

Overview

Useful For

Aiding the diagnosis of California virus (La Crosse)

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

Yes

Specimen

Specimen Type

Serum

Advisory Information

This assay detects only California virus. For a complete arbovirus panel, order ARBOP / Arbovirus Antibody Panel, IgG and IgM, Serum.

Specimen Required

Container/Tube:

Preferred: Serum gel

Acceptable: Red top

Specimen Volume: 0.5 mL

Forms

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

Specimen Minimum Volume

0.15 mL

Reject Due To

Gross hemolysis	Reject
Gross lipemia	Reject

Specimen Stability Information

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

Clinical and Interpretive

Clinical Information

California virus (La Crosse) is a member of the Bunyaviridae family and 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, chipmunk, and field mouse.

California meningoencephalitis is usually mild and occurs in late summer. Ninety percent of infections are seen in children under 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 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 sequelae of California virus encephalitis is epilepsy, which occurs in about 10% of children; almost always in patients who have had seizures during the acute illness. A few patients (estimated 2%) have persistent paresis. Learning disabilities or other objective cognitive deficits have been reported in a small proportion (no more than 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: <1:10

IgM: <1:10

Reference values apply to all ages.

Interpretation

In patients infected with these or related viruses, IgG antibody is generally detectable within 1 to 3 weeks of onset, peaking within 1 to 2 months and declining slowly thereafter.

IgM class antibody is also reliably detected within 1 to 3 weeks of onset, peaking and rapidly declining within 3 months.

Single serum specimen IgG of 1:10 or greater indicates exposure to the virus.

Results from a single serum specimen can differentiate early (acute) infection from past infection with immunity if IgM is positive (suggests acute infection).

A 4-fold or greater rise in IgG antibody titer in acute and convalescent sera indicates recent infection.

Cautions

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

Specimens drawn within the first 2 weeks after onset are variably negative for IgG antibody and should not be used to exclude the diagnosis of arboviral disease. If arboviral infection is suspected, a second specimen should be drawn and tested 10 to 21 days later.

Since cross-reactivity with dengue fever virus does occur with St. Louis encephalitis antigens and, therefore, cannot be differentiated further. The specific virus responsible for such a titer may be deduced by the travel history of the patient, along with available medical and epidemiological data, unless the virus can be isolated.

Usually, when an infection with an arbovirus is suspected, it is too late to isolate the virus or draw serum specimens to detect a rise of antibody titer.

Clinical Reference

1. Gonzalez-Scarano F, Nathanson N: Bunyaviruses. In Fields of Virology. Vol. 1. Second edition. Edited by BN Fields, DM Knipe. New York, Raven Press, 1990, pp 1195-1228
2. Donat JF, Hable-Rhodes KH, Groover RV, Smith TF: Etiology and outcome of 42 children with acute nonbacterial meningoencephalitis. Mayo Clin Proc 1980;55:156-160
3. Tsai TF: Arboviruses. In Manual of Clinical Microbiology. Seventh edition. Edited by PR Murray, EJ Baron, MA Pfaller, et al. Washington, DC, ASM Press, 1999 pp 1107-1124
4. Calisher CH: Medically important arboviruses of the United States and Canada. Clin Microbiol Rev 1994;7:89-116

Performance**Method Description**

Indirect immunofluorescence. Dilutions of test sera are prepared and allowed to react with substrate cells infected with California encephalitis virus. If IgG antibodies to this virus are present in the serum 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 Manual of Clinical Microbiology. Seventh edition. Edited by PR Murray, EJ Baron, MA Pfaller, et al. Washington, DC, ASM Press, 1999, pp 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;15:429-434)

PDF Report

No

Day(s) and Time(s) Test Performed

May through October: Monday through Friday; 9 a.m.

November through April: Monday, Wednesday, Friday; 9 a.m.

Analytic Time

Same day/1 day

Maximum Laboratory Time

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 has been cleared or approved by the U.S. 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

86651 x 2

LOINC® Information

Test ID	Test Order Name	Order LOINC Value
CAVP	Calif Virus (LaCrosse)IgG and IgM,S	In Process

Result ID	Test Result Name	Result LOINC Value
8764	Calif (LaCrosse) Encep Ab, IgG, S	10904-1
87280	Calif (LaCrosse) Encep Ab, IgM, S	10905-8