Arbovirus IgM Antibody Panel

ANALYTES TESTED: Eastern Equine Encephalitis (EEE), St. Louis Encephalitis (SLE), California Group (CGV) Encephalitis [Lacrosse and Jamestown Canyon Strain], and West Nile virus (WNV) antibodies.

USE OF TEST: Determination of recent infection by demonstration of IgM antibody in cerebral spinal fluid (CSF).

SPECIMEN COLLECTION AND SUBMISSION GUIDELINES:

Test Request Form DCH-0583
Specimen Submission Guidelines
Serum Specimen Collection DCH-0811
Transport Temperature: Frozen, cold packs or ambient temperature.
No special patient preparation is required.

SPECIMEN TYPE:

Specimen Required: Single CSF, paired sera*
Minimum Acceptable Volume: 1.5 ml
Container: 3-5 ml polypropylene screw capped tube or CSF tube #2 or #3.
Shipping Unit: Unit 8

*** Prior approval from the Virology Section Manager (517-335-8099 or 517-335-8100) is required for testing performed on serum. Acute and convalescent sera should be submitted together (see Note # 4 below). The acute specimen must be drawn at least 8 days post-onset and the convalescent drawn at least 22 days post-onset with a 2-3 week time period between blood draws.**

SPECIMEN REJECTION CRITERIA:

Specimens lacking two unique patient identifiers (i.e., full name, date of birth) will not be tested.
Plasma is unacceptable for testing by this method.

TEST PERFORMED:

Methodology: CGV – IgM Capture ELISA. EEE, SLE, WNV – Microsphere Immunoassay (MIA).
Turn Around Time: 1-2 weeks (results usually available within 1 week).
Where/When Performed: Lansing, weekly (May – October).
Specimens received November through April will be referred to the Center for Disease Control and Prevention (CDC) for testing.

RESULT INTERPRETATION:

Reference Range: NEGATIVE (No antibody detected).

1. Negative Result:
   A negative result indicates the absence of IgM antibody however, a false negative result may occur if the acute phase specimen (serum or CSF) is obtained too early during the disease process. The acute specimen must be drawn at least 8 days post-onset for IgM antibody to be detected.

2. Reactive Result:
   The presence of IgM antibody may indicate recent exposure. According to current CDC guidelines, arboviral IgM found in cerebral spinal fluid (CSF) is sufficient to establish a confirmed case of arboviral infection. However, during the investigation of the 2002 WNV outbreak in Michigan, MDHHS observed the persistence of WNV IgM antibodies in CSF up to 199 days and in serum for up to 500 days post-onset. The absence or presence of IgM antibody must be interpreted with caution, and the timing of specimen collection considered.

3. Uninterpretable Result:
   An uninterpretable result means that a non-specific reaction occurred when testing the patient specimen. Confirmatory testing by Plaque Reduction Neutralization (PRNT) will be performed on all MIA EEE, SLE or WNV uninterpretable results. Submit a convalescent serum specimen drawn at least 22 days post onset for all CGV uninterpretable results.

4. All positive serum specimens are reported as "Presumptive Positive" and will receive subsequent PRNT testing.

FEES: N/A

NOTES:

1. Arboviruses are transmitted to humans by hematophagous arthropods (i.e., mosquitoes and ticks); therefore, testing is only available in warm months when transmission is probable.

2. Only hospitalized patients with any of the following syndromes during May 1 – October 31 should be tested:
   - Viral encephalitis, a clinical diagnosis characterized by:
     a. Fever > 38°C or 100°F; and
     b. CNS involvement, including altered mental status (altered level of consciousness, confusion, agitation, or lethargy) or other cortical signs (cranial nerve palsies, paresis or paralysis, or convulsions); and
     c. An abnormal CSF profile suggesting a viral etiology (a negative bacterial stain and culture, pleocytosis [WBC between 5 and 1500 cells] and/or an elevated protein level >40 mg/dL).
   - Viral meningitis, without recovery in 72 hours (aseptic meningitis due to enterovirus is typically of short duration and has a benign clinical course).

- Guillain-Barre syndrome, especially with atypical features, such as fever, altered mental status, and/or pleocytosis.

3. As of 2007, the MDHHS lab does not test for arbovirus IgG antibody, therefore serum specimens are not accepted for routine testing.

4. For serum testing: To differentiate recent from past exposure, acute serum (drawn at least 8 days post-onset) and convalescent serum (drawn at least 22 days post-onset with a minimum of 14 days from acute collection date) specimens must be tested in parallel. If IgM antibody is not detected in the convalescent specimen, no further testing will be performed. If IgM antibody is detected, the plaque reduction neutralization test (PRNT) will be performed. Turn-around-time for PRNT is approximately 3-4 weeks.

ALIASES: Arbovirus panel