

Powassan Virus Fact Sheet

1. What is Powassan disease (POW)?

- a. Powassan disease is a serious and rare tick-borne illness caused by Powassan virus (POWV).
- b. Fewer than 70 cases have been identified in North America and less than 40 in the United States.
- c. POWV is the only arthropod-borne virus (Arbovirus) occurring in North America that is transmitted by ticks. The virus is in the same family as other arboviruses transmitted by mosquitoes (e.g. dengue, St. Louis encephalitis, yellow fever, Japanese B encephalitis, West Nile virus) and in the laboratory special tests may be necessary to determine which of these viruses caused the illness.
- d. POWV is named after Powassan, Ontario, where it was first identified in 1958 in a specimen taken from the brain of a 5-year-old child.
- e. POW has occurred in the Mid-Atlantic, Midwest and New England states..

Powassan Disease Cases by State (2001-2012)

State	Number
Maine	2
Michigan	1
Minnesota	10
New York	13
Pennsylvania	1 ^(08/20/11)
Virginia	1
Wisconsin	7

2. How do people get infected with POWV? - POWV is only transmitted by ticks:

- a. POWV (Lineage I) is carried and transmitted by *Ixodes cookei* and *Ixodes marxi* ticks. These ticks normally feed on foxes, skunks, woodchucks, or other medium-sized mammals. Human exposure to these ticks normally occurs either at or around their burrows, or by exposure to the host animal.
- b. Recently a second type of POWV (Lineage II) was isolated from a deer tick, *Ixodes scapularis*, which is the wide-spread tick that transmits Lyme disease and other tick diseases in Pennsylvania.
- c. A follow-up call with the Centers for Disease Control and Prevention concluded that Lineage II POWV most likely caused the single PA encephalitic disease. This conclusion

was based upon the case patient's exposure history and the fact that a southeastern New York POWV isolate was identified as Lineage II.

- d. In Pennsylvania, significant human exposure to the deer tick may occur where ever tall grass or bushes are present.
 - e. POWV does not spread from person to person.
3. **How soon do signs of Powassan disease appear after infection?** - Signs are generally seen about 4 to 18 days after an infected tick bite.
4. **What type of illness is caused by POW virus?**
- a. POWV infects the brain and can cause encephalitis (inflammation of the brain) and meningitis (inflammation of the membranes that surround the brain and spinal cord).
 - b. Early signs of disease usually include headache, fever, nausea, vomiting, stiff neck and sleepiness. Later signs include respiratory distress, tremors, confusion, weakness, loss of coordination, speech difficulties, memory loss, seizures, coma, paralysis and death.
 - c. About 10% of patients diagnosed with POW disease will die from their infection, and residual neurological problems may persist among those who survive.
 - d. As happens with most Arbovirus infections, it is probable that some people infected with POWV may experience a mild illness that is never diagnosed, or will have no symptoms at all when infected. It is unknown whether or how often these milder or asymptomatic cases occur.
5. **How long does it take for a tick to transmit POWV?** - Ticks feed on blood by inserting their mouth parts into the skin of a person or animal. They are slow feeders so it takes time before any infectious agent can be transmitted. While the time interval is not specifically known for POWV, it is much shorter than the time known to be needed to transmit the Lyme disease bacterium (24 to 48 hours).
6. **How is POWV infection diagnosed?** There are no symptoms of illness that are unique to this infection. Specimens must be collected and tested in the to look for the presence of the virus or the body's immune response to the infection. Because the virus is similar to other disease-producing Arboviruses, sometimes specialized laboratory tests must be done to distinguish between these viruses.
7. **What is the treatment for Powassan disease?** - There is no effective treatment for Powassan. As a result, supportive care is generally recommended.
8. **Is there a vaccine I can get for Powassan disease?** - Currently there is no POW vaccine.

9. **How do I protect myself from getting Powassan and/or Lyme disease?** - To prevent tick-borne illnesses, the best protection is to avoid contact with infected ticks. If you are doing any outdoor activities in areas that may have ticks, you should take the following steps:
- a. Wear light-colored clothing as this will allow you to better see and remove ticks that are crawling on your clothing.
 - b. Tuck your pant legs into your socks, so that ticks cannot crawl up your pant legs.
 - c. Apply repellants to discourage ticks from attaching. Repellents containing permethrin can be sprayed onto boots and clothing, and will last for several days. Repellents containing DEET can be applied to the skin, but will last only a few hours before reapplication is necessary. Follow the manufacturer's instructions and use with caution on children.
 - d. Conduct a body check upon returning from tick-infested areas by searching your entire body for ticks. Use a hand-held or full-length mirror to view all parts of your body.

10. **How do I properly remove a tick?**

- a. Using fine-tipped tweezers, grab the tick at its mouth, and with firm, slow steady pressure pull the tick off. Do not squish the attached tick because that may inject infected bodily fluids into the bite wound.
- b. Do not use petroleum jelly, hot matches, nail polish remover or any other substance to try to remove the tick. Using those items will increase the risk of an infection when the agitated tick regurgitates infected stomach contents into the wound.

11. **More about Powassan disease:** <http://www.cdc.gov/ncidod/dvbid/arbor/arbdet.htm>

This fact sheet provides general information. Please contact your physician and/or veterinarian for specific clinical information related to you or your animal.