Michigan Department of Community Health
MDCH
Bureau of Laboratories

August 30, 2010
From: MDCH Bureau of Laboratories
Re: Arbovirus Testing

As we have entered the arbovirus transmission season, clinical laboratories are starting to detect arbovirus cases. Specimens from suspect cases who are hospitalized with meningitis and/or encephalitis can be forwarded to MDCH laboratory for confirmation. As a reminder, please note that we accept only cerebral spinal fluid (CSF) specimens for arbovirus testing. A cautionary note for laboratories using IFA testing for arboviruses - false negative tests have been reported due to lower sensitivity; we, therefore, advise laboratories that are using IFA, to submit specimens to MDCH for arboviruses testing on clinically suspect cases. CSF samples will be tested for IgM antibodies to the four arboviruses most likely to be found in Michigan, West Nile Virus (WNV), St. Louis encephalitis virus (SLE), Eastern Equine encephalitis virus (EEE), and California Group virus (CGV), which includes LaCrosse virus. For suspect hospitalized cases where CSF is not available, contact MDCH Communicable Disease Division at 517-335-8165 to discuss other testing options.

Viral encephalitis is one of the most dangerous mosquito-borne diseases caused by arbovirus infection. The Michigan Department of Community Health has already confirmed three human cases of Eastern Equine Encephalitis (EEE) in the state of Michigan. The Michigan Department of Agriculture has reported that 23 horses have tested positive for EEE with more than 62 suspect cases. EEE can cause neurologic illness in both horses and humans with case fatality rates close to 90% in horses and 30% in humans. Physicians treating patients with neurologic symptoms should consider testing for EEE and other mosquito-borne viruses and report suspect cases to their local health department. Additional information on arbovirus activity in Michigan can be found on the Emerging Infectious Diseases web page at www.michigan.gov/emergingdiseases.

People are reminded to take precautions to avoid mosquito bites, including staying indoors at dusk and dawn when mosquitoes are most active, wearing long sleeved shirts and pants when weather permits, using mosquito repellent according to label directions if you must be outdoors, keeping window screens and doors in good repair and eliminating standing water that can breed mosquitoes around your home. For information about EEE in humans, visit the Centers for Disease Control and Prevention's EEE website at http://www.cdc.gov/easternequineencephalitis/.

For questions regarding testing, please contact Dr. Anthony Muyombwe at 517-335-8099 or MuyombweA@michigan.gov.

Arbovirus IgM Antibody Panel

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

TEST CODE: 2771

USE OF TEST: Determination of recent infection by demonstration of IgM antibody.

SPECIMEN COLLECTION AND SUBMISSION GUIDELINES:

Test Request Form DCH-0583 (DCH-0583 fillable)
Specimen Submission Guidelines
Transport Temperature: Wet ice or ambient temperature.

SPECIMEN TYPE:

Specimen Required: CSF; Serum *
Minimum Acceptable Volume: 1.5 ml
Container: Plastic tube with skirted cap.
Shipping Unit: Unit 8

*** Prior approval from the Virology Section Manager (517-335-8099) is required for testing performed on serum.**

SPECIMEN REJECTION CRITERIA:

Critical Data Needed For Testing: patient identifier.

TEST PERFORMED:

Methodology: CGV – IgM Capture ELISA. EEE, SLE, WNV – Microsphere Immunoassay (MIA).
Turn Around Time: 3-4 weeks (results usually available within 2 weeks).
Where/When Performed: Lansing, weekly (May – October).

RESULT INTERPRETATION:

Reference Range: No antibody detected.

The presence of IgM antibody may have diagnostic value. Arboviral IgM found in cerebral spinal fluid (CSF) is sufficient to establish a confirmed case of arboviral infection. The presence of WNV IgM antibody has been documented in serum for up to 500 days post-onset. During the investigation of the 2002 WNV outbreak in Michigan, MDCH observed the persistence of WNV IgM antibodies in CSF up to 199 days. The absence or presence of IgM antibody must be

interpreted with caution, and the timing of the draw considered. The acute specimen must be drawn at least 8 days post-onset for detectable levels of antibody to be present.

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 – Nov 1 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 with a 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 MDCH lab does not test for Arbovirus IgG. Thus serum specimens are not accepted for testing.

ALIASES: West Nile, WNV, EEE, SLE, CGV, LaCrosse, Eastern Equine Encephalitis, St. Louis Encephalitis, California Group Virus.