MAYO CLINIC LABORATORIES

Test Definition: CIMRP

Coccidioides immitis/posadasii, Molecular Detection, PCR, Varies

Overview

Useful For

Rapid detection of *Coccidioides* DNA, preferred method

An aid in diagnosing coccidioidomycosis

Testing Algorithm

For more information see Meningitis/Encephalitis Panel Algorithm.

Special Instructions

- Meningitis/Encephalitis Panel Algorithm

Method Name

Real-Time Polymerase Chain Reaction (PCR)

NY State Available

Yes

Specimen

Specimen Type

Varies

Shipping Instructions

Specimen must arrive within 7 days of collection; specimen >7 days will be rejected.

Necessary Information

Specimen source is required.

Specimen Required

The high sensitivity of amplification by polymerase chain reaction (PCR) requires the specimen to be processed in an environment in which contamination of the specimen by *Coccidioides* species DNA is unlikely.

Preferred Specimens: Body fluid, cerebrospinal fluid (CSF), ocular fluid, respiratory (eg, bronchoalveolar lavage [BAL], bronchial washing, sputum), fresh tissue, or bone

Acceptable Specimens: If no fresh specimen is available, digested respiratory specimens treated with N-acetyl-L-cysteine-sodium hydroxide (NALC/NaOH) are acceptable (eg, BAL, bronchial washing, respiratory fluid, sputum, or tracheal secretion)

Submit only 1 of the following specimens:

Specimen Type: Body fluid
Sources: Body, ocular, or CSF
Container/Tube: Sterile container
Specimen Volume: 1 mL
Additional Information: Only fresh, non-NALC/NaOH-digested body fluid is acceptable.

Specimen Type: Respiratory
Sources: BAL, bronchial washing, or sputum
Container/Tube: Sterile container
Specimen Volume: 1 mL if only PCR ordered or 3 mL if PCR ordered with smear and culture

Specimen Type: Tissue
Sources: Fresh tissue or bone
Container/Tube: Sterile container
Specimen Volume: 5 to 10 mm
Collection Instructions: Keep moist with sterile water or sterile saline
Additional Information: Only fresh, non-NALC/NaOH-digested tissue is acceptable.

Acceptable
Specimen Type: NALC/NaOH-digested respiratory specimens
Sources: BAL, bronchial washing, respiratory fluid, sputum, or tracheal secretion
Container/Tube: Sterile container
Specimen Volume: 2 mL
Collection Instructions:
1. Submit digested specimen treated with NALC/NaOH.
2. Clearly indicate on container and order form that specimen is a digested specimen.

Forms

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

Specimen Minimum Volume

Body fluid or nondigested respiratory specimen: 0.5 mL; Fresh tissue or bone: 5 mm; NALC-NaOH-digested specimen: 1 mL

Reject Due To

Blood Bone marrow Specimen in anaerobe vial or viral transport	Reject

medium (including but not limited to M4, M5, BD viral transport media, thioglycolate broth) Feces Swabs Tissues in formalin fluid Urine	

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Varies	Refrigerated (preferred)	7 days	
	Frozen	7 days	

Clinical & Interpretive

Clinical Information

Coccidioidomycosis is caused by the dimorphic fungi, *Coccidioides immitis* and *Coccidioides posadasii.* These organisms are endemic to the southwestern regions of the United States, northern Mexico, and areas of Central and South America, with recent literature suggests the geographic area of endemicity may be expanding over time.

The gold standard for the diagnosis of coccidioidomycosis is culture of the organism from clinical specimens due to its high sensitivity. However, growth in culture may take up to several weeks, which can delay diagnosis and treatment. In addition, the propagation of *Coccidioides* species in the clinical laboratory is a significant safety hazard to laboratory personnel.

This polymerase chain reaction method can identify *Coccidioides* species directly from clinical specimens, allowing for a rapid diagnosis. Fungal culture should also always be performed since it may enhance detection, and the isolate may be needed for antifungal susceptibility testing.

Reference Values

Not applicable

Interpretation

A positive result indicates presence of *Coccidioides* DNA.

A negative result indicates absence of detectable *Coccidioides* DNA.

Cautions

This test should always be performed in conjunction with fungal culture.

This rapid polymerase chain reaction assay detects *Coccidioides* nucleic acid and, therefore, does not distinguish between viable, disease-related organisms and transient colonizing organisms or nucleic acid persisting from old disease. Test results should be correlated with patient symptoms and clinical presentation before a definitive diagnosis is made.

A negative result does not rule out the presence of *Coccidioides* or active disease because the organism may be present at levels below the limit of detection for this assay.

This test does not distinguish between *Coccidioides immitis* and *Coccidioides posadasii.*

Clinical Reference

1. Williams SL, Chiller T: Update on the epidemiology, diagnosis, and treatment of coccidioidomycosis. J Fungi (Basel). 2022 Jun 25;8(7):666. doi: 10.3390/jof8070666
2. Thompson GR, Ampel NM, Blair JE, et al: Controversies in the management of central nervous system coccidioidomycosis. Clin Infect Dis. 2022 Sep 10;75(4):555-559. doi: 10.1093/cid/ciac478
3. Boro R, Iyer PC, Walczak MA: Current landscape of coccidioidomycosis. J Fungi (Basel). 2022 Apr 17;8(4):413. doi: 10.3390/jof8040413

Performance

Method Description

Following specimen processing, nucleic acids are extracted, and the extract transferred to individual self-contained cuvettes for amplification using the LightCycler real-time polymerase chain reaction (PCR) platform (Roche Applied Sciences). The LightCycler is an automated instrument that amplifies and monitors the development of target nucleic acid (amplicon) after each cycle of PCR. The detection of amplicon is based on fluorescence resonance energy transfer, which utilizes hybridization probes. The presence of the specific organism nucleic acid is confirmed by performing a melting curve analysis of the amplicon.(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)

PDF Report

No

Day(s) Performed

Monday through Sunday

Report Available

1 to 3 days

Specimen Retention Time

7 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 was developed and its performance characteristics determined by Mayo Clinic in a manner consistent with CLIA requirements. It has not been cleared or approved by the US Food and Drug Administration.

CPT Code Information

87798

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
CIMRP	Coccidioides PCR	97916-1

Result ID	Test Result Name	Result LOINC® Value
SRC64	Coccidioides PCR, Specimen Source	31208-2
88804	Coccidioides PCR, Result	97916-1