



Powassan Encephalitis

What is Powassan Encephalitis?

Powassan encephalitis is a serious but rare tick-borne illness caused by the Powassan virus. The virus was named after the town of Powassan, Ontario where the virus was first isolated in 1958.

Where has this virus been found?

Although human illness is rare and most infections do not cause disease, Powassan virus has been found in North America and South Eastern Siberia. Between 1958 and 1999, only 12 human cases of Powassan encephalitis have been known to occur in Canada. The virus has caused clinical disease in people in Ontario, Quebec and New Brunswick.



Groundhog ticks are capable of carrying and transmitting the Powassan virus.

How is this virus transmitted?

Even with a bite from an infected tick, there is only a small chance of getting Powassan encephalitis. Ticks are slow feeders so it takes time before the virus can be transmitted to your blood.

This virus can be transmitted to humans through the bite of an infected tick from the following species:

- Groundhog/Woodchuck tick (*Ixodes cookei*)
- Squirrel tick (*Ixodes marxi*)
- Rocky Mountain Wood tick (*Dermacentor andersoni*)
- *Ixodes spinipalpus*

It may also be transmitted by consumption of raw milk from certain infected animals.

It cannot be transmitted from person-to-person.

The groundhog or woodchuck tick (*Ixodes cookei*) is commonly found throughout Ontario near nests or burrows and prefers to feed on groundhogs, squirrels, chipmunks, mice, porcupines, raccoons and skunks. This species of tick rarely contacts and bites humans.

What are the symptoms of Powassan Encephalitis?

The Powassan encephalitis virus causes inflammation and swelling in the lining of the brain and spinal cord (encephalitis and meningoencephalitis). Should infection occur, symptoms should present themselves within 4-18 days after the bite.

Initial symptoms include:

- headache,
- fever,
- stiff neck,
- drowsiness,
- nausea and,
- vomiting

How is Powassan Encephalitis diagnosed?

Blood tests are available for diagnosis. However, testing may react with antibodies of other flaviviruses such as dengue, St. Louis encephalitis and yellow fever so an epidemiologic history of the patient is crucial to distinguish among them.

What is the treatment?

There is no specific treatment or medication for Powassan encephalitis. Medical attention should be sought if symptoms develop over the next two weeks.

If Powassan encephalitis develops, supportive care can be provided.

How can I prevent being exposed to the Powassan virus?

The best method to avoid exposure to the Powassan virus is to avoid being bitten by a tick.

Tick Avoidance Tips

For yourself:

- Don't walk barelegged in tall grass, wooded areas or marshlands.
- Try to stay in the centre of a cleared trail to avoid contact with overgrown grass, brush, and leaf litter.
- Wear long sleeves, slacks and fully-closed boots or shoes when walking in grassy or wooded areas.
- Tuck your pant legs into your socks.
- Conduct a "tick check" on yourself, your family and your pets after exposure to tick habitat.
- Wear light-coloured clothing to make the ticks easier to find.
- Insect repellents containing DEET (N,N-diethyl-meta-toluamide) are useful and can be sprayed onto clothing, especially pants and socks. Please read the label when using any repellents, in particular when using them on young children. For safety tips on using personal insect repellents containing DEET, visit the following website: www.hc-sc.gc.ca and search "insect repellents."

For your pets:

- Check your pets for ticks daily, especially after they spend time outdoors.
- If you find a tick on your pet, remove it right away.
- Ask your veterinarian to conduct a tick check at each exam.
- Talk to your veterinarian about tickborne diseases in your area.
- Reduce tick habitat in your yard.
- Talk with your veterinarian about using tick preventive products on your pet.

For your yard:

- Remove ideal tick habitat from your property, such as brush and leaf litter.
- Keep your lawn short (<16cm).
- Place a 3-ft wide barrier of wood chips or gravel between lawns and wooded areas and around patios and play equipment. This will restrict tick migration into recreational areas.
- Keep tables, swing sets, play equipment, etc. away from woods, shrubs and tall grass. Place in a sunny location, if possible.
- Remove possible rodent habitats around your property (e.g. stack wood neatly in dry areas away from house).

Tick Removal

- Prompt removal of ticks from your skin will help prevent infection, since transmission of the disease agent usually requires the tick to be attached for a longer period of time.
- Using fine-tipped tweezers, carefully grasp the tick as close to your skin as possible. Pull it straight out, gently but firmly.
- Don't squeeze it. Squeezing the tick can cause the disease agent to be accidentally introduced into your body.
- Don't put anything on the tick, or try to burn the tick off.
- Thoroughly cleanse the bite site with rubbing alcohol and/or soap and water.

Tick Identification

- After the tick has been removed, place it in screw-top bottle (e.g. pill vial), and take it to your doctor. They can send it to the Ontario Public Health Laboratory for identification.
- Establishing the type of tick may help to assess your risk.
- It is important to remember where you most likely acquired the tick.

Note: Tick identification only is available. Ticks submitted will not be tested for the Powassan virus.

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HealthUnit
Haldimand - Norfolk

www.hnhu.org • info@hnhu.org

Simcoe:
P.O. Box 247,
12 Gilbertson Dr.,
Simcoe, ON N3Y 4L1
519-426-6170 or 905.318.6623

Caledonia:
282 Argyle St. S,
Caledonia, ON N3W 1K7
905.318.5367

