

Prevention – T.I.C.K.

Treat clothes and shoes with permethrin

Apply permethrin insecticide to clothes, shoes, gear before engaging in outdoor activities.



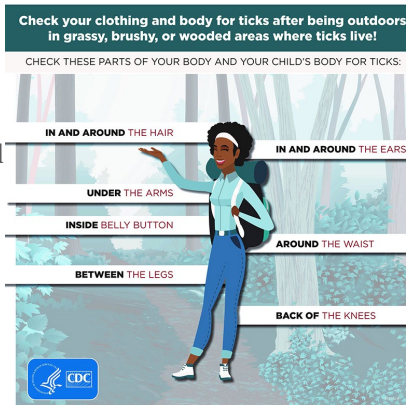
Insect repellent

Apply an EPA approved insect repellent to your skin and over your clothes before engaging in outdoor activities.



Check for ticks

Check for ticks regularly while you are outside and conduct a thorough tick check when you come inside. Don't forget to check pets who spend time outdoors! Shower shortly after coming inside and place clothes in the dryer.



Keep watch for signs and symptoms of tickborne illnesses

Watch for the signs and symptoms described for each disease, especially in the summer when ticks are most active. Seek medical care if you develop symptoms related to tickborne diseases.



TICKBORNE DISEASES IN PENNSYLVANIA

LYME DISEASE

ANAPLASMOSIS

BABESIOSIS

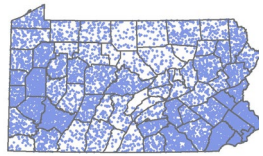
POWASSAN VIRUS

EHRlichiosis

ROCKY MOUNTAIN SPOTTED FEVER

Lyme Disease

What is Lyme disease?



PA Lyme Disease Cases,
2019

Lyme disease is the most common tickborne disease in Pennsylvania. Lyme disease is caused by the bacteria *Borrelia burgdorferi* and is transmitted by the bite of an infected deer tick, also called a black-legged tick.

What are the symptoms of Lyme disease?

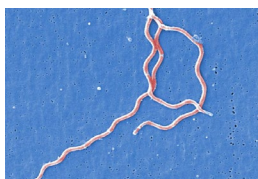


Erythema migrans rash
with bull's eye
appearance

Early Lyme symptoms (about three-30 days after the tick bite) include erythema migrans (EM), a type of skin rash, fatigue, fever and chills, headaches, joint pain, and swollen lymph nodes.

Late Lyme symptoms (30 or more days after tick bite) include arthritis (pain and swelling of the joints), nerve pain or paralysis, including Bell's palsy, meningitis symptoms, cardiac symptoms, memory or concentration symptoms.

How is Lyme disease treated?

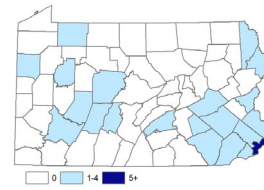


Borrelia burgdorferi
bacteria

Lyme disease is treated with antibiotics. Some people may not feel completely recovered after treatment. This is known as Post Treatment Lyme Disease Syndrome and is believed to be a result of tissue damage caused by Lyme disease.

Rocky Mountain Spotted Fever

What is Rocky Mountain spotted fever?



PA RMSF Cases,
2019-2020

Rocky Mountain spotted fever (RMSF) is an uncommon tickborne disease transmitted in Pennsylvania. RMSF is caused by the bacteria *Rickettsia rickettsii* and is transmitted by the bite of an infected dog tick.

What are the symptoms of RMSF?

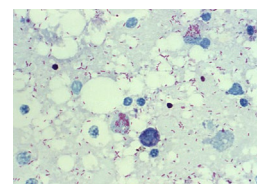


Dermacentor variabilis,
Dog tick
Photo: US Army Public
Health Center

Early RMSF symptoms include fever, headache, muscle aches, nausea, vomiting, stomach pain, loss of appetite, rash.

RMSF can progress rapidly to severe disease if untreated. Severe disease symptoms and complications may include altered mental status, coma, cerebral edema, respiratory failure, necrosis, multiorgan system damage, death.

How is RMSF treated?

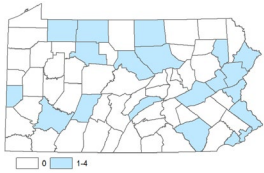


Rickettsia rickettsii bacteria

RMSF is treated with antibiotics.

Ehrlichiosis

What is ehrlichiosis?



PA Ehrlichiosis Cases,
2019-2020

Ehrlichiosis is an uncommon tickborne disease transmitted in Pennsylvania. Ehrlichiosis is caused by the bacteria *Ehrlichia chaffensis* and is transmitted by the bite of an infected lone star tick.

What are the symptoms of ehrlichiosis?



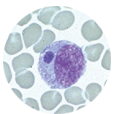
Amblyomma americanum,
Lone star tick
Photo: US Army Public
Health Center

Early ehrlichiosis symptoms include fever, chills, severe headache, muscle aches, nausea, vomiting, diarrhea, loss of appetite, confusion, rash (more common in children).

Although rare, these severe ehrlichiosis symptoms may include damage to the brain or nervous system, respiratory failure, bleeding problems, organ failure, death.

Severe disease is more likely in persons who are very young or very old, immunocompromised or have delayed treatment.

How is ehrlichiosis treated?

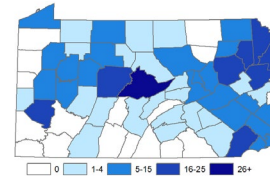


Ehrlichia bacteria

Ehrlichiosis is treated with antibiotics.

Anaplasmosis

What is anaplasmosis?



PA Anaplasmosis Cases,
2019-2020

Anaplasmosis is the second most common tickborne disease in Pennsylvania. Anaplasmosis is caused by the bacteria *Anaplasma phagocytophilum* and is transmitted by the bite of an infected deer tick.

What are the symptoms of anaplasmosis?



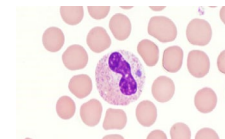
Ixodes scapularis,
Deer tick
Photo: US Army Public
Health Center

Early anaplasmosis symptoms include fever, chills, severe headache, muscle aches, nausea, vomiting, diarrhea, loss of appetite.

Although rare, these severe anaplasmosis symptoms may include respiratory failure, bleeding problems, organ failure, death.

Severe disease is more likely in persons who are older, immunocompromised or have delayed treatment.

How is anaplasmosis treated?

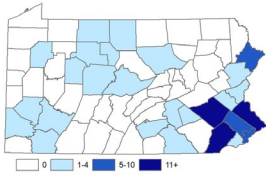


Anaplasma bacteria

Anaplasmosis is treated with antibiotics.

Babesiosis

What is babesiosis?



PA Babesiosis Cases, 2019-2020

Babesiosis is caused by the parasite *Babesia microti* and is transmitted by the bite of an infected deer tick. Rarely, babesiosis may be transmitted through blood transfusions. Blood donations are screened for *Babesia* parasites in Pennsylvania.

What are the symptoms of babesiosis?



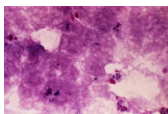
Ixodes scapularis,
Deer tick

Photo: US Army Public Health Center

Many people with babesiosis do not experience any symptoms. Common babesiosis symptoms include fever, chills, sweats, headache, body aches, nausea, loss of appetite, fatigue.

Complications of babesiosis may include low or unstable blood pressure, blood abnormalities (anemia, thrombocytopenia), disseminated intravascular coagulation, organ failure, and death. Complications are more likely to occur in the elderly or immunocompromised persons.

How is babesiosis treated?



Babesia parasite

Babesiosis is treated with antiparasitic medications.

Powassan Virus

What is Powassan virus?



PA Powassan Case County of Residence, 2011-2021

Powassan virus is a rare disease caused by Powassan virus transmitted by the bite of an infected deer tick.

What are the symptoms of Powassan virus?



Ixodes scapularis,
Deer tick

Photo: US Army Public Health Center

Many people with Powassan virus do not experience any symptoms.

Early Powassan virus symptoms may include fever, headache, vomiting, weakness.

Severe Powassan virus symptoms may include confusion, loss of coordination, difficulty speaking, seizures.

Encephalitis or meningitis may occur. Powassan virus may be fatal.

How is Powassan virus treated?



Tick habitat

Since Powassan virus is a virus, it cannot be treated with antibiotics. Supportive care is the only treatment.