

DATE: Oct. 19, 2011
TO: Health Alert Network
FROM: Eli Avila, Secretary of Health
SUBJECT: **First Human Case of Powassan Virus in Pennsylvania**
DISTRIBUTION: Statewide
LOCATION: Statewide
STREET ADDRESS: Statewide
COUNTY: Statewide
MUNICIPALITY: Statewide
ZIP CODE: Statewide

This transmission is a “Health Advisory” provides important information for a specific incident or situation; may not require immediate action.

HOSPITALS: PLEASE SHARE WITH ALL MEDICAL, PEDIATRIC, INFECTION CONTROL, NURSING, AND LABORATORY STAFF IN YOUR HOSPITAL

EMS COUNCILS: PLEASE DISTRIBUTE AS APPROPRIATE

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LOCAL HEALTH JURISDICTIONS: PLEASE DISTRIBUTE AS APPROPRIATE

PROFESSIONAL ORGANIZATIONS: PLEASE DISTRIBUTE TO YOUR MEMBERSHIP

The first recognized case of human illness due to Powassan virus was recently confirmed by the Pennsylvania Department of Health (PADOH). Because this is a rarely identified arboviral infection that is unfamiliar to most clinicians, PADOH is distributing information on Powassan virus and encourages health care providers to consider this diagnosis when seeing patients with meningoencephalitis.

Powassan virus is a rarely recognized cause of meningoencephalitis that was first recognized in 1958 in a child in Ontario, Canada. Since then, fewer than 100 cases have ever been reported, mostly in the north central Midwest (Wisconsin and Minnesota), in northern New England and in upstate New York. It is unique in that it is the only arboviral flavivirus infection in North America that is transmitted by a tick instead of mosquitoes, and produces an illness that is very similar to that seen with West Nile virus. Infection can result in severe illness and can be fatal in 10 percent of recognized cases.

This disease has never been observed in Pennsylvania until this year. In August, a previously healthy young adult farmer in northeastern PA was hospitalized with fever, headache, altered mental status, stiff neck and myalgia. The patient had no history of travel outside of his home area. Aseptic meningitis was diagnosed and West Nile infection was considered in the differential diagnosis as the causative agent. Testing of cerebrospinal fluid was initially

equivocal for West Nile IgM antibodies, but a follow-up convalescent serum sample was IgM positive. Specimens were forwarded to the Centers for Disease Control and Prevention (CDC), which determined by plaque reduction neutralization assay that the cause of illness was Powassan virus and not West Nile. As both viruses are in the flavivirus family, cross-reactive test results can occur in the laboratory and antibody titers against Powassan were found to be higher than those of West Nile virus.

Signs or symptoms of Powassan infection generally appear 4–18 days after an infected tick bite and can include (but are not limited to) fever, headache, vomiting, weakness, confusion, loss of coordination, speech difficulties and memory loss. Residual neurological problems can occur among survivors. There is no specific treatment for Powassan virus infection apart from appropriate supportive care.

Powassan virus is transmitted by two species of Ixodes ticks in North America – *Ixodes cookei* (the groundhog tick) and *Ixodes scapularis* (the deer tick). The latter species is responsible for a number of other human illnesses, including Lyme disease, babesiosis, anaplasmosis and ehrlichiosis. Some studies suggest that the duration of tick attachment necessary for disease transmission is shorter for Powassan virus than for Lyme disease (which usually requires attachment for >24 hours). *I. scapularis* can be found throughout Pennsylvania. The Pennsylvania patient did not specifically recall a tick bite, but had extensive outdoor exposure to ticks due to his occupation. The Pennsylvania Department of Environmental Protection (PADEP) is collecting ticks for analysis near where this infection occurred.

Health care providers should consider the diagnosis of Powassan disease in patients with meningitis, encephalitis or other non-specific febrile illness occurring during the warmer months of the year, especially if arboviral illness is considered or the patient has a history of tick exposure or bite. The disease can be diagnosed through the presence of antibodies in CSF or serum, although most laboratories cannot specifically test for this agent.

Suspected cases of Powassan virus should be reported to your local health department or PADOH to assist with laboratory diagnosis and patient management. PADOH can be contacted at 1-877-PA-HEALTH. Clinical samples can be submitted to PADOH's Bureau of Laboratories (BOL) for testing. In addition, any samples found to be positive for West Nile virus infection or related flaviviruses should be submitted to BOL for confirmation.

Cases of arbovirus infection should be entered into Pennsylvania's web-based electronic disease surveillance system, PA-NEDSS: <https://www.nedss.state.pa.us/nedss/default.aspx>

Fact sheets on Powassan virus and West Nile virus are available on the PADOH web site at: http://www.portal.state.pa.us/portal/server.pt/community/diseases_and_conditions/11595

Information is also available from CDC at www.cdc.gov and the Minnesota Department of Health at <http://www.health.state.mn.us/divs/idepc/diseases/powassan/basics.html>

Categories of Health Alert messages:

Health Alert: conveys the highest level of importance; warrants immediate action or attention.

Health Advisory: provides important information for a specific incident or situation; may not require immediate action.

Health Update: provides updated information regarding an incident or situation; unlikely to require immediate action.

This information is current as of Oct. 19, 2011 but may be modified in the future.