

Tick Talk



Get Tick Smart

- Know the bug
- Know the bite
- Know what to do

**Let's
Target
Lyme** 

www.ontario.ca/lyme

...and other tick-
borne diseases



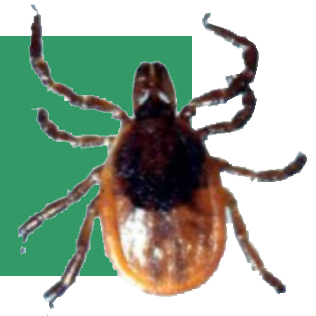
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Know the Bug



- Ticks are external parasites
- Arachnid family
- Feed on mammals and birds
- Found Worldwide
- Two groups – hard and soft ticks
- Examples of hard ticks include:
 - American dog tick
 - Black-legged tick (*Ixodes scapularis*)



Know the Bug

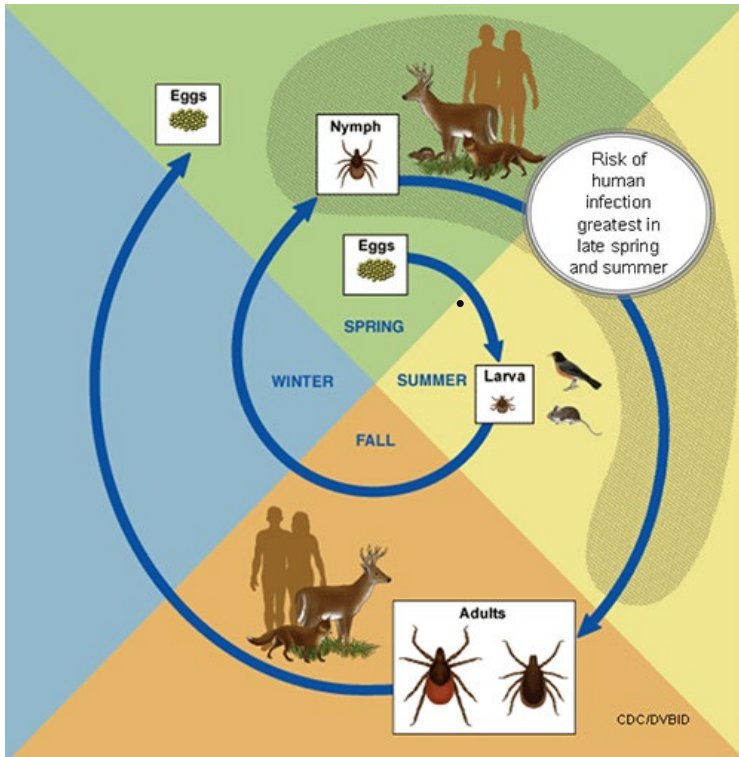


- Hard ticks have a tough back plate
- Attach and feed for hours to days
- Need a blood meal to survive, develop and reproduce
- Hard ticks take one blood meal per life stage
- Black-legged ticks feed on a different host during each life stage (3 hosts)
- Ticks that become infected at any stage stay infected



Know the Bug

Life Cycle of the Black-legged Tick



- Life cycle of the black-legged tick takes 2 years.
- Development between stages takes time.
- In the spring eggs are laid.
- **Eggs** hatch into larva in Aug./Sept.
- **Larvae** have one feeding and molt into nymphs next spring (1st tick blood meal).
- **Nymphs** that have had a blood meal will molt into an **adult** male or female tick (2nd tick blood meal).
- In the fall the females find a host to feed on, mate and in the Spring lays around 3000 eggs and dies. (3rd tick blood meal.)
- Adult ticks that do not feed in the fall will be dormant over winter then feed and mate in the spring.



Know the Bug

Lyme Bacteria Transmission Cycle

- Larvae and nymphs become infected with the bacteria that causes Lyme Disease when they feed on infected small animals.
- The bacteria remain in the tick as it develops from larva to nymph or from nymph to adult.
- Infected nymphs and adult ticks then bite and transmit the bacteria to small rodents, animals, and humans.



Know the Bug

Black Legged Tick



Adult female



4 mm

Nymph



Larva



Adult male



Engorged female laying eggs



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Know the Bug

Behaviour of Ticks

- Ticks cannot fly, they do not jump and do not move large distances along the ground.
- Typically seek a host by climbing vegetation (such as long grass, bushes or shrubs in and along forest edges), and wait for a suitable host to come in contact with them.
- Black legged ticks tend to prefer **wooded areas or vegetation along natural/wooded areas.**
- Most ticks require from 3 to 7 days to feed fully.
- Once engorged, they drop from the host (animal/person).
- Black- legged tick may feed on different host each life stage.



Know the Bug



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Know the Bite

Tick Bites

- When ticks bite, they may secrete or regurgitate small amounts of saliva that contain neurotoxins.
- This secretion may prevent you from feeling the bite of the tick.
- Ticks attach to a host via their mouthparts and slowly feed upon their blood.
- Ticks do not bite and release like other insects.



Know What to Do

Protect Yourself from Ticks

While walking in wooded areas or in tall grass along edges of wooded areas:

- Stay on paths where possible.
- **Use a stiff brush to knock ticks off clothing before going inside [new].**
- Do your tick check when after coming in from outdoors, don't forget your head and have someone check those areas that you can not see.
- Taking a shower when coming indoors will remove any loose ticks that may be crawling on you.
- Put clothes into a dryer immediately after coming, the heat of the dryer will kill the loose ticks that may be in your clothes.



Prevention



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Know What to Do

Protect Yourself from Tick Bites

- If you walk in areas that are known to have ticks:
 - Wear clothing that covers exposed skin (long pants, long-sleeved shirt)
 - High socks (with pants tucked tightly under the socks)
 - Wear fully enclosed shoes, not sandals
- Wear **light-coloured clothing** as it helps make ticks easier to spot.
- Use a repellent that has “**DEET**” or **Icaridin**, especially around your pant legs and shoes, and re-apply every 2 hours (avoid your face and any cuts).



Know What to Do

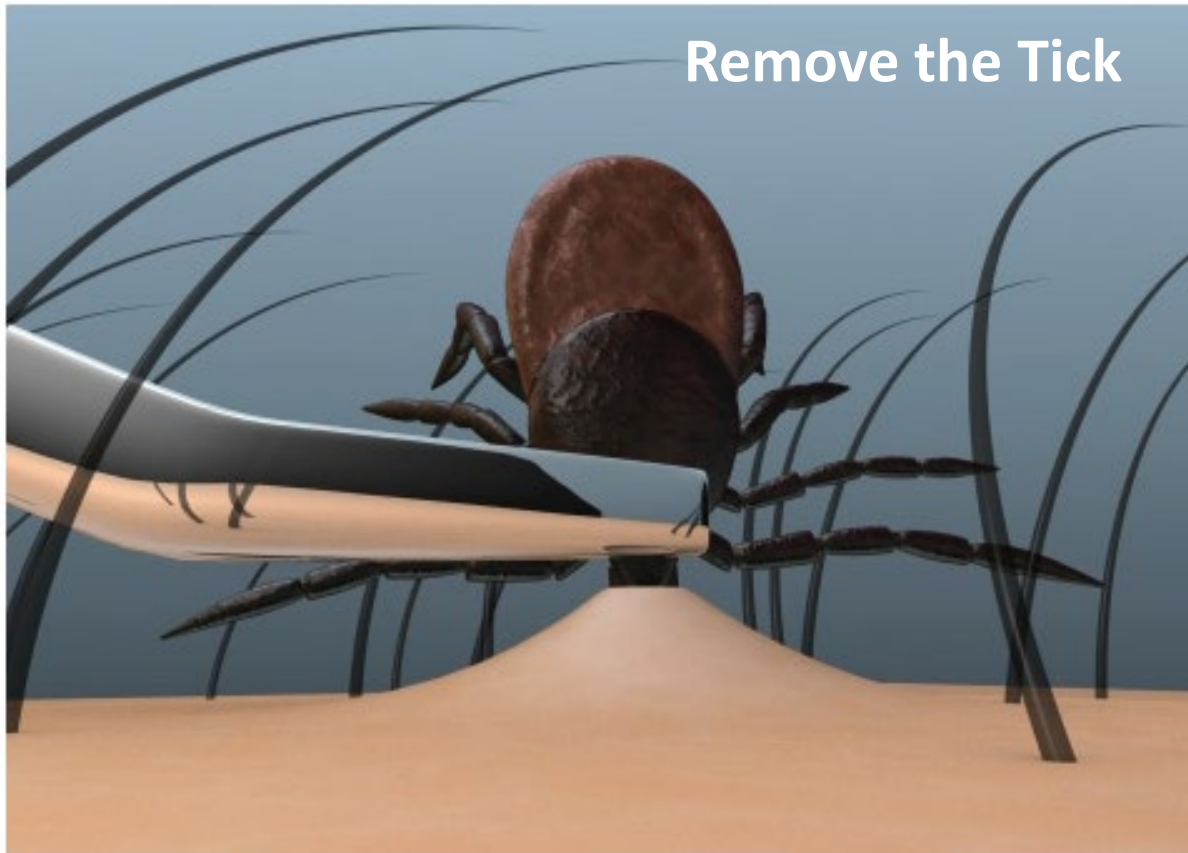
If You Spot a Tick

- Don't squeeze the tick or try to burn it off or put anything on it.
- Grasp the tick by the head as close to your skin as possible. Pull it straight out, gently but firmly. Use tweezers or a tick twister if possible.
- Clean and disinfect the bite area.



Know What to Do

Remove the Tick



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Know What to Do

Complete Removal of Tick



Incomplete Removal of Tick



**Be sure you have removed
the tick completely**



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Know What to Do

- **Examine** the tick for signs of engorgement that will indicate if it has been feeding (is **fat** or flat). If its is **fat** consult your health care provider.
- **Mark the date** of when you removed the tick on a calendar and monitor for symptoms.
- **If you develop symptoms** of Lyme Disease see your health care provider.



Unfed tick

Fed (engorged) tick



Know What to Do

Check your tick to see if has fed



Unfed tick

Fed (engorged) tick



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Know What to Do

Reduce your risk of contracting Lyme Disease

- **Not all tick bites will result in disease.**
- It is not the bite of the tick, but the bacteria (*Borrelia burgdorferi*) in the tick's saliva that causes Lyme disease.
- It typically takes **24-36 hours** for the bacteria that causes **Lyme disease** to be transmitted (that is typically the time it takes for the bacteria to travel from the tick's gut to its salivary glands). **Consult your health care provider if you believe the tick has been attached for 24 hours or longer.**
- As of January 11, 2023, pharmacists can now prescribe medications following tick exposures if certain criteria are met.



Know What to Do

- After removing a tick you may immediately notice a red mark. This red mark is a result of the actual tick bite similar to an insect bite and not considered a bulls-eye rash, and does not mean you have a tick-borne infection.
- **Checking yourself when you come in from the outdoors and prompt removal of ticks will reduce your chances of contracting Lyme Disease.**



Tick Surveillance

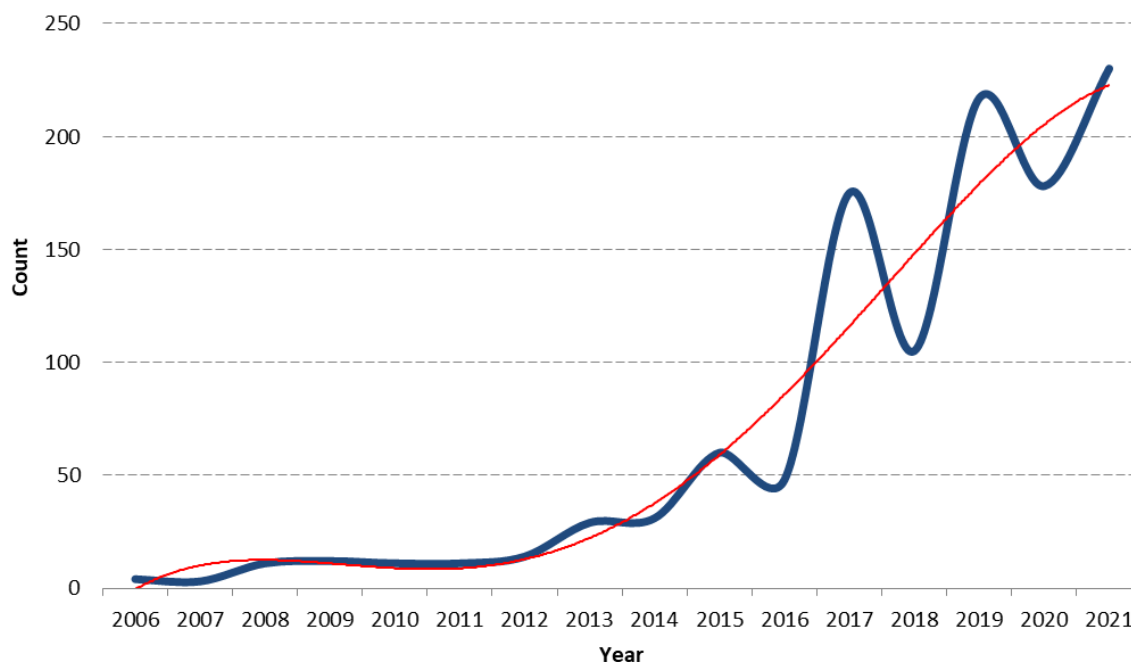
The Health Unit is actively looking for risk areas:

- During tick dragging (active surveillance), a white sheet is dragged across the ground for 3 person hours. Any ticks collected are sent to the lab for identification and testing.
- This information helps inform the Ontario Lyme Disease Estimated Risk Map which is revised annually.
- Tick dragging also helps identify new emerging species of ticks and diseases that they may carry, that previously were not a concern in Ontario.
- Ticks are found world wide and carry a number of different diseases depending on where you are travelling. When travelling it is important to take personal precautions and do your tick checks when coming in from outdoors.



Human Cases of Lyme

Lab-confirmed Lyme Disease case counts by year: LGLDHU, 2006-21



Source: Integrated Public Health Information System (iPHIS) 2006-2021. LGLDHU data.



Lyme Disease

The following criteria is required for Lyme disease to exist in an area:

- The Lyme disease bacteria (*Borrelia burgdorferi*)
- Ticks species **Ixodes scapularis** also known as black legged ticks, deer ticks that can transmit the bacteria
- Mammals to act as a host (such as mice and deer) that provide food (blood meal) for the ticks in their various life stages



Initial Symptoms of Lyme Disease

- Appear from three days or as long as a month after the tick bite.
- The first sign of infection is usually a circular rash that resembles a bull's eye (not the initial redness resulting from the bite).
- Common symptoms are: fatigue, chills, fever, headache, muscle and joint pain, swollen lymph nodes.



photo by N.Y. Medical College



Symptoms of Second Stage Lyme Disease

- If left untreated, the disease may progress to the second stage that can last several months.
- Symptoms may include: multiple skin rashes, heart palpitations, arthritis, extreme fatigue, general weakness and central nervous system disorders.



Symptoms of the Third Stage of Lyme Disease

- This stage can last for months or years
- Recurring neurological problems and arthritis
- More difficult to treat



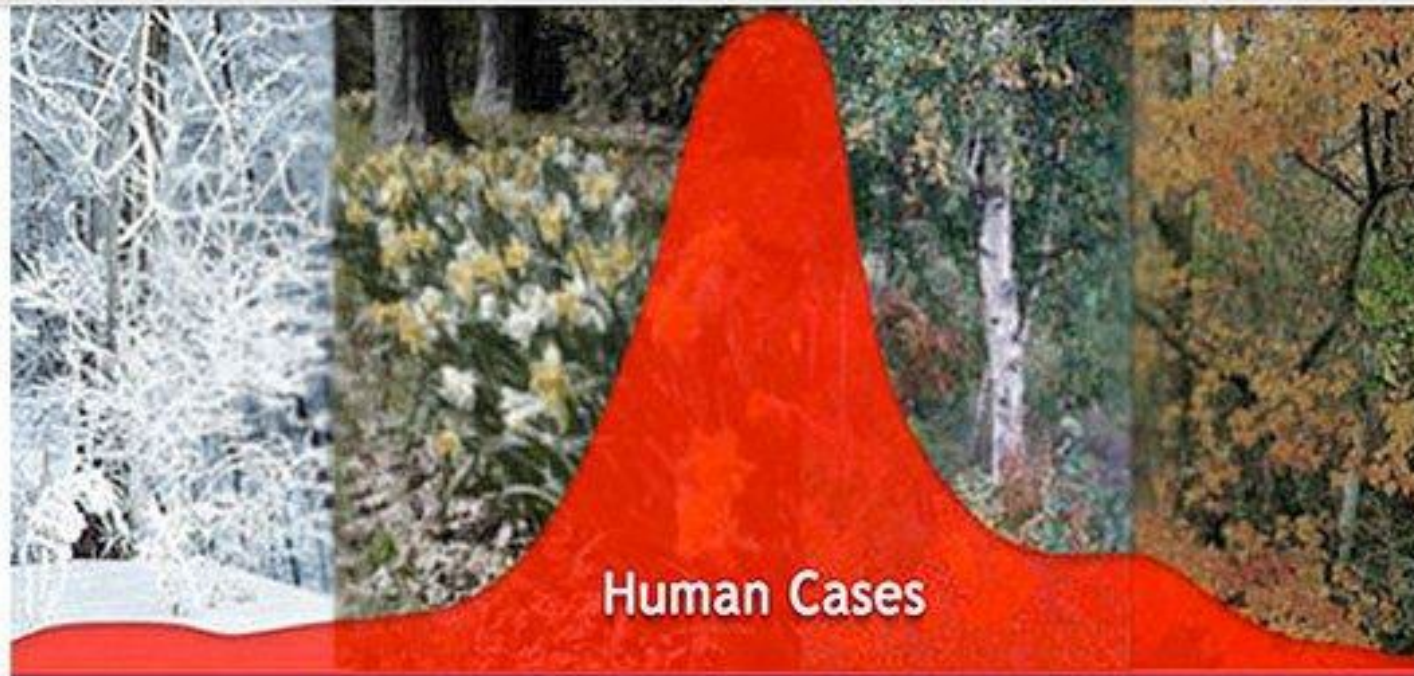
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Seasonal Pattern Of Lyme Disease Cases

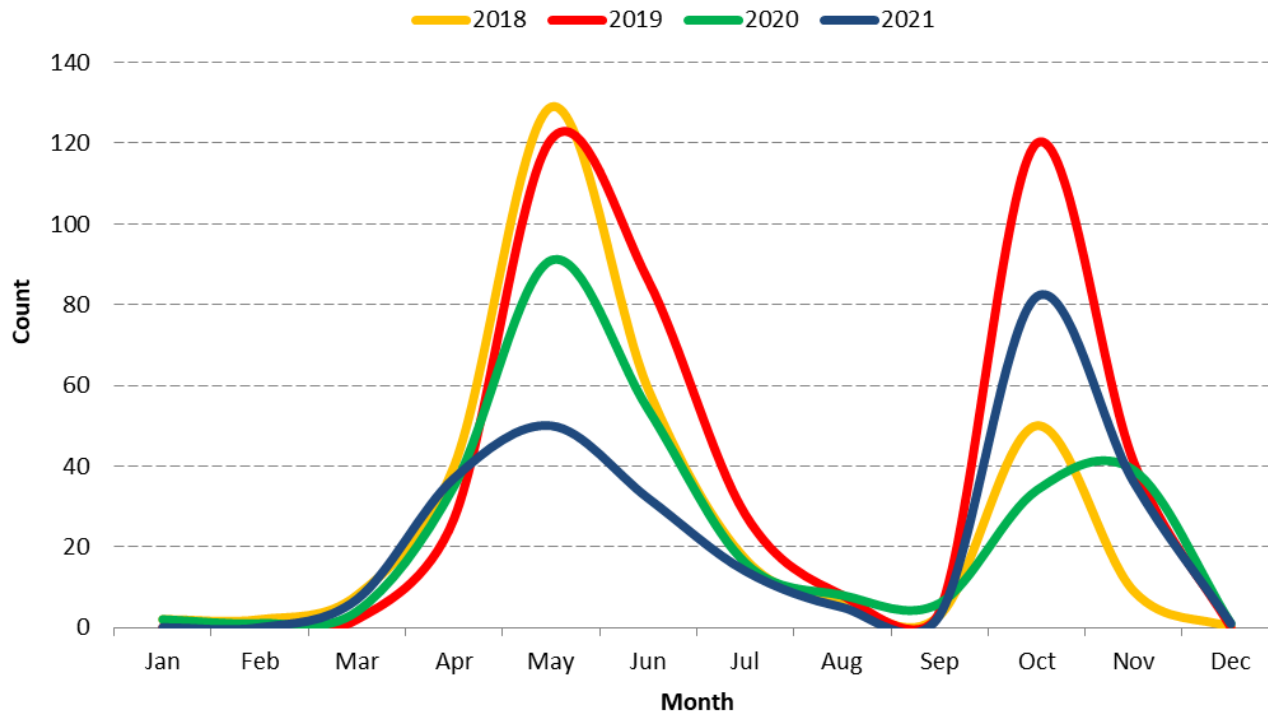


Jan Feb Mar Apr May Jun Jul Aug Sept Oct Nov Dec



Seasonal Activity Of Deer Tick Life Stages

Emergency Room Visits



Source: ACES, KFLA 2022



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Diagnosis and Testing

- Diagnosis of Lyme Disease in the early stages is based on **clinical symptoms**, and the likelihood of exposure to risk factors (i.e., ticks)
- Laboratory testing of a person's blood plays a role in supporting the diagnosis
- Blood test (antibodies appear 2-4 weeks after the bulls-eye rash)
- Tests performed by the Public Health Lab include a **two-tier ELISA test (looking for antibodies)**
- Tick submissions are used for surveillance purposes **NOT** for disease diagnosis (currently the Health Unit is not submitting ticks from the general public for identification and testing)



Other Tick-borne Diseases

Three new tick-borne diseases became reportable in Ontario on July 1, 2023:

- Anaplasmosis
- Babesiosis
- Powassan Virus



Anaplasmosis

- Anaplasmosis is a tickborne disease caused by the bacterium *Anaplasma phagocytophilum*.
- Caused by the bite of an infected tick.
- The bacteria is carried by the blacklegged tick (*Ixodes scapularis*) and has been identified in our local tick population.



Anaplasmosis

Signs and Symptoms

- Anaplasmosis symptoms typically begin within 1–2 weeks after the bite of an infected tick.
- Early signs and symptoms (days 1-5) are usually mild or moderate and may include:
 - Fever, chills
 - Severe headache
 - Muscle aches
 - Nausea, vomiting, diarrhea, loss of appetite

Source: [Prevention | Anaplasmosis | CDC](#)



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Anaplasmosis

Signs and Symptoms

- Rarely, if treatment is delayed or if there are other medical conditions present, anaplasmosis can cause severe illness. Prompt treatment can reduce your risk of developing severe illness.
- Signs and symptoms of severe (late stage) illness can include:
 - Respiratory failure
 - Bleeding problems
 - Organ failure
 - Death

Source: CDC



Anaplasmosis Diagnosis and Treatment

- Your healthcare provider can order a blood tests for Anaplasmosis.
- Test results may take several weeks.
- If your healthcare provider thinks you have Anaplasmosis, he or she may prescribe antibiotics while you wait for test results.
- There is no vaccine to prevent Anaplasmosis.



Source: Prevention | Anaplasmosis | CDC



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Babesiosis

- A tick-borne disease caused by the parasite *Babesia microti* (there are other species, however *B. microti* is typically the species of concern in Ontario).
- Incubation Period:
 - Symptoms typically begin 7 to 30 days after the bite of an infected tick.



Babesiosis

Signs and Symptoms

- **Contact a health care provider** if you have been exposed to ticks and you experience any of the following symptoms:
 - fever
 - chills
 - sweats
 - headache
 - body aches
 - loss of appetite
 - nausea
 - fatigue

Source: Ontario Ministry of Health



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Babesiosis

Signs and Symptoms

- Most infections are asymptomatic
- Since parasite (Babesia) infect and destroy red blood cells, may cause hemolytic anemia
 - fatigue
 - jaundice
 - dark urine

Source: Ontario Ministry of Health



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Babesiosis

Diagnosis and Treatment

- Health care provider may make diagnosis based on signs and symptoms and history of exposure to black-legged ticks
- Laboratory diagnostic testing
- Most cases can be successfully treated with antibiotics and/or anti-parasitic drugs

Source: Ontario Ministry of Health



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Powassan Virus

- Rare in Canada (zero cases in Ontario in 2023)
- **See health care provider** if exposed to black-legged ticks and experience:
 - fever
 - headache
 - nausea
 - vomiting
 - weakness
 - muscle pain



Powassan virus

- Most infections asymptomatic, however may develop into severe disease with neurological symptoms and long term health problems
- Diagnosis based on signs, symptoms and exposure to black-legged ticks and diagnostic testing
- Currently no known treatment

Source: Ontario Ministry of Health



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Prevention Summary

All Tick-borne Diseases

Protect Yourself from Ticks

While walking in wooded areas or in tall grass along edges of wooded areas:

- Stick to groomed paths if possible
- Use a **stiff brush** to knock ticks off before going indoors
- Do your **tick check** when after coming in from outdoors, don't forget your head and have someone check those areas that you can not see.
- Taking a **shower** when coming indoors will remove any loose ticks that may be crawling on you. Make sure you scrub!
- Immediately after coming inside, put clothes into a **dryer** on high heat for 15 minutes. The heat of the dryer will kill the loose ticks that may be in your clothes.



Prevention Summary

All Tick-borne Diseases (cont'd)

If you walk in areas that are known to have ticks:

- Wear light-coloured clothing that **covers exposed skin** (long pants, long-sleeved shirt)
- High socks (with pants tucked tightly under the socks)
- Wear fully enclosed shoes, not sandals



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Prevention Summary

All Tick-borne Diseases (cont'd)

If you are bitten by a black legged tick:

- Consult with a **pharmacist** (Lyme Disease)
- Note the date – if you develop symptoms in following 30 days, see your **health care provider**
- if in doubt, contact your health care provider or the health unit

If you develop symptoms and have potentially been bitten by a black legged tick:

- Consult with a **health care provider**



Public Health Role: Prevention

The role of Public Health is **prevention** not treatment

- Public Education based on current scientific evidence
- Communication with area Doctors and Hospitals
- Active tick surveillance (tick dragging) to identify new risk areas and emerging species and diseases
- Disease surveillance
- Liaising with local vets (One Health Approach)



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Protect Your Pets

- Consult with a veterinarian about tick borne diseases and possible vaccines.
- Check your pets when coming indoor. Ticks should be removed immediately from pets
- Don't let pets sit in area's normally occupied by humans.





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Ticks

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