



Powassan virus infection

What is Powassan virus infection?

Powassan virus (POWV) infection is a rare tickborne viral infection occurring in Wisconsin and other northern regions of North America. POWV infection is caused by an arbovirus (similar to the mosquito-borne West Nile virus) but it is transmitted to humans by the bite of an infected tick instead of a mosquito bite. The virus is named for Powassan, Ontario where it was first discovered. Eleven reported cases of POWV infection have been detected among Wisconsin residents during 2003 to 2011. At least 50 cases have been detected in the United States and Canada since 1958.

How is Powassan virus spread?

In Wisconsin, *Ixodes scapularis* (known as the blacklegged tick or deer tick) is capable of transmitting Powassan virus. In addition, several other tick species in North America can carry POWV, including other *Ixodes* species and *Dermacentor andersoni*.

Where does Powassan virus infection occur?

Powassan virus infection occurs mostly in northeastern and upper Midwestern states. In Wisconsin, cases have been detected in areas where there is a high risk of exposure to ticks.

Who gets Powassan virus infection?

Everyone is susceptible to Powassan virus, but people who spend time outdoors in tick-infested environments are at an increased risk of exposure. In the upper Midwest, the risk of tick exposure is highest from late spring through autumn.

What are the symptoms of Powassan virus infection?

Symptoms usually begin 7-14 days (range 8-34 days) following infection. Some people who are infected may experience mild illness or no symptoms. Symptoms of illness usually begin with acute onset of fever and may include headache, muscle weakness, nausea, vomiting, stiff neck, fatigue, confusion, paralysis, speech difficulties, and memory loss. POWV infects the central nervous system and can cause encephalitis and meningitis. About 10-15% of persons infected with POWV will experience severe illness and survivors may develop long-term neurological problems.

How is Powassan virus infection diagnosed?

Because symptoms of Powassan virus infection are similar to symptoms of other arboviral infections, arboviral diseases can be difficult to differentiate. Blood tests can detect antibodies to POWV but are not readily available in commercial laboratories. In Wisconsin, arboviral panel testing can be requested through the Wisconsin State Laboratory of Hygiene (includes tests for West Nile, California/La Crosse, St. Louis, Eastern equine, and Western equine encephalitis viruses). The Wisconsin State Laboratory of Hygiene will forward the Powassan virus test request to the Centers for Disease Control and Prevention (CDC) for testing.

What is the treatment for Powassan virus infection?

Currently, there are no medications available for the treatment of Powassan virus illness but supportive care can be used to manage and alleviate symptoms. No vaccine is available to prevent people from becoming infected with Powassan virus.

What precautions can be taken to prevent Powassan virus infection?

The most effective way to prevent Powassan virus infection is to avoid tick bites. When in areas that may be tick-infested, the following precautions can reduce the risk of acquiring Powassan virus illness and other tickborne infections:



Disease Fact Sheet Series

- Wear a long-sleeved shirt, long pants, socks, and closed shoes (rather than sandals). Tuck shirts into pants and pant cuffs into tops of socks. Light-colored clothing will make any ticks on them more easily visible. Walk in the center of cleared or mowed trails to avoid brushing up against shrubs and tall grass.
- Conduct thorough tick checks on yourself and your children after spending time in a tick-infested area, and promptly remove any ticks found.
- Insect repellents containing 0.5% permethrin or 20-30% DEET have been shown to be effective in repelling deer ticks. If such products are used, be sure to follow the manufacturer's directions on the label. Take a shower after coming in from being outdoors to remove any residual insect repellent and ticks remaining on the body.

How should an attached tick be removed?

To remove a tick that has attached to the skin, grasp the tick with a pair of narrow-bladed tweezers or forceps as close as possible to the attachment (skin) site, and pull outward with a firm steady traction. If tweezers are not available, the fingertips can be used, but should be shielded from the tick with tissue paper or rubber gloves. Avoid squeezing or puncturing the body of the tick because it may contain infectious fluids. After tick removal, wash the bite site and your hands with soap and water, and apply a disinfectant or an antibiotic ointment to the site.