

2016
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 Department of Health, conducts surveillance on tickborne diseases to measure the burden of disease in Vermont, detect trends or changes in disease activity and identify those who may be at greater risk.

We also work to educate Vermonters about tickborne diseases, using collected data to provide the latest, evidence-based information so that they are aware of the risks and understand the best strategies to protect themselves. The landscape of tickborne disease 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 increase the timeliness and accuracy of diagnoses.



LYME DISEASE

Lyme disease is caused by an infection with bacteria called *Borrelia burgdorferi* that are transmitted to humans by the bite of a blacklegged tick. It is the most commonly reported tickborne disease in Vermont. In 2016, 763 cases of Lyme disease were reported to the Health Department, the second highest annual count recorded in Vermont.

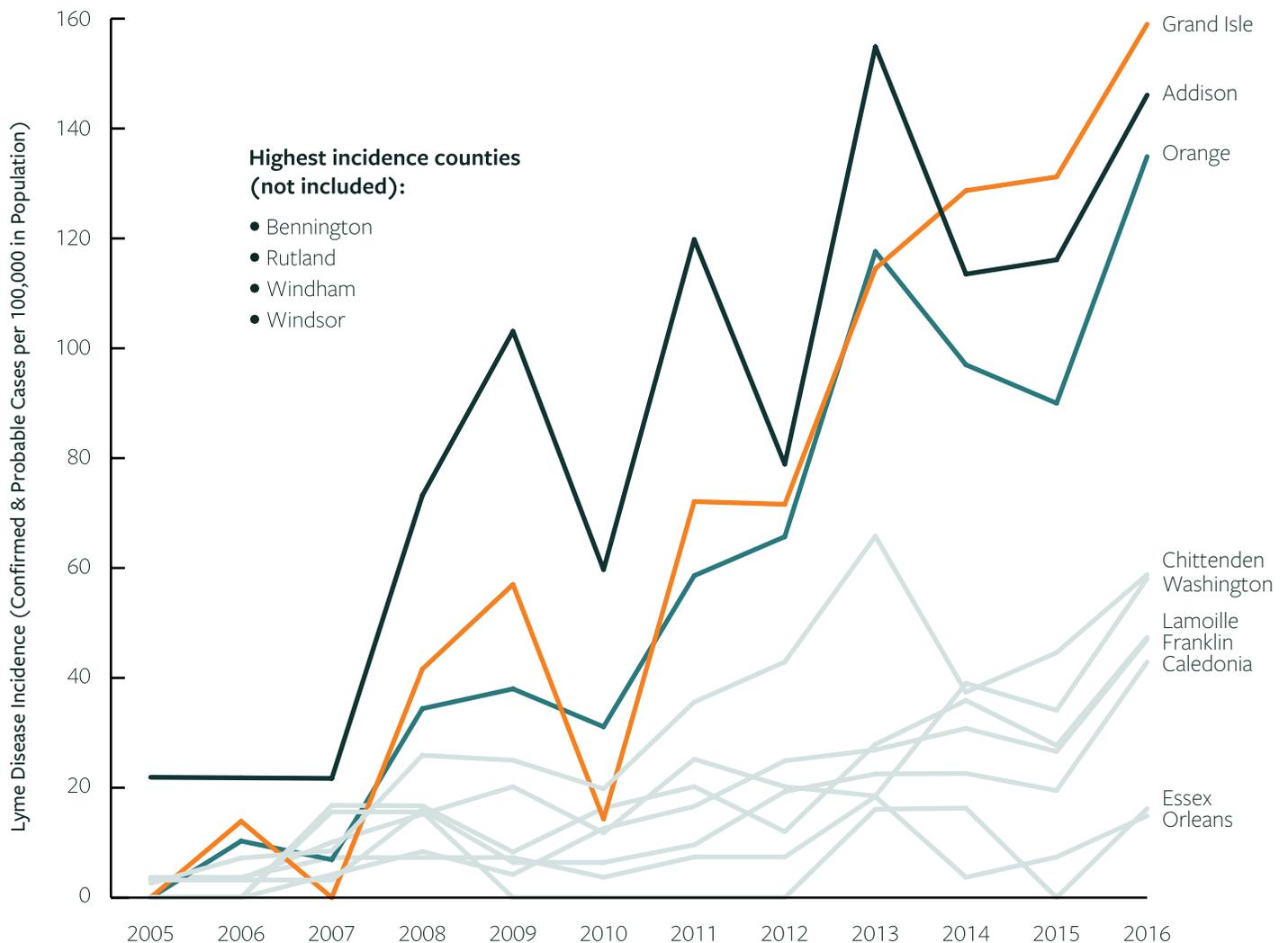
While cases of Lyme disease were reported in residents of all Vermont counties in 2016, the burden of disease is varied across the state. Southern Vermont still maintains the highest incidence of Lyme disease, with Bennington, Windsor, Windham and Rutland counties ranking 1-4 respectively in 2016. The counties that make up the Northeast Kingdom—Caledonia, Essex and Orleans—continue to have the lowest incidence of Lyme disease, although Caledonia County had a substantially higher

incidence in 2016 (42.9 cases/100,000 population) compared to Essex (16.2) and Orleans (14.9) counties.

Lyme disease appears to be increasingly common in Addison, Grand Isle and Orange counties. These counties were among the lowest incidence areas of the state in 2007, but since that time, the county-level incidence has gradually increased in each (Figure 1).

Most people with Lyme disease develop an erythema migrans (EM) rash, a symptom that can be very helpful for diagnosis because it is the only symptom that is unique to Lyme. This common association between Lyme and the EM rash has led to the misconception that an EM rash must be present for a person to have Lyme disease.

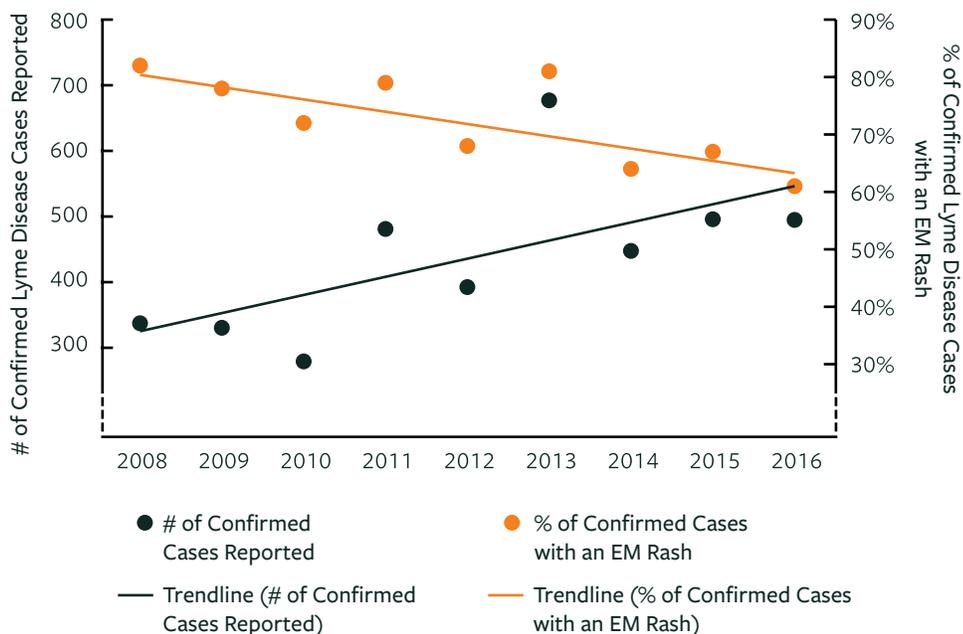
(Fig. 1) COUNTY-LEVEL LYME DISEASE INCIDENCE IN VERMONT, 2005-2016



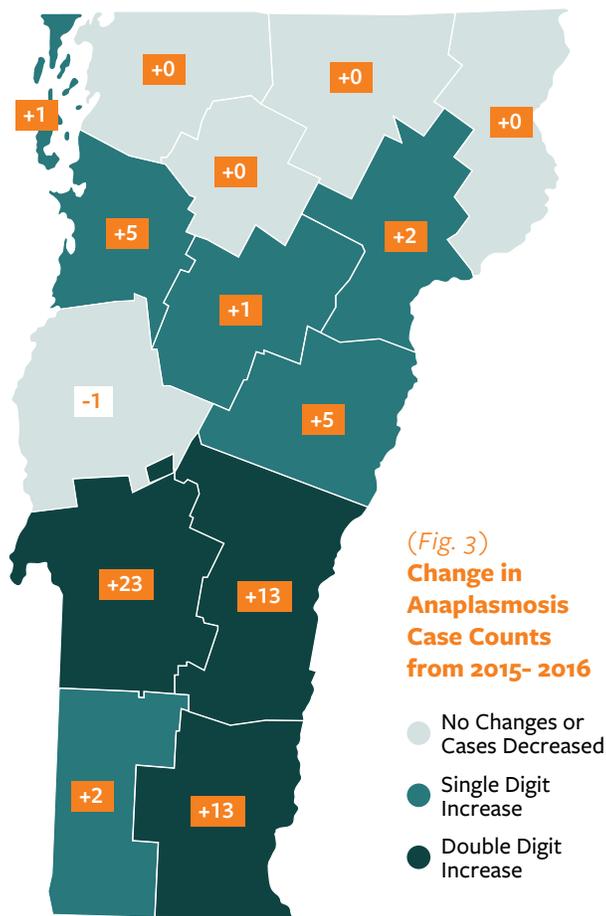
However, many people with Lyme disease do not develop a rash, making their illness more difficult to recognize. Health care providers may use the presence of other symptoms, the patient's recent exposure to blacklegged ticks and laboratory testing to diagnosis these patients.

The percentage of confirmed Lyme disease cases with an EM rash has trended downward over the last nine years, while the number of confirmed cases reported has generally increased (Figure 2). Combined, this indicates that more cases of Lyme disease without an EM rash are being diagnosed and reported in Vermont.

(Fig. 2) Trend in the Number of Confirmed Lyme Disease Cases Reported and the Percentage of Confirmed Cases with an Erythema Migrans (EM) Rash, 2008-2016



ANAPLASMOSIS



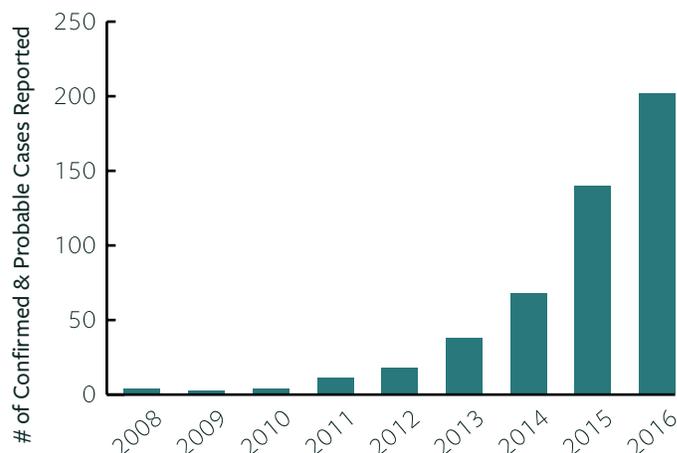
(Fig. 3) Change in Anaplasmosis Case Counts from 2015- 2016

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

Like Lyme disease, anaplasmosis is a tickborne disease caused by bacteria (*Anaplasma phagocytophilum*) and transmitted by the blacklegged tick. Unlike Lyme disease, anaplasmosis hospitalizes a significant number of the Vermonters who become infected. In 2016, approximately 24% of all anaplasmosis cases reported in the state were hospitalized for their illness.

The number of anaplasmosis cases reported in 2016 was up 45% over the previous year's tally. Case counts in Vermont have risen each year since 2011 (Figure 4).

(Fig. 4) Anaplasmosis Cases Reported in Vermont, 2008-2016

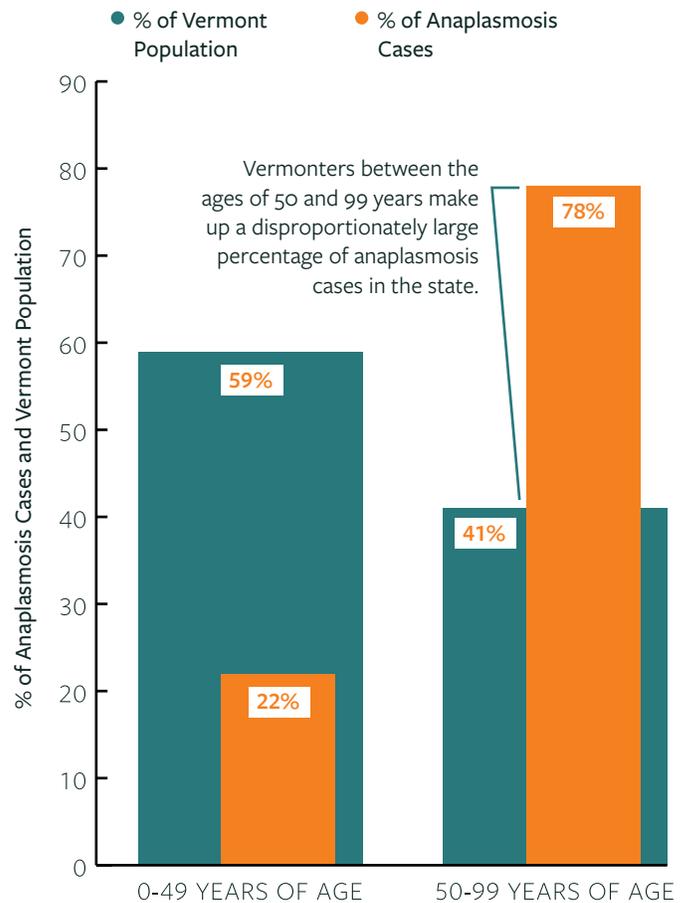


This increase was due in large part to the emergence of anaplasmosis in three southern counties: Rutland, Windham and Windsor (Figure 3). Although Bennington County only recorded two more cases in 2016 than in the previous year, 44% of all anaplasmosis cases in Vermont were in Bennington County residents.

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of all anaplasmosis cases in Vermont were in Bennington County

Anaplasmosis disproportionately impacts older Vermonters. Despite making up only 41% of Vermont's population, residents who are 50 years of age or older make up 78% of the anaplasmosis cases reported in Vermont (Figure 5).

(Fig. 5) **Confirmed and Probable Anaplasmosis Cases Reported in Vermont by Age Group, 2016**



BABESIOSIS

Babesiosis is also transmitted to humans through the bite of a blacklegged tick, but this disease is caused by a parasite (*Babesia microti*). Babesiosis is the third most commonly reported tickborne disease in Vermont. The number of reported cases has historically been low, but annual case counts are slowly increasing. Nine cases were reported in 2015, and 15 cases were reported in 2016. Approximately 13% of Vermonters with babesiosis were hospitalized for their illness in 2016.

Most of the babesiosis cases in Vermont have been 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, 2005-2016**



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 U.S. in 2013. Commonly reported symptoms included fever, chills, muscle and joint aches, headache, nausea and fatigue.

Seven cases of *Borrelia miyamotoi* infections were reported in 2016, most of which were adults. These individuals became sick between May and October.

Unlike Lyme disease, *Borrelia miyamotoi* infections are thought to rarely cause a rash. And while most diseases transmitted by the blacklegged tick can cause a fever, *Borrelia miyamotoi* can cause a fever that comes and goes.

TICKBORNE DISEASE PROGRAM ACTIVITY IN 2016

- Investigated 1,572 tickborne disease reports from health care providers and laboratories.
- 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.
- Distributed 11,000 "Be Tick Smart" booklets, 16,000 "Be Tick Smart" cards, 68 "Prevent Lyme Disease" outdoor signs and 298 other tickborne disease awareness and educational materials.
- 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 the latest information and data prior to the launch of the Department's new website.
- Raised awareness on tickborne diseases through radio and digital advertisements designed to drive traffic to the Health Department's tickborne disease webpages where Vermonters can learn the facts about these diseases. During the advertising campaign, traffic to our tickborne disease webpages was up 119% over the previous year.
- Revised the Department's "Be Tick Smart" cards to include the latest information on ticks and tickborne diseases in Vermont.

LOOKING AHEAD

TICKBORNE DISEASE PROGRAM PRIORITIES

- Improve our education materials – The Tickborne Disease Program will be creating new materials to help educate Vermonters about tickborne diseases. The Program will also be revising its existing materials to include the latest information and align visually with our new "Be Tick Smart" materials.
- Raise awareness about anaplasmosis – Educating Vermonters and health care providers about this emerging disease will be an important part of our awareness activities going forward. There will be a greater focus on the unique symptoms and risks associated with anaplasmosis in our future awareness efforts.

For more information visit
**HEALTHVERMONT.GOV/
BETICKSMART**



