**Tick-borne Diseases**

**Lyme Disease**

**What is Lyme disease?**

Lyme disease is caused by bacteria that are spread by tiny, infected deer ticks. Both people and animals can have Lyme disease. Where do cases of Lyme disease occur? In the United States, Lyme disease most commonly occurs in the Northeast and mid-Atlantic regions and in the upper Midwest. In Massachusetts, Lyme disease occurs throughout the state.

**How is Lyme disease spread?**

Lyme disease is spread by the bite of an infected deer tick. The tick usually needs to be attached to a person for at least 24 hours before it can spread the germ, but in some cases it can spread it if it’s attached for less time.

**What are the symptoms?**

Early Lyme disease (days to weeks): characteristic rash, fatigue, chills and fever, headache, muscle and joint pain, swollen lymph nodes. Late Lyme disease (weeks to years): The joints, nervous system and heart are most commonly affected. Arthritis (pain and swelling in one or more large joints, especially the knees), nervous system symptoms can include numbness, pain, nerve paralysis (often of the facial muscles, usually on one side), and meningitis (fever, stiff neck, and severe headache). The complications from Lyme Disease can be long-lasting and permanent.

**Babesiosis**

**What is babesiosis?**

Babesiosis is a disease caused by a microscopic parasite (a type of germ similar to those that cause malaria) that infects red blood cells.

**How is babesiosis spread?**

Babesiosis is spread by the bite of an infected deer tick; it can also be passed through a blood transfusion. The longer a tick remains attached and feeding, the higher the likelihood that it may spread the parasite. The tick must generally be attached to a person for at least 24-36 hours before it can spread the germ. Babesiosis occurs in coastal areas in the northeastern United States. In Massachusetts, the disease occurs most frequently on Cape Cod and the islands of Martha’s Vineyard and Nantucket, but it can occur anywhere in the state.

**What are the symptoms?**
Symptoms of babesiosis usually begin to appear from 1 to 8 weeks after being bitten by an infected tick. Most people who are infected by the parasite will show very mild signs of illness or no signs at all. If symptoms occur, they may include fever, chills, headache, achy joints and muscles, fatigue, nausea, vomiting, abdominal pain and dark urine.

Human Granulocytic Anaplasmosis (HGA)

What is human granulocytic anaplasmosis (HGA)?

HGA is caused by bacteria (germs) that attack certain types of white blood cells called granulocytes. HGA is also known as human granulocytic ehrlichiosis.

How is HGA spread?

HGA is one of the diseases that can be spread by the bite of an infected deer tick. The longer a tick remains attached and feeding, the higher the likelihood that it may spread the bacteria. In the United States, HGA is most commonly found in the Northeast, Mid-Atlantic, and upper Midwest. In Massachusetts, the highest rates of disease occur on the islands of Nantucket and Martha’s Vineyard and in Barnstable and Berkshire counties, but it can occur anywhere in the state.

What are the symptoms?

Symptoms of HGA usually begin to appear 7 to 14 days after being bitten by an infected tick. Symptoms of HGA generally include fever, headache (that often doesn’t get better with over-the counter medicine), chills, muscle ache, and fatigue. Less commonly, people may have abdominal pain, nausea, vomiting, diarrhea, cough and joint aches. The elderly and people without a healthy spleen or immune system are more likely to develop serious symptoms.

Rocky Mountain Spotted Fever

What is Rocky Mountain Spotted Fever (RMSF)?

RMSF is a disease caused by the bacteria Rickettsia rickettsia. Where do cases of RMSF occur? RMSF is a rare disease in Massachusetts. Between 1995-2011, seven cases were reported. The disease is most often reported from the southeastern part of the state, Cape Cod and Martha’s Vineyard.

How is RMSF spread?

In the Northeast, RMSF is spread by the bite of an infected dog tick, or lone star tick. The longer a tick remains attached and feeding, the higher the likelihood that it may spread the bacteria. However, unlike for other tick-borne diseases, the bacteria that causes RMSF often spreads within 24 hours of the tick attaching.

What are the symptoms?

Symptoms usually start to appear about 7 days after the bite of an infected tick, but can begin anywhere between 3 and 14 days. Symptoms usually begin with a sudden onset of fever and severe headache, and
may also include deep muscle pain, nausea and vomiting, and less frequently stomach pain and cough. Most people develop a rash on their arms and legs about 3 to 5 days after the fever starts. This rash often spreads to the palms, soles, and over the rest of the body.

**Powassan Virus**

**What is Powassan Virus?**

Powassan virus causes a rare, but often serious disease, and is spread by the bite of tiny, infected deer (black-legged) ticks. There are two types of Powassan virus in the United States. One type is found in ticks that normally feed on woodchucks (groundhogs); the second type is carried by deer ticks.

**How is the Powassan Virus Spread?**

Powassan virus is spread by the bite of an infected tick. In Massachusetts, the deer tick is the type of tick most likely to carry this infection. While ticks must be attached for a certain length of time before they can spread most infections, there is some evidence that Powassan virus can spread from the tick into a person after only a short time of attachment. Although only about 50 cases of Powassan infection have been reported in the last 10 years in the United States, most of those cases have occurred in the Northeast and the Upper Midwest. There have been cases of Powassan virus infection in Massachusetts in the last 10 years.

**What are the symptoms?**

Symptoms of disease usually begin between one week and one month after the bite of an infected tick. Although most people who are exposed to Powassan virus likely never feel ill, others may become severely ill with meningitis (inflammation of the covering of the brain and spinal cord) or encephalitis (inflammation of the brain). Signs and symptoms include fever, headache, vomiting, weakness, confusion, loss of coordination, speech difficulties and seizures. Approximately 10% of people with this severe form of the disease will die and survivors may have long-term health problems.

**Source-Massachusetts Department of Public Health**