

# POWASSAN VIRUS

## Case definition

The Powassan virus (POWV) case definition can be found in the [NS Surveillance Guidelines](https://novascotia.ca/dhw/populationhealth/surveillanceguidelines/powassan-surveillance-guidelines.pdf) found here: <https://novascotia.ca/dhw/populationhealth/surveillanceguidelines/powassan-surveillance-guidelines.pdf>.

## Causative agent

Powassan virus is a flavivirus.

## Source

The *Ixodes scapularis*, commonly known as the blacklegged (BLT) or deer tick, and other ticks such as the *I. pacificus* ticks, also known as Western BLT, the squirrel tick (*Ixodes marxi*) or the groundhog tick (*Ixodes cookie*) are the vectors that spread POWV. The squirrel tick and groundhog tick do not frequently bite humans. *I. scapularis* have been found throughout Nova Scotia. *I. pacificus* is primarily found in British Columbia. POWV is a rare disease in humans.

Deer and wild rodents are the reservoir hosts for these ticks. Adult BLT normally feed on deer while nymphs primarily feed on small rodents such as mice and squirrels.

BLT survive best in areas that provide a moist habitat, such as wooded or forested areas, urban parks, and gardens, because the trees provide shade, and leaves provide protective ground cover.

Migrating birds can also carry blacklegged ticks into Nova Scotia. Nova Scotia has a suitable climate for tick populations. Climate change contributes to the expansion of tick populations in Canada. As temperatures and humidity increase, prevalence, activity, and tick species are also expected to increase. In addition, as environments become more suitable tick habitats, tick survival increases, reservoir hosts may be more abundant and tick activity period is lengthened.

## Transmission

Animal studies suggest that tick borne transmission of POWV to humans requires 15-30 minutes; notably more rapid than Lyme disease, Anaplasmosis or Babesiosis.

## Communicability

There is no evidence of natural mammal to mammal transmission (including person-to-person and non-vector animal (e.g., pet) to human transmission). POWV can be transmitted through blood transfusion.

## Incubation

The incubation period ranges from 7-34 days.

## Signs and Symptoms

Many people infected with POWV are asymptomatic or develop mild influenza-like symptoms with headache and fever being common. However, POWV can cause severe disease, including viral meningitis or encephalitis with altered sensorium. Approximately ten percent of neuroinvasive disease cases are fatal, and survivors may have long lasting sequelae.

## Diagnostic testing and treatment

Diagnostic testing for POWV can be found in the [Guidance for Primary Care and Emergency Medicine Providers in the Management of Lyme Disease, Human Granulocytic Anaplasmosis, Babesiosis and Powassan virus infection in Nova Scotia](#).

There is no vaccine or antivirals for POWV and treatment is supportive.

# PUBLIC HEALTH MANAGEMENT & CONTROL

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## Case management

This disease is notifiable.

1. Contact the client to obtain case details including onset information, mode of transmission, in particular tick exposures, travel history, areas of work and recreational activity, donation or receipt of blood products, tissues or organs.
2. Patients with active disease should not donate blood because POWV can also be transmitted through blood transfusion.
3. Lookback and traceback investigations can be initiated by Canadian Blood Services for Powassan virus cases that have donated or received blood products within one year of specimen collection.
4. Educate the client about POWV using the key messages listed below.

## Education

### Key messages

- Blacklegged ticks are found throughout Nova Scotia, and while the risk is low, there is a risk of getting POWV throughout the province.
- Nova Scotians are encouraged to spend time outdoors, be active and remember to protect themselves against tick bites, which is the best way to prevent POWV.
- Use personal insect repellent with ingredients proven to be effective by [Health Canada](https://www.canada.ca/en/health-canada/services/about-pesticides/insect-repellents.html#a3): <https://www.canada.ca/en/health-canada/services/about-pesticides/insect-repellents.html#a3> and follow directions carefully.
- Cover skin when walking, working, or playing in areas where ticks are found.
- Wear enclosed shoes, tucking shirt in pants and pant legs in socks.
- Walk on well-traveled paths, avoiding high grass and vegetation.
- Check yourself, your children and pets after walking in grassy or wooded areas. When possible, take a bath or shower within two hours of coming indoors. This makes it easier to find ticks and washes away loose ones. Check clothing and inspect skin including in and around ears, arm pits, inside belly button, groin, around the waist, and especially in hair and scalp area.
- Remove ticks as soon as you find them. [To safely remove a tick](#), carefully grasp the head of the tick as close to the skin as possible with clean tweezers and slowly pull the tick straight out. Try not to twist or crush the tick. Clean your hands with soap and water or alcohol-based sanitizer. Wash the area where the tick was attached to the skin with soap and water and disinfect with rubbing alcohol or hydrogen peroxide.
- To have a tick identified please visit [eTick.ca](http://eTick.ca) for more information.
- Review common signs and symptoms of tick borne diseases.
- See a health care provider if symptoms develop after being bitten by a BLT.
- Use simple landscaping techniques to reduce the number of blacklegged ticks around your home. Please see the DHW website for detailed information at <https://novascotia.ca/dhw/cdpc/documents/Landscape-Management-Handbook.pdf>

## Exclusion

Exclusion of cases is not applicable.

## Contact Tracing

Contact tracing is not applicable.

## REFERENCES

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