specimen collection, transport, and processing: Mycology. In: Murray PR, Baron EJ, Jorgensen JH, et al. Manual of Clinical Microbiology. 9th ed. ASM Press; 2007:1728-1736)

Identification of fungi is based on colonial and microscopic morphology, MALDI-TOF mass spectrometry, nucleic acid hybridization probes, laboratory-developed real-time PCR assays and/or D2 rDNA gene sequencing, as applicable. (Babady NE, Buckwalter SP, Hall L, Le Febre KM, Binnicker MJ, Wengenack NL: Detection of *Blastomyces dermatitidis* and *Histoplasma capsulatum* from culture isolates and clinical specimens by use of real-time PCR. J Clin Microbiol. 2011 Sep;49[9]:3204-3208; Binnicker MJ, Buckwalter SP, Eisberner JJ, et al: Detection of *Coccidioides* species in clinical specimens by real-time PCR. J Clin Microbiol. 2007 Jan;45[1]:173-178; Dhiman N, Hall L, Wohlfiel SL, Buckwalter SP, Wengenack NL: Performance and cost analysis of matrix-assisted laser desorption ionization time of flight mass spectrometry for routine identification of yeast. J Clin Microbiol. 2011 Apr;49[4]:1614-1616; Hall L, Wohlfiel SL, Roberts GD: Experience with the MicroSeq D2 large-subunit ribosomal DNA sequencing kit for identification of filamentous fungi encountered in the clinical laboratory. J Clin Microbiol. 2004 Feb;42[2]:622-626; Theel ES, Schmidt BH, Hall L, et al: Formic acid-based direct, on-plate testing of yeast and *Corynebacterium* species by Bruker Biotyper matrix-assisted laser desorption ionization-time of flight mass spectrometry. J Clin Microbiol. 2012 Sep;50[9]:3093-3095; Theel ES, Hall L, Mandrekar J, Wengenack NL: Dermatophyte identification using matrix-assisted laser desorption ionization-time of flight mass spectrometry. J Clin Microbiol. 2011 Dec;49[12]:4067-4071)

**PDF Report**

No

**Specimen Retention Time**

24 days

**Performing Laboratory Location**

Rochester

**Fees & Codes****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**

87015-Concentration (any type) for infectious agents

87103-Blood

87106-Id MALDI-TOF Mass Spec Yeast (if appropriate)

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87107-Id MALDI-TOF Mass Spec Fungi (if appropriate)

87107-Fungal identification panel A (if appropriate)

87107-Fungal identification panel B (if appropriate)

87150-Identification rapid PCR coccidioides (if appropriate)

87150 x 2- Identification Histoplasma/Blastomyces, PCR (if appropriate)

87153-D2 fungal sequencing identification (if appropriate)

87150- Id, Candida auris Rapid PCR (if appropriate)

**LOINC® Information**

Test ID	Test Order Name	Order LOINC Value
FBL	Fungal Culture, Blood	601-5

Result ID	Reporting Name	LOINC®
FBL	Fungal Culture, Blood	601-5