

Tickborne Diseases in Wisconsin

With the warmer weather we are all eager to be outside and enjoy outdoor activities. This is especially true now with the Covid-19 pandemic and having been cooped up in the house for several months. However, we must remember that there are other diseases that we can contract outdoors. With the warmer weather ticks are emerging and can carry several different diseases. The most common disease is Lyme's Disease. But they also can carry anaplasmosis and babesiosis. Lyme's disease and anaplasmosis are caused by bacteria. Babesiosis is caused by a small parasite. These bacteria and parasites are transferred to humans and pets through the tick bite.

The tick that is the carrier of these three diseases in Wisconsin is the deer tick or black-legged tick (*Ixodes scapularis*). This tick is found in forests, tall grassy areas, as well as wooded, marshy areas near rivers and lakes. Humans may be bitten by the tick while out hiking, camping, gardening or other outdoor activities. Often we are unaware that we have been bitten. It should also be noted that our pets can also bring deer ticks into the home. Our pets can be bitten by the tick and also develop Lyme's Disease just like humans.

Black-legged Tick (Deer Tick) Tick bite



Lyme's Disease

Lyme's Disease is the most common of the tickborne diseases in Wisconsin. It is difficult to diagnose and can cause serious and recurring health problems. Therefore, it is important to take measures to prevent tick bites. That includes wearing long pants, socks, and long sleeved shirts in tick areas as well as using insect repellants like DEET that will repel the ticks. DEET can be applied to the skin but read the directions on the product container. Permethrin can be used also but it can only be applied to the clothes. It also helps to tuck the cuff the pants into

the top of the socks. Once inside, the outer clothes need to be removed and washed in hot water. The person then needs to do a total body exam looking for ticks. If a tick is found and it is attached to the skin, it needs to be removed. Using a fine-tipped tweezers grasp the tick as close to the skin's surface as possible. Pull upward with steady and even pressure. Do not twist or jerk the tick as this can cause the mouth parts to break off and remain in the skin. Once the tick is removed wash the bite area with warm water and soap thoroughly. Be sure to wash your hands thoroughly also after removing the tick.

Symptoms of Lyme's Disease

Many people with early-stage Lyme's Disease develop a distinctive circular rash at the site of the tick bite, usually around three to 30 days after being bitten. This is known as erythema migrans. The rash is often described as looking like a bull's-eye on a dart board.

Some of the common symptoms are as follows: chills, fever, joint pain, rashes, nausea

Bell's Palsy-a drooping of one side of the face

Symptoms of late-stage lyme disease:

Numbness in hands and legs, arthritis, short term memory loss, other neurological symptoms,

Rarely there can be heart involvement

Diagnosis of Lyme's Disease

Enzyme-linked immunosorbent assay (ELISA) : ELISA detects presence of antibodies to *Borrelia burgdorferi* in the blood. *Borrelia burgdorferi* is the bacteria that causes Lyme's Disease

Western blot : To confirm the ELISA diagnosis by detecting antibodies to several proteins of *Borrelia burgdorferi*.

Treatment of Lyme's Disease

Antibiotics, usually doxycycline in persons over age 8. Amoxicillin for those allergic to doxycycline and in children under age 8.

Anaplasmosis

Anaplasmosis is a disease caused by the bacterium *Anaplasma phagocytophilum*. These bacteria are spread to people by tick bites primarily from the blacklegged tick (*Ixodes scapularis*) and the western blacklegged tick (*Ixodes pacificus*).

Signs and Symptoms of Anaplasmosis

Signs and symptoms of anaplasmosis typically begin within 1–2 weeks after the bite of an infected tick.

Tick bites are usually painless, and many people do not remember being bitten.

See your healthcare provider if you become ill after having been bitten by a tick or having been in the woods or in areas with high brush where ticks commonly live.

Early Illness:

Early signs and symptoms (days 1-5) are usually mild or moderate and may include:

Fever, chills, severe headaches,

Muscle aches

Nausea, vomiting, diarrhea, loss of appetite

Late Illness:

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

Risk factors for severe illness:

Delayed treatment

Age: being older puts you at risk

Weakened immune system:

People with weakened immune systems (such as those receiving some cancer treatments, individuals with advanced HIV infection, prior organ transplants, or people taking some medications) are at risk for severe illness.

Diagnosis of Anaplasmosis

Your healthcare provider can order certain blood tests to look for evidence of anaplasmosis or other illnesses that cause similar symptoms.

Test results may take several weeks.

If your healthcare provider thinks you have anaplasmosis, or another tickborne infection, he or she may prescribe antibiotics while you wait for test results.

Treatment of Anaplasmosis

Doxycycline is the treatment of choice for anaplasmosis, and all other tickborne rickettsial diseases. Presumptive treatment with doxycycline is recommended in patients of all ages, including children <8 years.

Doxycycline is most effective at preventing severe complications from developing if it is started early in the course of disease.

Babesiosis

Babesiosis is caused by microscopic parasites that infect red blood cells and are spread by certain ticks. In the United States, tickborne transmission is most common in particular regions and seasons: it mainly occurs in parts of the Northeast and upper Midwest and usually peaks during the warm months. Although many people who are infected with Babesia do not have symptoms, for those who do effective treatment is available. Babesiosis is preventable, if simple steps are taken to reduce exposure to ticks.

Many people who are infected with Babesia microti feel fine and do not have any symptoms. Some people develop nonspecific flu-like symptoms, such as fever, chills, sweats, headache, body aches, loss of appetite, nausea, or fatigue.

Because Babesia parasites infect and destroy red blood cells, babesiosis can cause a special type of anemia called hemolytic anemia. This type of anemia can lead to jaundice (yellowing of the skin) and dark urine.

Babesiosis can be a severe, life-threatening disease, particularly in people who

Do not have a spleen;

Have a weak immune system for other reasons (such as cancer, lymphoma, or AIDS);

Have other serious health conditions (such as liver or kidney disease); or

Are elderly.

Complications of babesiosis can include:

A low and unstable blood pressure;

Severe hemolytic anemia (hemolysis);

A very low platelet count (thrombocytopenia);

Disseminated intravascular coagulation (also known as “DIC” or consumptive coagulopathy), which can lead to blood clots and bleeding;

Malfunction of vital organs (such as the kidneys, lungs, and liver); or
Death.

Signs and Symptoms of Babesiosis

Night sweats

Chills

Loss of balance

Fatigue

Abdominal pain

Joint pain

Muscle pain

Jaundice (yellowing of the eyes)

Skin bruising

Diagnosis of Babesiosis

In symptomatic people, babesiosis usually is diagnosed by examining blood specimens under a microscope and seeing Babesia parasites inside red blood cells.

To be sure the diagnosis is correct, your health care provider might have specimens of your blood tested by a specialized reference laboratory (such as at CDC or a health department).

Treatment of Babesiosis

Effective treatments are available. People who do not have any symptoms or signs of babesiosis usually do not need to be treated.

Before considering treatment, the first step is to make sure the diagnosis is correct. For more information people should talk to their health care provider.

information Content source: Centers for Disease Control and Prevention, National Center for Emerging and Zoonotic Infectious Diseases (NCEZID), Division of Vector-Borne Diseases (DVBD)