



Infectious Disease Epidemiology Report

Tick-Borne Diseases, Maine - 2013



Background

Tick-borne diseases are a growing concern in the United States. These diseases are transmitted through the bite of an infected tick and can lead to multiple complications.

There are a variety of tick-borne diseases present in Maine. While Lyme disease is the most common tick-borne disease in Maine, there are other diseases of concern to human health including: anaplasmosis, babesiosis, ehrlichiosis, Powassan encephalitis, and Rocky Mountain spotted fever. This surveillance report summarizes the surveillance of tick-borne diseases reported in 2013, excluding Lyme disease. Due to the high incidence of Lyme disease in Maine, it has its own surveillance report which is available on Maine CDC's website at <http://www.maine.gov/dhhs/mecdc/infectious-disease/epi/vector-borne/index.shtml>.

Anaplasmosis

Anaplasmosis is a bacterial disease transmitted through the bite of an infected deer tick (*Ixodes scapularis*). Signs and symptoms include fever, headache, malaise, and body aches. Encephalitis or meningitis may occur in rare instances.

Babesiosis

Babesiosis is a parasitic disease transmitted through the bite of an infected deer tick (*Ixodes scapularis*). Patients may be asymptomatic or may experience symptoms including extreme fatigue, aches, fever, chills, sweating, dark urine, and anemia. Persons with underlying conditions such as asplenia are at higher risk of severe disease.

Ehrlichiosis

Ehrlichiosis is a bacterial disease transmitted through the bite of an infected lone star tick (*Ambylomma americanum*). Signs and symptoms include fever, headache, nausea, rash, and body aches. Encephalitis or meningitis may occur.

Powassan Encephalitis

Powassan is a viral disease transmitted through the bite of an infected deer or woodchuck tick (*Ixodes* family). Early signs and symptoms include

headache, fever, nausea vomiting, stiff neck, and sleepiness.

Rocky Mountain Spotted Fever

Rocky Mountain spotted fever (RMSF) is a bacterial disease transmitted through the bite of an infected dog tick (*Dermacentor variabilis*). Signs and symptoms include fever, rash, headache, nausea, vomiting, abdominal pain, muscle pain, lack of appetite, and red eyes.

Methods

All cases of tick-borne diseases in humans are investigated. Standardized case report forms are completed for all cases. Confirmed and probable cases are reported to federal CDC. Cases are classified using CSTE's case definitions for each specific disease.

Results

A total of 139 confirmed and probable cases of tick-borne disease (excluding Lyme) were reported in 2013. Anaplasmosis was the most commonly reported of these diseases, followed by babesiosis (Table 1).

Table 1: Confirmed and probable endemic tick-borne disease cases, by county – Maine, 2013

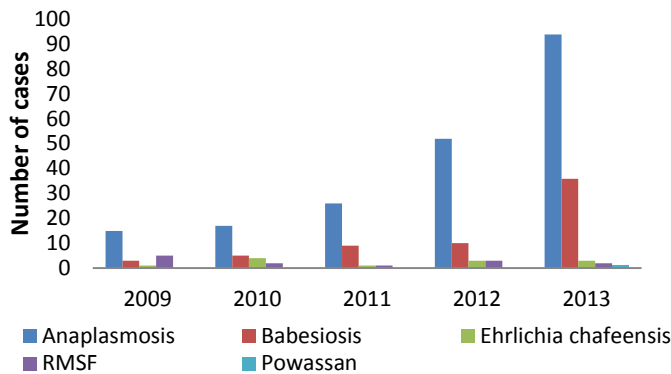
	Anaplasmosis	Babesiosis	Powassan
Androscoggin	2	0	0
Aroostook	1	0	0
Cumberland	19	9	0
Franklin	2	0	0
Hancock	0	0	0
Kennebec	7	1	0
Knox	27	7	1
Lincoln	10	1	0
Oxford	2	0	0
Penobscot	0	1	0
Piscataquis	0	0	0
Sagadahoc	3	0	0
Somerset	0	0	0
Waldo	3	0	0
Washington	0	0	0
York	18	17	0
Maine Total	94	36	1

Tick-Borne Diseases – Maine, 2013

Ehrlichiosis and RMSF are rare conditions in Maine and usually associated with travel. In 2013, there were three cases of *Ehrlichia chaffeensis*, one case of *Ehrlichia ewingii*, two cases of *Ehrlichia/Anaplasma* undetermined, and two cases of RMSF.

Tick-borne disease cases in Maine are increasing in number (Figure 1) and expanding in geographic range.

Figure 1: Tick-borne Disease Cases – Maine, 2009 - 2013



Discussion

Lyme disease is firmly established in Maine, but there are other tick-borne illnesses that are becoming more common. The agents that cause anaplasmosis and babesiosis are transmitted by the same tick that carries Lyme disease, and the numbers of both of these diseases are on the rise. The number of cases of anaplasmosis nearly doubled from 2012 to 2013. Babesiosis cases more than tripled from 2012 to 2013.

A single tick can carry more than one pathogen. In 2013, there were nine reported co-infections of Lyme disease and anaplasmosis, four reported co-infections of Lyme disease and babesiosis, two reported co-infections of anaplasmosis and babesiosis, and one reported co-infection of Lyme disease, anaplasmosis and babesiosis.

Maine had its first report of Powassan encephalitis in nearly a decade in 2013. This fatal case occurred in Knox county, and was co-infected with Lyme disease and anaplasmosis.

Ehrlichiosis is transmitted by a tick that is infrequently found in Maine but is being monitored as an emerging disease in Maine. Ehrlichia is difficult to distinguish from Anaplasma when testing by serology, which is why Maine had three cases of Ehrlichiosis/Anaplasmosis undetermined.

RMSF is uncommon in Maine, but the tick that transmits the disease is frequently found here. There are no confirmed cases of RMSF that have been acquired in Maine; however this is another disease that is considered to be emerging in the state.

Prevention

To lower the chances of contracting a tick-borne disease, measures should be taken to prevent tick bites both at home and while traveling:

- Using caution in tick-infested areas
- Using EPA-approved repellents on uncovered skin and clothing
- Wearing long sleeved shirts and long pants
- Checking for ticks after being outside
- Removing attached ticks with tweezers or a tick spoon immediately to avoid them becoming engorged
- Using “tick-safe” landscaping such as removing leaf litter, tall grass and brush, creating borders between woods and lawn and discouraging deer with physical barriers

Health care providers are encouraged to consider tick-borne diseases in patients with appropriate clinical presentations. Polymerase Chain Reaction (PCR) is the preferred method of testing for anaplasmosis, babesiosis, and ehrlichiosis.

All cases of anaplasmosis, babesiosis, ehrlichiosis, Powassan, and Rocky Mountain spotted fever in Maine must be reported within 48 hours by calling 1-800-821-5821, or by faxing reports to 207-287-6865.

Ticks may be submitted for identification for a fee to the University of Maine Cooperative Extension Information can be found at: <http://extension.umaine.edu/ipm/tickid/>. Ticks will not be tested for presence of disease.

Additional information about tick-borne diseases can be found at:

- Maine CDC
<http://www.maine.gov/dhhs/mecdc/infectious-disease/epi/vector-borne/index.shtml>
- Federal CDC
<http://www.cdc.gov/ticks/index.html>