

2017
REPORT

VERMONT Tickborne Disease PROGRAM

A review of the latest tickborne disease data in Vermont and the Health Department's efforts to keep the public informed.



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The Tickborne Disease Program

The Tickborne Disease Program, housed within the Health Surveillance Division of the Vermont Department of Health, conducts surveillance for tickborne diseases in humans to measure the disease burden in Vermont, detect trends or changes in disease activity and identify people who may be at greater risk for illness.

We also collect data and share current, evidence-based information with Vermonters so they are aware of their risk and can use the best strategies to protect themselves against tickborne diseases. The landscape of tickborne diseases in Vermont has changed significantly in the last 10 years, so we strive to inform the state's health care community about the latest tickborne disease developments to improve the timeliness and accuracy of diagnoses.

LYME DISEASE

Lyme disease is caused by an infection with the bacterium *Borrelia burgdorferi* and is transmitted to humans through the bite of infected blacklegged ticks. It is the most commonly reported tickborne disease in Vermont.

In 2017, 1,093 cases of Lyme disease were reported to the Health Department, the highest annual count ever recorded in Vermont.

While confirmed and probable cases of Lyme disease were reported in all Vermont counties in 2017, the risk for disease varied across the state (Figure 1). Counties in southern Vermont maintained the highest incidence of Lyme disease, with Bennington, Rutland, Windsor and Windham counties ranking highest in 2017. Counties of the Northeast Kingdom – Caledonia, Essex and Orleans – continued to have the lowest incidence of Lyme disease in Vermont.

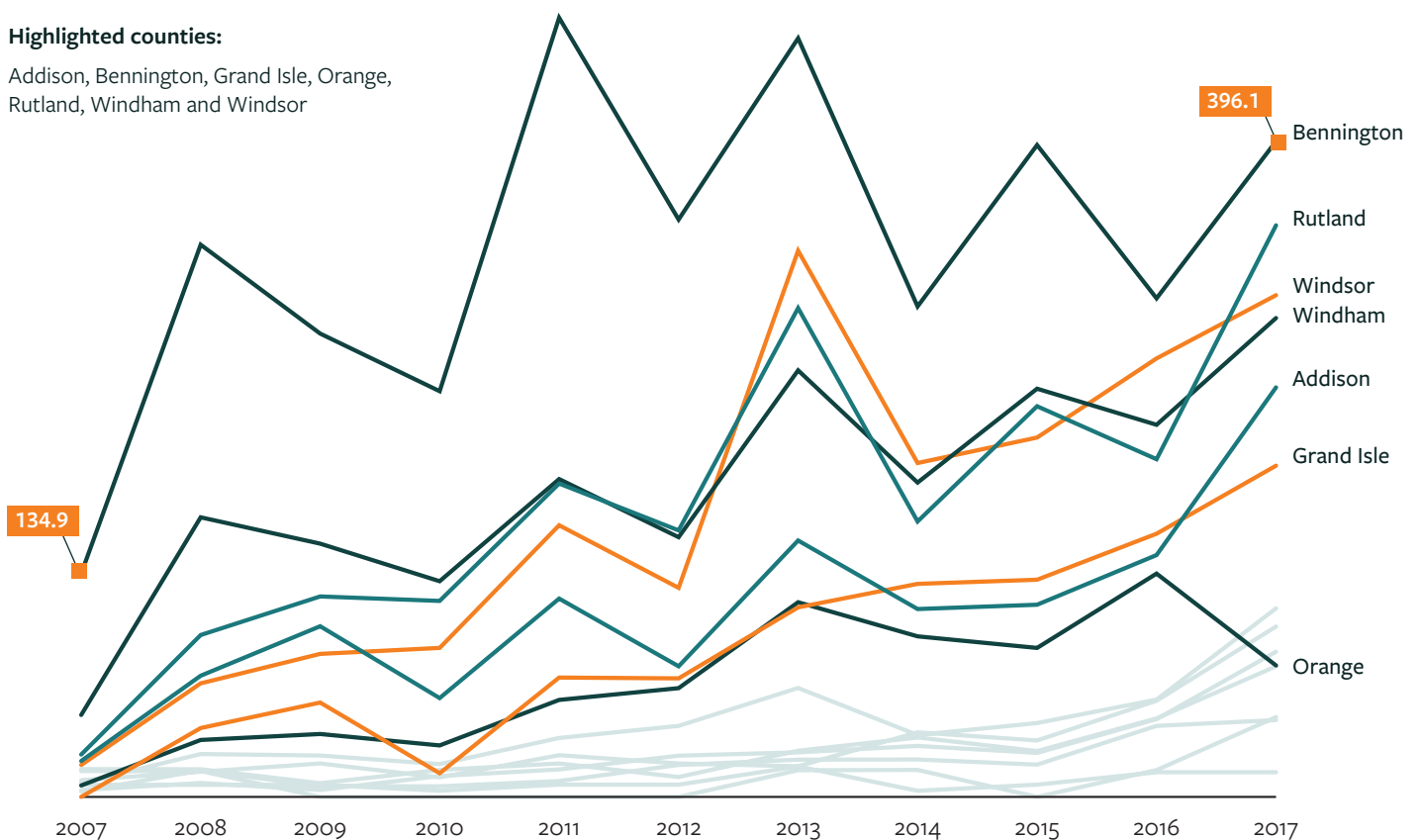
The incidence of Lyme disease in Addison and Grand Isle counties continued to grow. These counties were among the lowest risk areas of the state in 2007, but their county-level incidence has gradually increased over time. Orange was the only county to have a decrease in county-level incidence between 2016 and 2017 (135 and 79 cases/100,000 people, respectively).

During 2005–2017, more than 70% of Vermonters with confirmed cases of Lyme disease developed an erythema migrans (EM) rash, a physical finding that can be very helpful for diagnosis because it is fairly unique to Lyme disease. Other symptoms of Lyme disease, such as fever, chills, headache, fatigue and muscle and joint aches may occur with or without an EM rash. Less often, signs and symptoms can progress to more severe clinical forms of Lyme disease,

(Fig. 1) COUNTY-LEVEL LYME DISEASE INCIDENCE IN VERMONT, 2007-2017

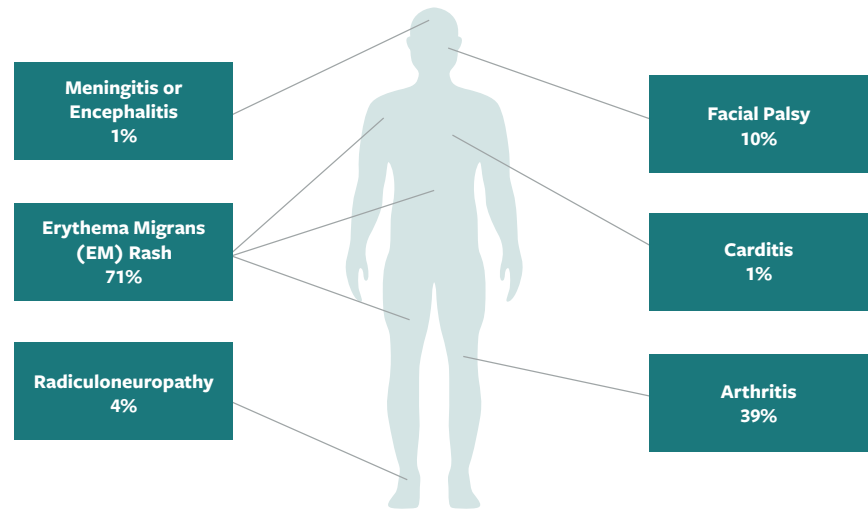
Highlighted counties:

Addison, Bennington, Grand Isle, Orange, Rutland, Windham and Windsor

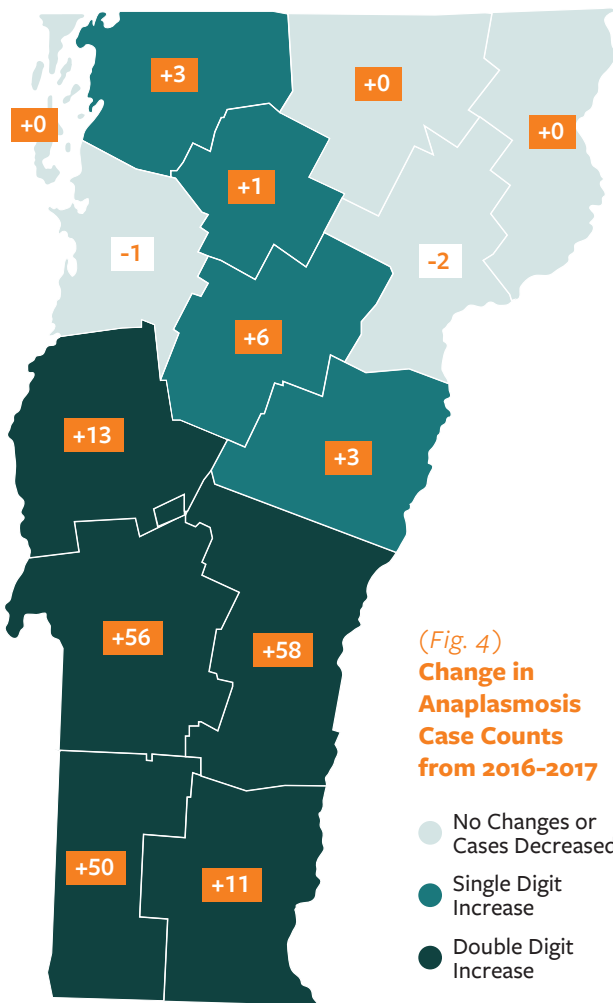


such as meningitis, facial palsy, and arthritis – Vermonters with confirmed cases of Lyme disease experienced these to varying degrees (Figure 2). Health care providers may use the presence of symptoms, physical findings (e.g., rash) and the possibility of exposure to infected blacklegged ticks to diagnose and treat patients early. Laboratory testing is also helpful if used correctly and performed with validated methods.

(Fig. 2) **Relative frequency of clinical features among confirmed cases of Lyme disease—Vermont, 2007-2017**



ANAPLASMOSIS



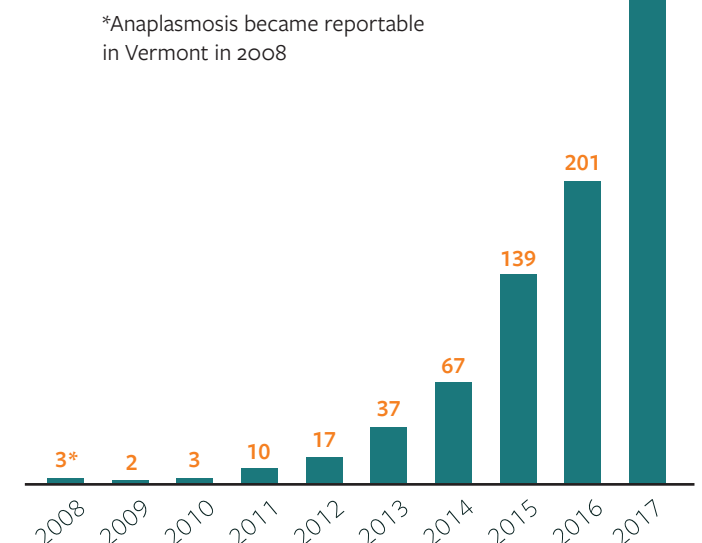
(Fig. 4) **Change in Anaplasmosis Case Counts from 2016-2017**

- No Changes or Cases Decreased
- Single Digit Increase
- Double Digit Increase

Anaplasmosis is the second most common tickborne disease in Vermont. Like Lyme disease, it is caused by a bacterium (*Anaplasma phagocytophilum*) and transmitted through the bite of infected blacklegged ticks. Unlike Lyme disease, anaplasmosis hospitalizes a large percentage of the Vermonters who become infected. **In 2017, approximately 26% of all anaplasmosis cases reported in the state were hospitalized for their illness.**

The number of anaplasmosis cases reported in 2017 almost doubled from the previous year's tally. Case counts in Vermont have risen each year since 2009 (Figure 3).

(Fig. 3) **Anaplasmosis Cases Reported in Vermont, 2008-2017**



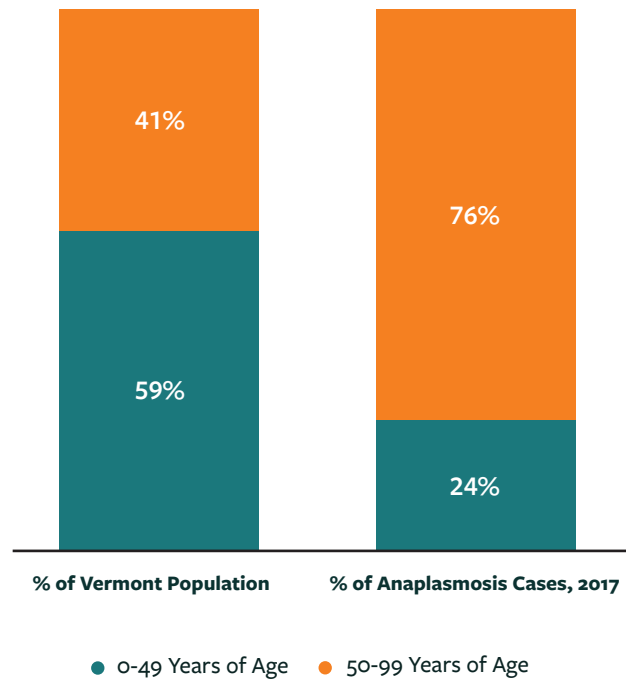
*Anaplasmosis became reportable in Vermont in 2008

This increase is largely due to the continued emergence of anaplasmosis in southern counties. Cases reported in Rutland and Windsor counties more than doubled from the previous year—from 56 to 112 cases in Rutland County and 20 to 78 cases in Windsor County (Figure 4). Case counts also continue to rise in Bennington County—50 more cases were reported in 2017 than in the previous year.

35%
of all anaplasmosis cases in Vermont were in Bennington County.

Anaplasmosis disproportionately impacts older Vermonters. Despite making up only 41% of Vermont’s population, 76% of the anaplasmosis cases reported in Vermont were in residents 50 years of age or older (Figure 5).

(Fig. 5) Older Vermonters are disproportionately affected by anaplasmosis.

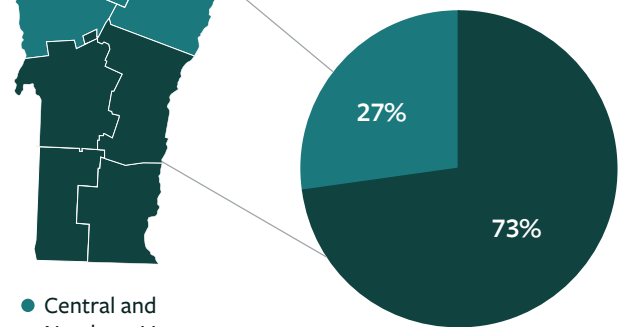


BABESIOSIS

Babesiosis is the third most commonly reported tickborne disease in Vermont. Babesiosis is also transmitted to humans through the bite of infected blacklegged ticks, but this disease is caused by a parasite (*Babesia microti*). The number of reported cases has historically been low, but annual case counts are slowly increasing. Nine cases were reported in 2015, 15 cases were reported in 2016 and 22 cases were reported in 2017. Approximately 14% of Vermonters with babesiosis were hospitalized for their illness in 2017.

Like Lyme disease and anaplasmosis, most of the babesiosis cases in Vermont were reported in residents of the state’s four southernmost counties: Bennington, Rutland, Windham and Windsor (Figure 6).

(Fig. 6) Reported Cases of Babesiosis in Vermont by Geographic Region, 2007-2017



- Central and Northern Vermont Counties
- Four Southernmost Counties

73% of all reported cases of babesiosis in the last 10 years were in residents from four southern Vermont counties.



BORRELIA MIYAMOTOI

In 2016, the Health Department received the first reports of Vermonters infected with a recently recognized tickborne pathogen called *Borrelia miyamotoi*. A distant relative of the bacteria that causes Lyme disease in Vermont, *Borrelia miyamotoi* was first recognized to cause illness in the United States in 2013.

Commonly reported symptoms include fever, chills, muscle and joint aches, headache, nausea and fatigue. Unlike Lyme disease, *Borrelia miyamotoi* infections are thought to rarely cause a rash, and sick individuals may have a fever that comes and goes.

Twelve cases of *Borrelia miyamotoi* infections were reported in 2017, up from 6 cases in 2016. Most cases were reported in adults (median age: 63, range: 4–80 years). These individuals became sick between May and October.

TICKBORNE DISEASE PROGRAM ACTIVITY IN 2017

- Investigated 2,308 tickborne disease reports from health care providers and laboratories.
- Distributed 50,098 “Be Tick Smart” cards, 33,968 “Be Tick Smart” booklets, 157 “Prevent Lyme Disease” outdoor signs and 14,984 other tickborne disease awareness and educational materials (e.g. posters, shower cards, stickers, CDC manuals).
- Organized the state’s “Tickborne Disease Awareness Month” in May. Activities included an official proclamation by the Governor’s office, a press release, numerous media interviews and a partnership with Green Up Vermont to help educate volunteers about tick protection.
- Gave presentations across Vermont to members of the public and the health care community about tickborne diseases and tick bite prevention strategies.
- Revised the Health Department’s tickborne disease webpages to ensure that the latest information and data are available.
- Raised awareness on tickborne diseases through radio and digital advertisements designed to drive traffic to the Health Department’s website where Vermonters can learn the facts about tickborne diseases. During the advertising campaign, traffic to tickborne disease pages on our site increased significantly.
- Raised awareness about anaplasmosis via web, oral presentations and print materials, educating Vermonters and health care providers about this emerging disease with a focus on the unique symptoms and risks.

LOOKING AHEAD

TICKBORNE DISEASE PROGRAM PRIORITIES

- Continue to update “Be Tick Smart” education materials based on current data and evidence and share with Vermonters so they can take steps to protect themselves against tick bites and tickborne diseases.
- Improve surveillance for Lyme disease, seeking new and efficient methods to detect, investigate and quantify cases in Vermont.
- Provide free and up-to-date continuing medical and nursing education for Vermont health care professionals on the diagnosis and treatment of tickborne diseases in Vermont.
- Systematically search for disease-carrying ticks throughout Vermont by partnering with colleagues at the Vermont Agency of Agriculture, Food & Markets, to identify where ticks and tickborne diseases are emerging and understand geographic differences in human tickborne disease risk.
- Increase awareness and investigate new reports of *Borrelia miyamotoi* disease and other emerging tickborne infections, such as Powassan virus disease.

For more
information visit

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