

Overview

Useful For

Diagnosing coccidioidomycosis in spinal fluid

Testing Algorithm

See [Meningitis/Encephalitis Panel Algorithm](#) in Special Instructions.

Special Instructions

- [Meningitis/Encephalitis Panel Algorithm](#)

Method Name

ComplementFixation(CF)UsingCoccidioidin:IgG
Immunodiffusion:IgGandIgM

NY State Available

Yes

Specimen

Specimen Type

CSF

Specimen Required

Container/Tube: Sterile vial

Specimen Volume: 2 mL

Forms

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

Specimen Minimum Volume

1.2 mL

Reject Due To

Gross hemolysis	OK
Gross lipemia	OK

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
CSF	Refrigerated (preferred)	14 days	
	Frozen	14 days	

Clinical and Interpretive

Clinical Information

Coccidioidomycosis (Valley fever, San Joaquin Valley fever) is a fungal infection found in the southwestern United States, Central America, and South America. It is acquired by inhalation of arthroconidia of *Coccidioides immitis/posadasii*. Usually, it is a mild, self-limiting pulmonary infection. Less commonly, chronic pneumonia may occur, progressing to fibronodular cavitary disease. A rash often develops within 1 to 2 days, followed by erythema nodosum or multiforme and accompanying arthralgias. About 2 weeks after exposure, symptomatic patients develop fever, cough, malaise, and anorexia; chest pain is often severe. Coccidioidomycosis may disseminate beyond the lungs to involve multiple organs, including the meninges.

Serologic testing for coccidioidomycosis should be considered when patients exhibit symptoms of meningeal infection and have lived in or traveled to areas where *Coccidioides immitis/posadasii* is endemic. Any history of exposure to the organism or travel cannot be overemphasized when coccidioidomycosis serologic tests are being considered.

Reference Values

COMPLEMENT FIXATION

Negative

If positive, results are titered.

IMMUNODIFFUSION

Negative

Results are reported as positive, negative, or equivocal.

Interpretation

Complement Fixation:

IgG antibody is detected by complement fixation (CF) testing. Any CF titer in cerebrospinal fluid (CSF) should be considered significant. A positive complement fixation test in un-concentrated CSF is diagnostic of meningitis.

Immunodiffusion:

IgM and IgG precipitins are rarely found in CSF. However, when present, they are diagnostic of meningitis (100% specific). Since the immunodiffusion test is 100% specific, it is helpful in interpreting CF results.

Cautions

While complement fixation (CF) titers may be present in serum months after the infection has resolved, any CF titer in spinal fluid should be considered significant.

Clinical Reference

1. Larone D, Mitchell T, Walsh T: *Histoplasma, blastomyces, coccidioides*, and other dimorphic fungi causing systemic mycoses. In: Murray PR, Baron EJ, Pfaller MA, et al, eds. Manual of Clinical Microbiology. 7th ed. ASM Press, 1999:1260-1261

2. Ramanan P, Wengenack NL, Theel ES: Laboratory diagnosis for fungal infections. A review of current and future

diagnostic assays. Clin Chest Med. 2017 Sep;38(3):535-554. doi: 10.1016/j.ccm.2017.04.013

Performance

Method Description

Complement Fixation:

The immune response of a person to an infection frequently begins with the formation of specific antibody that is capable of combining in vitro with homologous antigen and complement (C'). The complement fixation (CF) test is a 2-stage test based on the ability of antigen-antibody complexes to bind C'. In the first stage, antigen and antibody combine and fix C'. The second stage is an indicator system in which sheep erythrocytes, sensitized by rabbit anti-sheep red cell antibody (hemolysin), are used to demonstrate the presence of unfixed C'. If the patient's serum contains C'-fixing antibody that reacts with the specific antigen (a positive reaction), C' will be fixed and excess C' will not be available to react with and lyse the sensitized sheep erythrocytes. If no antigen-antibody reaction occurs (a negative reaction), C' will be available to lyse the sheep erythrocytes. The CF titer is determined by the greatest dilution of serum (antibody) in which the sheep erythrocytes are not lysed.

Immunodiffusion:

Immunodiffusion (ID) is a qualitative test employed for the detection of precipitating antibodies present in the CSF. Soluble antigens of the fungus are placed in wells of an agarose gel filled Petri dish and the patient's CSF and a control (positive) CSF are placed in adjoining wells. If present, specific precipitate antibody will form precipitin lines between the wells. Their comparison to the control CSF establishes the results. When performing the ID test, only precipitin bands of identity with the reference bands are significant. (Kaufman L, Kovacs JA, Reiss E: Immunomycology. In: Rose NR, de Macario EC, Folds JD, et al, eds. Manual of Clinical Laboratory Immunology. 5th ed. ASM Press, 1997:591-593; Ramanan P, Wengenack NL, Theel ES: Laboratory diagnosis for fungal infections. A review of current and future diagnostic assays. Clin Chest Med. 2017 Sep;38[3]:535-554)

PDF Report

No

Day(s) and Time(s) Test Performed

Monday; 6 a.m.

Tuesday through Friday; 9:30 a.m.

Analytic Time

3 days

Maximum Laboratory Time

6 days

Specimen Retention Time

14 days

Performing Laboratory Location

Rochester

Fees and 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 Regional Manager. For assistance, contact [Customer Service](#).

Test Classification

This test uses a standard method. Its performance characteristics were determined by Mayo Clinic in a manner consistent with CLIA requirements. This test has not been cleared or approved by the U.S. Food and Drug Administration.

CPT Code Information

86635 x 3

LOINC® Information

Test ID	Test Order Name	Order LOINC Value
CCOC	Coccidioides Ab, CompF/ImmDiff, CSF	88745-5

Result ID	Test Result Name	Result LOINC Value
81542	Coccidioides Ab, CompF, CSF	13917-0
21002	Coccidioides, IgG, ImmDiff, CSF	94662-4
21001	Coccidioides, IgM, ImmDiff, CSF	94663-2