



ENCEPHALITIS, Acute Viral

(See also ENCEPHALITIS, Arboviral, and WEST NILE VIRUS)

1. **Agent:** Many viruses can produce this syndrome, including mumps, varicella zoster, herpes simplex I and II, measles, rabies, influenza (A and B) and a variety of enteroviruses. Rarely, live virus vaccines may result in acute encephalitis. A specific etiologic agent may be difficult to identify.
2. **Identification:** Clinical signs of encephalitis can occur as a primary manifestation, as an associated illness, or as a complication.
 - a. **Symptoms:** Variable; headache, high fever, meningeal signs, altered level of consciousness, spasticity, convulsions, and tremors. If the spinal cord is also affected, the condition is called *encephalomyelitis*; if the meninges are inflamed, the condition is called *meningoencephalitis*.
 - b. **Differential Diagnosis:** Arthropod-borne encephalitides, post-infectious encephalo-myelitis, other causes of inflammatory encephalopathy.
 - c. **Diagnosis:** Presence of viral-specific IgM antibodies in cerebrospinal fluid or acute-phase serum suggests recent infection. A 4-fold rise in viral-specific antibodies in paired acute and convalescent sera by neutralization, complement fixation, indirect fluorescent antibody, ELISA, or other serologic tests. Isolation of the virus from brain tissue or, rarely, from blood or CSF, or demonstration of viral antigen in brain tissue by immunofluorescence. Viral-specific PCR testing of CSF is available commercially and through public health laboratories.

REPORTING PROCEDURES

1. **Reportable.** (Title 17, Section 2500, *California Code of Regulations*).

Report Form: No report form is required.

An outbreak of viral encephalitis is defined as at least two cases outside of the immediate family from a suspected common source.

Outbreaks of encephalitis are investigated by Acute Communicable Disease Control Program.

2. Epidemiologic and Clinical Data:

- a. Other illnesses 3 to 4 weeks prior to onset.
- b. Immunization 3 to 4 weeks prior to onset: note dates, types, and sources.
- c. Results of the first spinal tap (CSF). Note the total WBC with differential, total RBC, and total protein and glucose and Gram stain.
- d. Results of all viral studies performed including antibody tests (serum and CSF), PCR-based diagnostics of CSF, and viral and bacterial cultures of CSF if completed.
- e. Results of other appropriate clinical studies (e.g., head CT, MRI, EEG).

CONTROL OF CASE, CONTACTS & CARRIERS

Follow-up depends on etiology, if known.

CASE: Isolation depends on communicability of etiologic agent. If unknown or enteroviral etiology is suspected, standard precautions are recommended. If respiratory virus is suspected then aerosol droplet isolation should also be followed.

CONTACTS: No restrictions.

CARRIERS: Not applicable.

PREVENTION-EDUCATION

Immunization against childhood disease. Use of good hygiene, especially hand washing.

DIAGNOSTIC PROCEDURES

Clinical and epidemiologic history is required to aid the laboratory in test selection.



1. **Antibodies:** Paired sera required.

Container: Serum separator tube (SST).

Test Requisition and Report Form H-3021 or online request if electronically linked to the Public Health Laboratory.

Test Requested: Encephalitis panel and/or enteroviral serology.

Material: Whole clotted blood, CSF.

Amount: 8-10 ml of blood, 1-2 ml CSF.

Storage: Refrigerate immediately.

Remarks: Collect first (acute) blood specimen as soon as possible. Collect second (convalescent) blood approximately 2 weeks after the first. Send each specimen to Public Health Laboratory as it is collected.

2. **Culture:** Depends on stage of illness. Consult the Public Health Laboratory, Virology Section.

Container: Sterile, 30 ml. wide-mouth screw-cap bottle, viral culturette, sterile test tube.

Laboratory Form: Test Requisition and Report Form H-3021

Examination Requested: Viral Culture.

Material: 2-3 grams of stool (no preservative) required; NP swab (using viral transport media) and CSF recommended.

Storage: Refrigerate and deliver to Public Health Laboratory within 48 hours of collection, or freeze immediately after collection at -70°F and keep frozen until delivery.

Remarks: Specimens for isolation attempts must be collected as soon as possible after the onset of symptoms.

3. **PCR:** Useful for the diagnostic of enterovirus and herpes viruses (including HSV I, HSVII, varicella zoster virus) which can cause acute viral encephalitis.

Container: sterile test tube.

Laboratory Form: Test Requisition and Report Form H-3021

Examination Requested: PCR of CSF for enterovirus, HSVI, HSVII, varicella zoster virus.

Material: 1-2 cc CSF (no preservatives).

Storage: Keep chilled and deliver to the virology laboratory as soon as possible. If unable to deliver within 48 hours, freeze immediately after collection at -70°C and keep frozen until delivered to the virology laboratory.