

Overview

Useful For

Aiding in the diagnosis of California (La Crosse) encephalitis using spinal fluid specimens

Testing Algorithm

See [Mosquito-borne Disease Laboratory Testing](#) in Special Instructions.

Special Instructions

- [Mosquito-borne Disease Laboratory Testing](#)

Method Name

Immunofluorescence Assay (IFA)

NY State Available

No

Specimen

Specimen Type

CSF

Ordering Guidance

This assay detects California virus antibodies only. For a complete arbovirus panel, order ABOPC / Arbovirus Antibody Panel, IgG and IgM, Spinal Fluid.

New York State clients: This test is not offered for specimens originating in New York.

Specimen Required

Container/Tube: Sterile vial

Specimen Volume: 0.8 mL

Forms

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

Specimen Minimum Volume

0.50 mL

Reject Due To

Gross hemolysis	OK
Gross lipemia	OK

Specimen Stability Information

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

Specimen Type	Temperature	Time	Special Container
	Frozen	14 days	

Clinical and Interpretive

Clinical Information

California (La Crosse) virus is a member of the *Bunyaviridae* family and it is one of the arthropod-borne encephalitides. It is transmitted by various *Aedes* and *Culex* mosquitoes and is found in such intermediate hosts as the rabbit, squirrel, chipmunk, and field mouse.

California meningoencephalitis is usually mild and occurs in late summer. Ninety percent of infections are seen in children less than 15 years of age, usually from rural areas. The incubation period is estimated to be 7 days and acute illness lasts 10 days or less in most instances. Typically, the first symptoms are nonspecific, lasting 1 to 3 days, and are followed by the appearance of central nervous system (CNS) signs and symptoms such as stiff neck, lethargy, and seizures, which usually abate within 1 week. Symptomatic infection is almost never recognized in those over 18 years old. The most important sequela of California virus encephalitis is epilepsy, which occurs in about 10% of children and almost always in patients who have had seizures during the acute illness. An estimated 2% of patients have persistent paresis. Learning disabilities or other objective cognitive deficits have been reported in a small proportion (<2%) of patients. Learning performance and behavior of most recovered patients are not distinguishable from comparison groups in these same areas.

Infections with arboviruses can occur at any age. The age distribution depends on the degree of exposure to the particular transmitting arthropod relating to age, sex, and occupational, vocational, and recreational habits of the individuals. Once humans have been infected, the severity of the host response may be influenced by age. Serious California (La Crosse) virus infections primarily involve children, especially boys. Adult males exposed to California viruses have high prevalence rates of antibody but usually show no serious illness. Infection among males is primarily due to working conditions and sports activities taking place where the vector is present.

Reference Values

IgG: <1:1

IgM: <1:1

Reference values apply to all ages.

Interpretation

A positive result indicates intrathecal synthesis of antibody and is indicative of neurological infection.

Cautions

All results must be correlated with clinical history and other data available to the attending physician.

False-positive results may be caused by breakdown of the blood-brain barrier, or by the introduction of blood into the cerebrospinal fluid at collection.

Clinical Reference

- Gonzalez-Scarano F, Nathanson N: Bunyaviruses. In: Fields BM, Knipe DM, eds. *Fields Virology*. Vol. 1. 2nd ed. Raven Press, 1990; 1195-1228
- Donat JF, Rhodes KH, Groover RV, Smith TF: Etiology and outcome in 42 children with acute nonbacterial

meningoencephalitis. Mayo Clin Proc. 1980;55:156-160

3. Tsai TF: Arboviruses. In: Murray PR, Baron EF, Pfaller MA, et al, eds. Manual of Clinical Microbiology. 7th ed. ASM Press; 1999: 1107-1124

4. Calisher CH: Medically important arboviruses of the United States and Canada. Clin Microbiol Rev. 1994;7:89-116

5. Beckham JD, Tyler KL: Arbovirus Infections. Continuum (Minneap Minn). 2015 Dec;21(6 Neuroinfectious Disease):1599-1611. doi: 10.1212/CON.0000000000000240

6. Dolin R: California encephalitis, hantavirus pulmonary syndrome, hantavirus hemorrhagic fever with renal syndrome, and bunyavirus hemorrhagic fevers. In Bennett JE, Dolin R, Blaser MJ, eds. Mandell, Douglas, and Bennett's Principles and Practice of Infectious Diseases. 9th ed. Elsevier; 2020:2169-2176

Performance

Method Description

Dilutions of cerebrospinal fluid (CSF) are prepared and allowed to react with substrate cells infected with the appropriate arbovirus. If antibodies to this virus are present in the CSF of the patient, an antigen-antibody complex will develop that can be detected by a fluorescein-labeled antibody directed to human globulin. (Tsai TF: Arboviruses. In: Murray PR, Baron EJ, Pfaller MA, et al, eds. Manual of Clinical Microbiology. 7th ed. ASM Press; 1999:1107-1124; Beaty BJ, Casals J, Brown KL, et al: Indirect fluorescent-antibody technique for serological diagnosis of LaCrosse [California] virus infections. J Clin Microbiol. 1982;15:429-443; Beckham JD, Tyler KL: Arbovirus Infections. Continuum (Minneap Minn). 2015 Dec;21(6 Neuroinfectious Disease):1599-1611. doi: 10.1212/CON.0000000000000240)

PDF Report

No

Day(s) Performed

May through October: Monday through Friday

November through April: Monday, Wednesday, Friday

Report Available

Same day/1 to 4 days

Specimen Retention Time

2 weeks

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 was developed and its performance characteristics 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

86651 x 2

LOINC® Information

Test ID	Test Order Name	Order LOINC Value
CAVPC	Calif(LaCrosse) Encep Ab Panel, CSF	96498-1

Result ID	Test Result Name	Result LOINC Value
26365	Calif(LaCrosse) Encep Ab, IgG,CSF	9539-8
26366	Calif(LaCrosse) Encep Ab, IgM,CSF	9540-6