



Healthy Insights

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Prevention news for the medical community of New Hampshire

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Arboviral Diseases in New Hampshire: Strategies for Prevention and Diagnosis

1. Vigilance is needed during the summer months to consider mosquito-borne diseases, including West Nile Virus (WNV) and Eastern Equine Encephalitis (EEE) in patients with compatible clinical features.
2. Prevention measures include avoiding mosquito bites with the use of protective clothing and insect repellents, and environmental reduction of mosquito populations.
3. Equine vaccines for EEE and WNV are available and should be used to protect horses. There are no recommended vaccines available for humans.
4. Suspected and confirmed cases of mosquito-borne diseases should be reported to NH DPHS Infectious Disease Investigation Section and Surveillance at 603-271-4496 (after hours 800-852-3345 ext. 5300).

Arboviruses in NH include West Nile virus (WNV) and Eastern Equine Encephalitis (EEE) virus, both transmitted to humans through the bite of an infected mosquito. The viruses are maintained in a bird-mosquito cycle with humans considered incidental hosts. The time of highest risk for human infection in NH has been identified between July and October. Year-round transmission is possible in some geographic locations in the U.S.

During last season (2010), there were 381 human cases of WNV reported in the US. Neuroinvasive Disease (meningitis and/or encephalitis) was recorded in 217 cases, while 164 cases were diagnosed with milder West Nile fever. In NH, one human case of WNV was reported (the first human case reported since 2003) as well as positive mosquito batches. For EEE, there was a single positive veterinary case reported in 2010. During 2007, 3 human EEE cases were reported and in 2009, 1 human case was reported.

When to Suspect Arboviral Illness

The incubation period following the bite of an infected mosquito ranges from 3 to 14 days. Most arboviral infections are mild and non apparent. Mild forms of disease normally present as a febrile illness but sudden onset of symptoms can be seen with headache, myalgias and arthralgias. Approximately 20% of those infected with WNV develop a mild illness known as West Nile Fever.

The more severe forms of arboviral infection include altered mental status and/or neurological dysfunction (cranial and peripheral neuritis or other neuropathies, including acute flaccid paralysis

syndrome). A minority of patients with severe disease develop a diffuse maculopapular or morbilliform rash. Approximately 1 in 150 WNV infections will result in severe neurological disease with encephalitis more common than meningitis. Older patients are at additional risk of developing severe West Nile Virus infections. For EEE, approximately one-third of all people who develop clinical encephalitis will die from the disease. Among those who recover, many suffer from permanent brain damage and severe disease can be seen in any age group, including children.

The typical laboratory findings are normal or elevated total leukocyte counts, lymphocytopenia and anemia, and hyponatremia in peripheral blood. Examination of cerebrospinal fluid (CSF) shows pleocytosis (usually with a predominance of lymphocytes), elevated protein, and normal glucose levels. For about one-third of WNV patients, magnetic resonance imaging (MRI) shows enhancement of the leptomeninges, the periventricular areas, or both, while MRI of EEE patients often reveal abnormalities of the basal ganglia and thalami.

Treatment is supportive, often involving hospitalization, intravenous fluids, respiratory support, and prevention of secondary infections for patients with severe disease.

When to Report Suspected Cases of Arboviral Illness

Clinicians, hospitals, and laboratories should report within 24 hours any patient meeting the following criteria:

1. Any patient with encephalitis or meningitis from July through November, who meet criteria a, b and c below without an alternative diagnosis:
 - a. Fever \geq 38.0 C or 100 F, and
 - b. CNS involvement including altered mental status (altered level of consciousness, confusion, agitation, lethargy) and/or other evidence of cortical involvement (e.g., focal neurologic findings, seizures), and
 - c. Abnormal CSF profile suggesting a viral etiology (a negative bacterial stain and culture) showing pleocytosis with predominance of lymphocytes. Elevated protein and normal glucose levels.

How to Report Suspect Cases of Arboviral Illness

All suspected arboviral cases should first be reported to the New Hampshire Division of Public Health Services by telephone. A completed case report form (attached) must be faxed to the NH Infectious Disease Investigation Section (603-271-0545) *and* a copy submitted with the laboratory specimen(s) to the NH Public Health Laboratories. DPHS staff members are available 24/7 to help determine if the clinical presentation meets the case criteria for viral meningoencephalitis and whether further testing would be appropriate. Specimen submission guidelines are attached as well.

For additional information on arboviral illness and maps of recent activity, please visit the NH DHHS website at <http://www.dhhs.nh.gov/dphs/cdcs/arboviral/results.htm>. For fact sheets on WNV and EEE, go to <http://www.dhhs.nh.gov/dphs/cdcs/arboviral/publications.htm>

A toll free information line is also available for the public during the summer months: 1-866-273-NILE (6453).

Attachments:

- 1) Laboratory Submission Guidelines for Arboviral Testing
- 2) NH Arboviral Case Report Form

