

2018
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, in 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 changes in disease activity and identify people who may be at greater risk for illness.

We collect data and share current, evidence-based information with Vermonters so they are aware of their risk and can use the best strategies to prevent tickborne diseases. We also strive to support the state's health care community with up-to-date medical resources to improve the timeliness and accuracy of tickborne disease 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 2018, 614 cases of Lyme disease were reported to the Health Department, a significant decrease from 1,093 cases reported in 2017. This decrease may be due to factors such as lower tick abundance, year-to-year fluctuations or a reduction in reporting by providers.

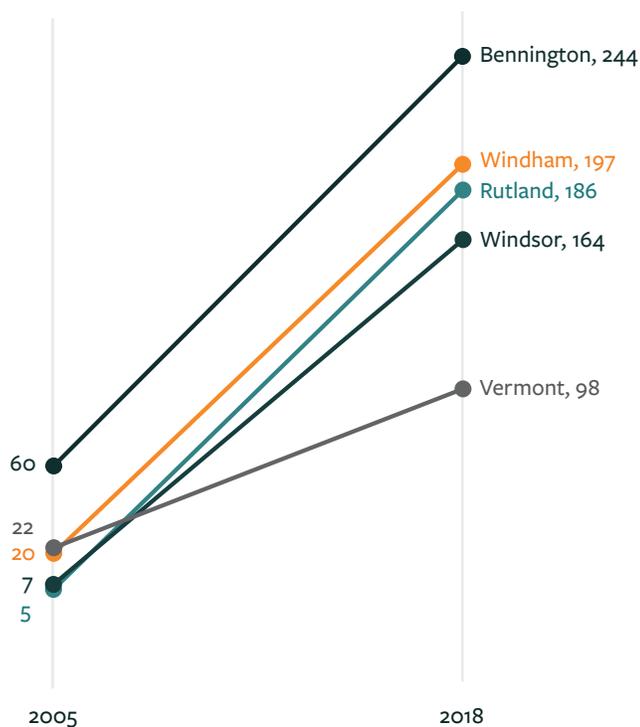
Confirmed and probable cases of Lyme disease were reported in all Vermont counties in 2018, but the risk for disease varied across the state. Counties in southern Vermont – Bennington, Windham, Rutland and Windsor – had the highest county-level incidence for Lyme disease in 2018, and has increased dramatically since 2005 (Figure 1). Incidence of Lyme disease decreased in all Vermont counties between 2017 and 2018. Orleans, Essex and Lamoille counties had the lowest incidence in 2018.

The tick that transmits Lyme disease in Vermont, the blacklegged tick, can live in a variety of habitats such as wooded areas or fields with tall grass and brush. The property around many homes is also suitable habitat for ticks, particularly edges of yards next to woods, or those with tall grass or leaf litter. In an interagency initiative, over 2,000 ticks were collected from 48 sites around the state in 2018; 53% were positive for *B. burgdorferi* and Orange, Windsor, Bennington and Rutland counties had the highest prevalence of *B. burgdorferi*-infected host-seeking female ticks (Figure 2).

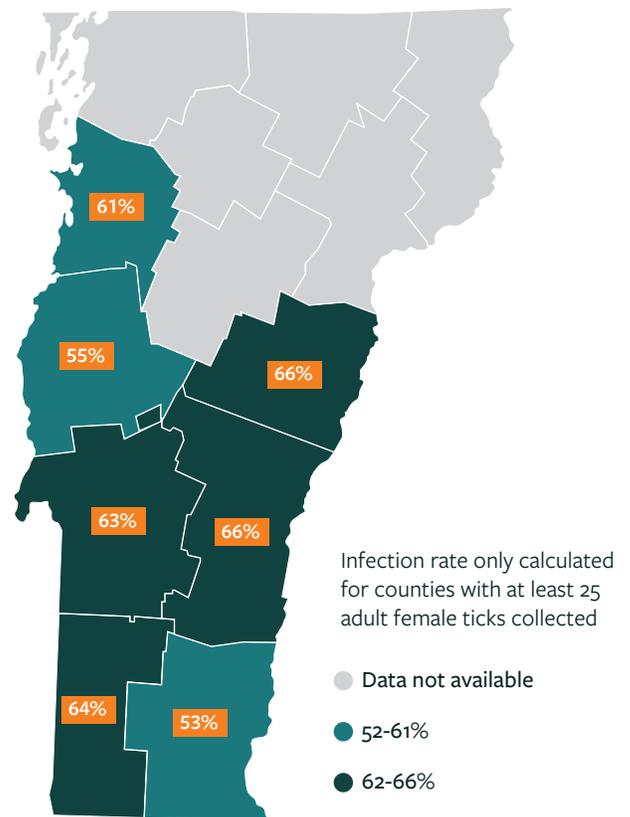
Vermonters of all ages get sick with Lyme disease, but males get Lyme disease more often than females. Boys aged 5–14 years and older men are at highest risk (Figure 3). People who frequently spend time in tick habitat (hikers, campers, hunters, farmers, gardeners, landscapers, and other outdoor workers) may also be at greater risk for Lyme disease.

(Fig. 1) County-Level Lyme Disease Incidence in Vermont (per 100,000 population)

Change between 2005 and 2018 among counties with the highest incidence of Lyme disease in Vermont



(Fig. 2) Percentage of Adult Female Blacklegged Ticks Positive for *Borrelia burgdorferi*, 2018



(Fig. 3) **Confirmed Lyme Disease Incidence (cases per 100,000 population) by Age Group and Sex, 2005–2018**

Rates are higher among males in every age group except 70–74 years



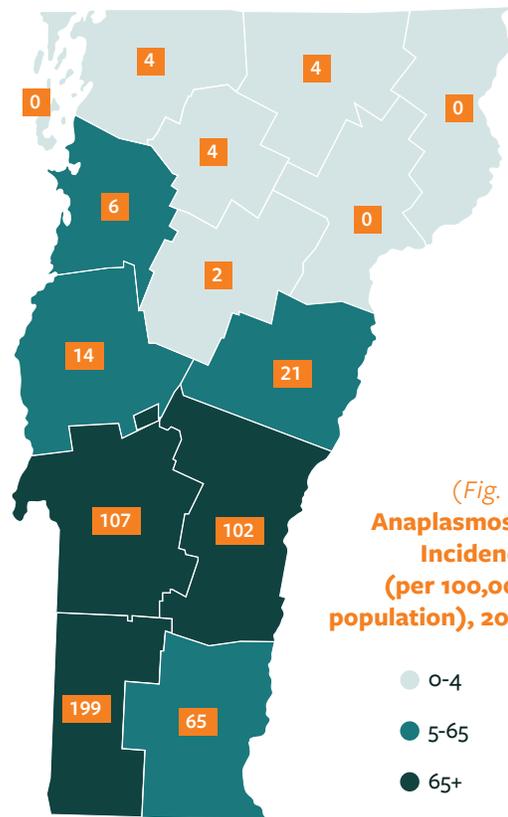
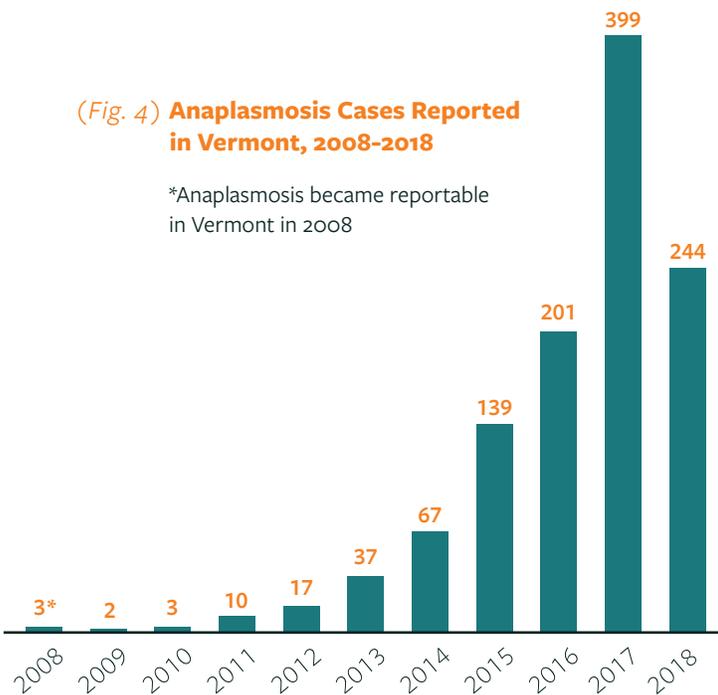
ANAPLASMOSIS

Anaplasmosis is the second most common tickborne disease in Vermont. Like Lyme disease, it is caused by a bacterium (*Anaplasma phagocytophilum*) and is transmitted by the bite of infected blacklegged ticks.

Unlike Lyme disease, anaplasmosis hospitalizes a large percentage of Vermonters who become ill. **In 2018, approximately 26% of Vermonters with anaplasmosis were hospitalized for their illness.**

(Fig. 4) **Anaplasmosis Cases Reported in Vermont, 2008-2018**

*Anaplasmosis became reportable in Vermont in 2008



(Fig. 5) **Anaplasmosis Incidence (per 100,000 population), 2018**

● 0-4
● 5-65
● 65+

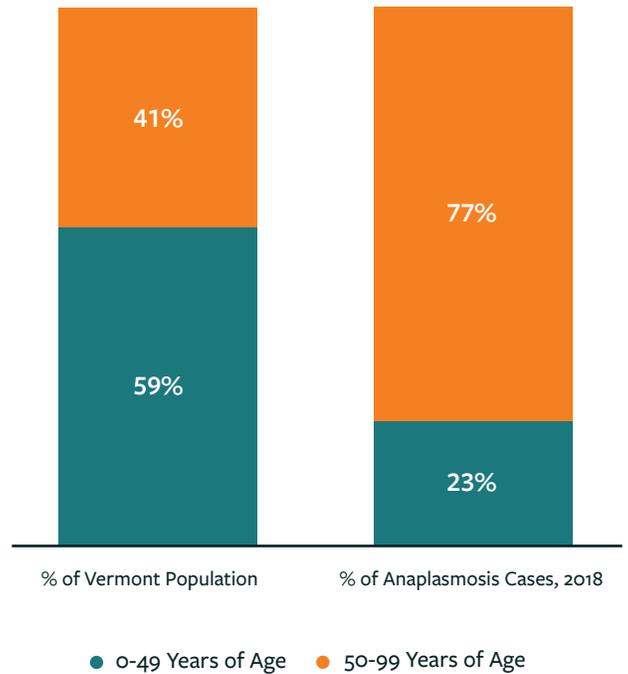


The number of confirmed and probable anaplasmosis cases reported in 2018 decreased from the previous year's tally (Figure 4), but is projected to exceed 2017 counts in 2019.

The highest rates of anaplasmosis continue to be reported in southern counties of Bennington, Rutland, and Windsor counties; 78% of all cases in 2018 were from these three counties (Figure 5).

78%
of all anaplasmosis cases in Vermont were in Bennington, Rutland and Windsor Counties.

(Fig. 6) Older Vermonters are disproportionately affected by anaplasmosis.



Anaplasmosis disproportionately impacts older Vermonters. Despite making up only 41% of Vermont's population, 77% of the anaplasmosis cases reported in Vermont in 2018 were in residents 50 years of age or older (Figure 6).

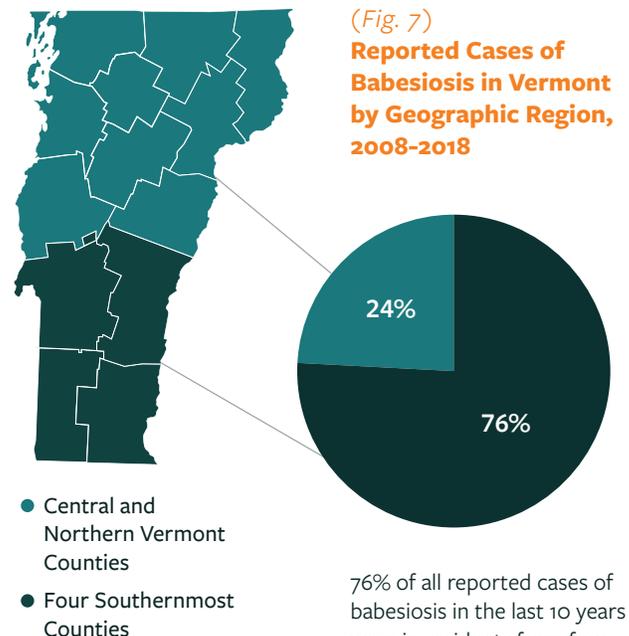
BABESIOSIS

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. Nine cases were reported in 2015, 15 cases were reported in 2016, 22 cases were reported in 2017 and 21 cases were reported in 2018. Approximately 29% of Vermonters with babesiosis were hospitalized for their illness in 2018.

Like Lyme disease and anaplasmosis, most babesiosis cases in Vermont were reported in residents of the state's four southernmost counties: Bennington, Rutland, Windham and Windsor (Figure 7).

(Fig. 7) Reported Cases of Babesiosis in Vermont by Geographic Region, 2008-2018



76% of all reported cases of babesiosis in the last 10 years were in residents from four southern Vermont counties.

BORRELIA MIYAMOTOI DISEASE

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.

Twenty-two cases of *Borrelia miyamotoi* infections were reported during 2016–2018, including two in 2018. Most cases were reported in adults (median age: 62, range: 4–80 years). These individuals became sick between May and October.

TICKBORNE DISEASE PROGRAM ACTIVITY IN 2018

- Investigated 1,597 tickborne disease reports from health care providers and laboratories.
- Distributed 30,480 “Be Tick Smart” cards, 21,905 “Be Tick Smart” booklets, 169 “Prevent Lyme Disease” outdoor signs and 15,892 other tickborne disease awareness and educational materials (e.g. posters, shower cards, stickers, CDC manuals).
- Initiated a statewide systematic tick surveillance program in collaboration with the Vermont Agency of Agriculture, Food & Markets to understand the prevalence and geographic distribution of disease-carrying blacklegged ticks in Vermont.
- Gave presentations and hosted table displays across Vermont to educate 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 the availability of the latest information and data.
- Raised awareness on tickborne diseases through updated radio and digital advertisements designed to drive traffic to the Health Department’s website where Vermonters can learn the facts about tickborne diseases.
- Provided free continuing medical and nursing education for Vermont health care professionals on the diagnosis and treatment of tickborne diseases in Vermont, including emerging concerns such as anaplasmosis and *Borrelia miyamotoi* disease.

LOOKING AHEAD

TICKBORNE DISEASE PROGRAM PRIORITIES

- Improve surveillance for Lyme disease in collaboration with other high-incidence states, seeking new methods to efficiently detect and quantify cases in Vermont.
- Continue systematic statewide tick pathogen surveillance to monitor tick abundance, tick infection rates and geographic trends over time.
- Update “Be Tick Smart” education materials with current data and evidence and share with Vermonters so they can take steps to protect themselves from tickborne diseases.
- Add *Borrelia miyamotoi* disease to the list of reportable infectious diseases in Vermont to more closely monitor disease trends.
- Form and co-lead a multi-state Anaplasmosis workgroup to foster collaboration in jurisdictions where anaplasmosis is an emerging public health concern and understand the recent regional increase in cases.

For more information visit

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