

## Lyme Disease Surveillance Report -- Vermont 2012

### Vermont Department of Health

This document includes Lyme disease data reported to the Vermont Department of Health (VDH) in 2012. Lyme disease is a nationally notifiable condition and data referenced in this update are based on reports received from physicians and clinical laboratories.

#### **Introduction**

##### *Background*

Lyme disease is caused by infection with the bacterium, *Borrelia burgdorferi*. In the eastern United States, Lyme disease is transmitted by the black-legged tick, *Ixodes scapularis*, commonly known as the deer tick. Some of the common symptoms of Lyme disease include skin rash, swollen joints and flu-like symptoms such as fatigue, fever, sweats, chills and headache. Lyme disease can also affect the heart and nervous system. Although patients with Lyme disease can be completely cured by antibiotics, the goal is to prevent infection by preventing tick bites.

##### *Current Status in Vermont*

Lyme disease was first recognized in the U. S. in 1975 when it was implicated in a mysterious cluster of juvenile arthritis cases in Lyme, Connecticut. Since then, Lyme disease has become the most commonly reported vector-borne disease in the US, with prevalence rates highest in New England and the Upper Midwest.

For many years, a small number of cases of Lyme disease were reported to VDH annually. The number of confirmed and probable human cases reported climbed from 105 cases in 2006 to 623 cases in 2011. However, in 2012, the number of confirmed and probable human cases slightly decreased to 522 cases.

**Figure 1: Assigned Case Status of Lyme Disease Reports, Vermont 2012**

	<b>Cases (#)</b>	<b>Percentage (%)</b>
Confirmed	386	45
Probable	136	16
Suspect	109	13
Not a case	224	26
<b>Total</b>	<b>855</b>	<b>100</b>

**Box: 2012 Lyme disease, case summary**

**1) Case Total: 522**

**Confirmed: 386**

**Probable: 136**

**2) Incidence Rate:**

- **Confirmed cases: 62 cases per 100,000 people**
- **Confirmed and Probable cases: 83 cases per 100,000 people**

**3) Gender:**

**Male: Confirmed – 211**

**Probable – 73**

**Female: Confirmed – 175**

**Probable: 63**

**4) Age:**

**Confirmed: 1- 92 years**

- **Average: 46**

**Probable: 3 – 87 years**

- **Average: 47**

**5) Place of Exposure**

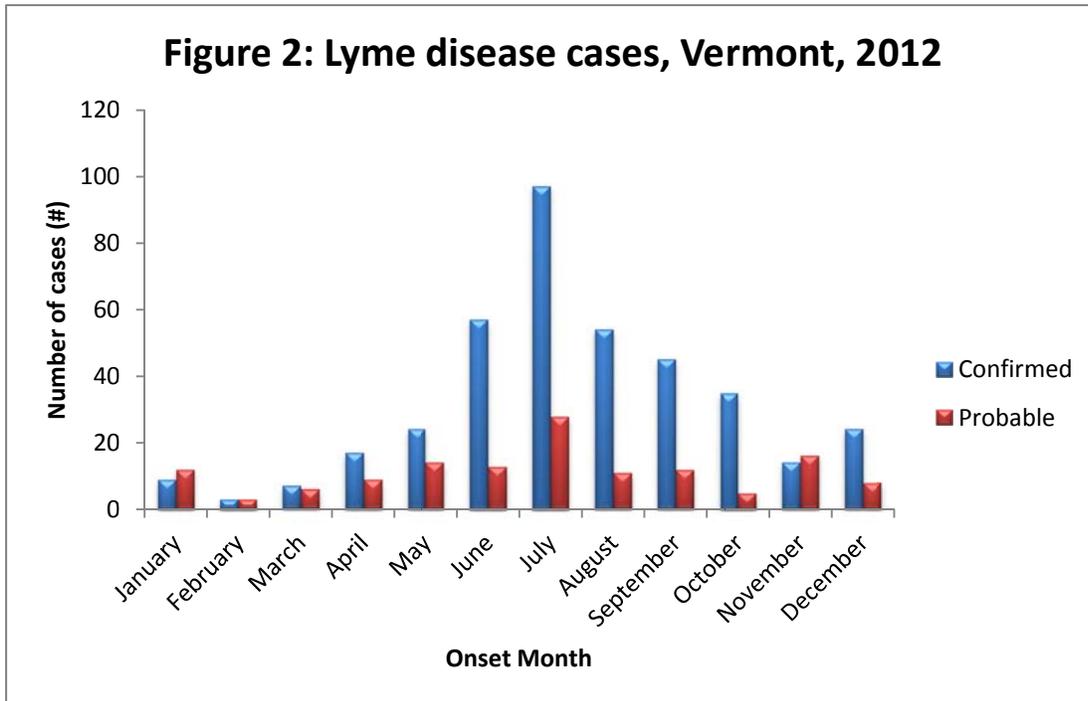
	<b>Confirmed</b>	<b>Probable</b>
<b>In-State:</b>	<b>267</b>	<b>100</b>
<b>Out-of-State:</b>	<b>23</b>	<b>5</b>
<b>Unknown:</b>	<b>94</b>	<b>31</b>
<b>Out-of-country:</b>	<b>2</b>	<b>0</b>

**Limitations for 2012 Lyme disease data**

Disease surveillance systems can be inexact because of disease under-reporting and misclassification. Every case of Lyme disease is not reported to the state, and some cases that are reported may be due to other causes..

### **2012 Lyme disease: Seasonality**

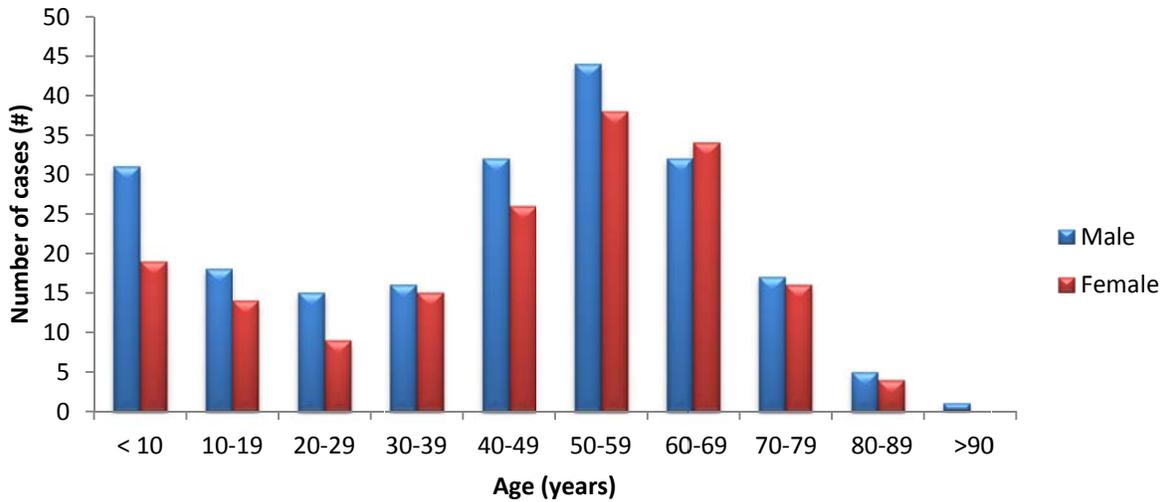
Transmission of *Borrelia burgdorferi* is largely dependent upon blacklegged ticks' ability to locate and feed upon competent host animals, which results in a distinct seasonality of infection. Most human cases occur during the peak periods of nymphal host-seeking behavior in late spring and early fall **[Figure 2]**. In 2012, 66% of confirmed cases and 47% of probable cases occurred between June and September. The majority of cases had onsets in June and July.



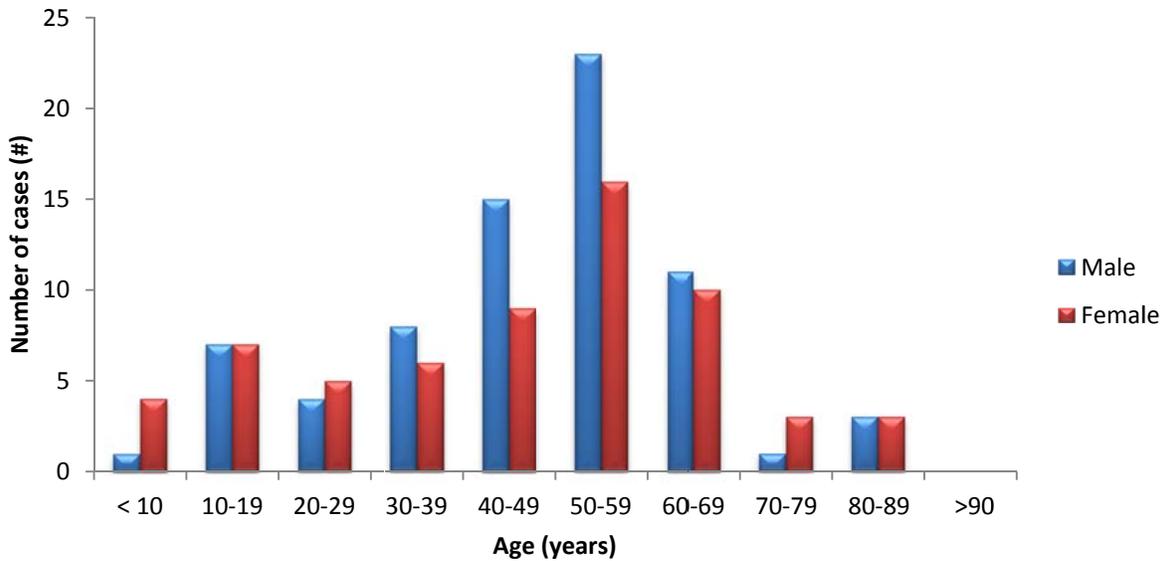
### **2012 Lyme disease: Cases by age and gender**

Lyme disease can affect people of all ages, but it is most commonly diagnosed in children and middle-aged to older adults. In Vermont, 45.3% of the reported confirmed cases were females and 54.6% of cases were males. Of the reported probable cases, 46.3% were females and 53.7% were males **[Figures 4 and 5]**.

**Figure 4: Confirmed cases of Lyme disease by age and gender, Vermont, 2012**



**Figure 5: Probable cases of Lyme disease by age and gender, Vermont, 2012**



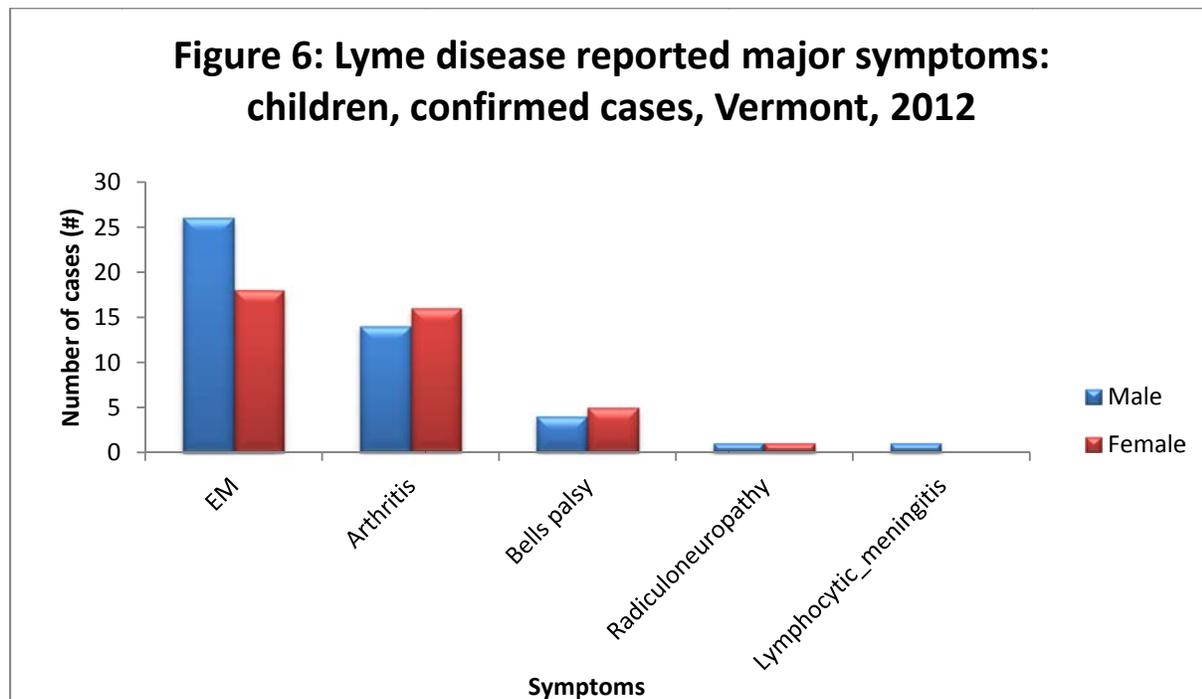
## 2012 Lyme disease: Reported Symptoms

The symptom that is most commonly associated with Lyme disease is the erythema migrans (EM) rash, which occurs in 60%-80% of people infected with *B. burgdorferi*. In 2012, 62.2% of all confirmed cases of Lyme disease in Vermont reported an EM rash as a major symptom of infection.[Table 1].

**Table 1: Erythema migrans (EM) presence in confirmed cases, Vermont, 2012**

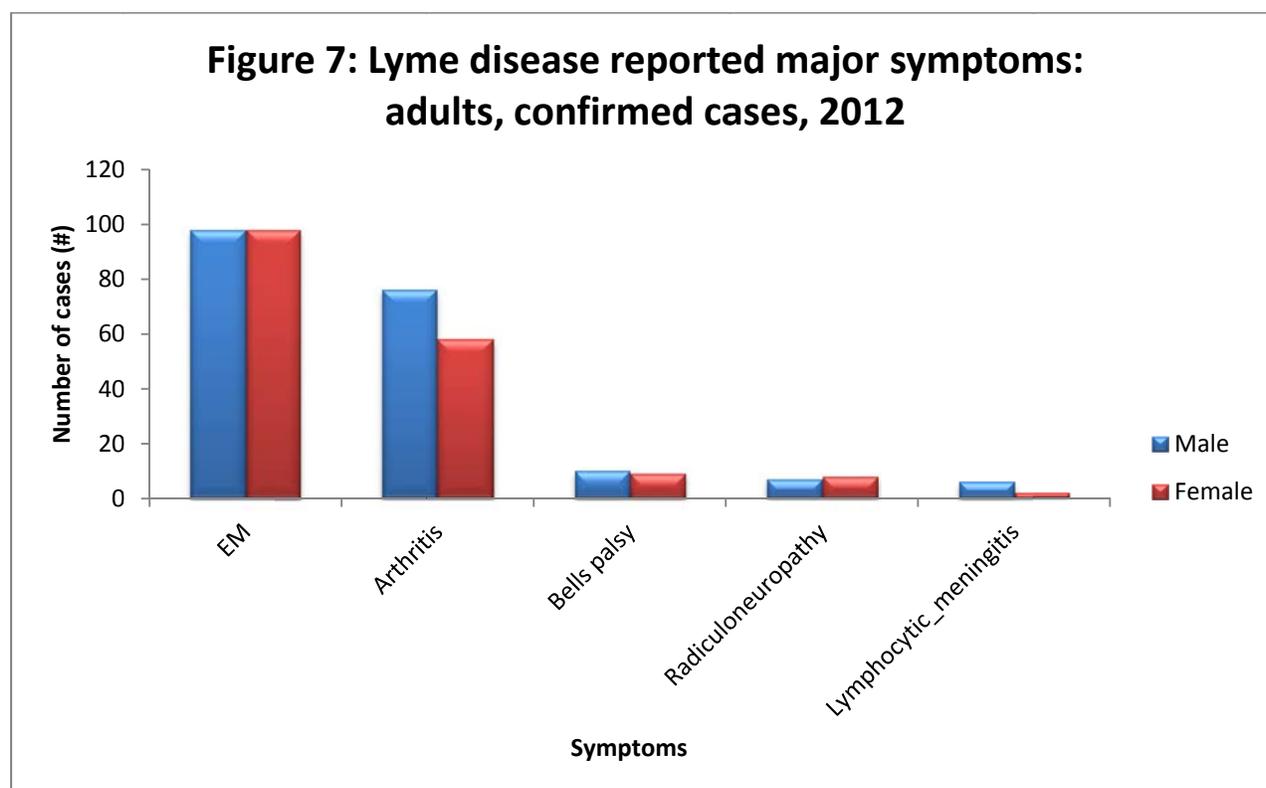
Age	Total no. of cases (#)	EM present (#)	EM present (%)
≤ 18	81	44	54.3
Adults	305	196	64.2
<b>Total</b>	<b>386</b>	<b>240</b>	<b>62.2</b>

In addition to causing an EM rash, Lyme disease may affect the heart, nerves and musculoskeletal system. The second most common reported symptom is swelling of the joints (arthritis, 38.5% among children and approximately 43% among adults), followed by temporary facial weakness or paralysis (Bells palsy, 11.5% among children and approximately 6% among adults), and nerve dysfunction (radiculoneuropathy, 2.5 % among children and approximately 4.9% among adults). [Figures 6 and 7; Table 2 and Table 3].



**Table 2: Reported major symptoms among children in confirmed cases, Vermont, 2012**

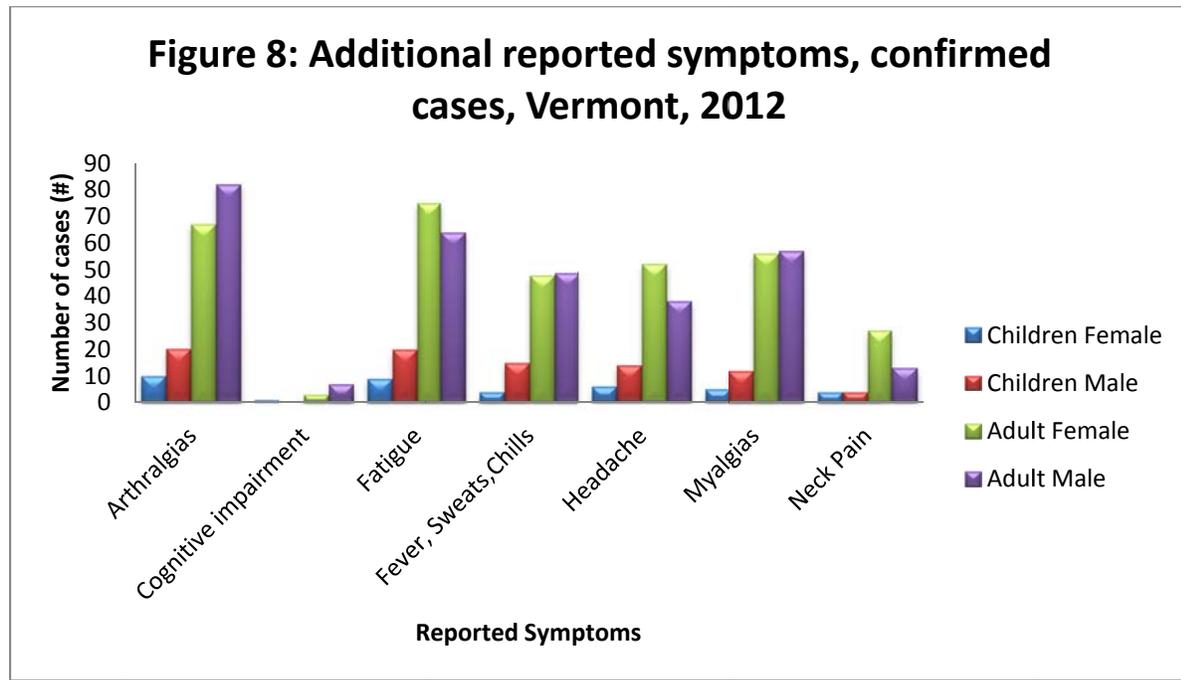
Children	Symptom		Gender	
	Cases (#)	Cases (%)	Female	Male
EM	44	55	18	26
Arthritis	30	47.1	14	16
Bells palsy	9	13.6	5	4
Radiculoneuropathy	2	6.3	1	1
Lymphocytic meningitis	1	1.6	0	1



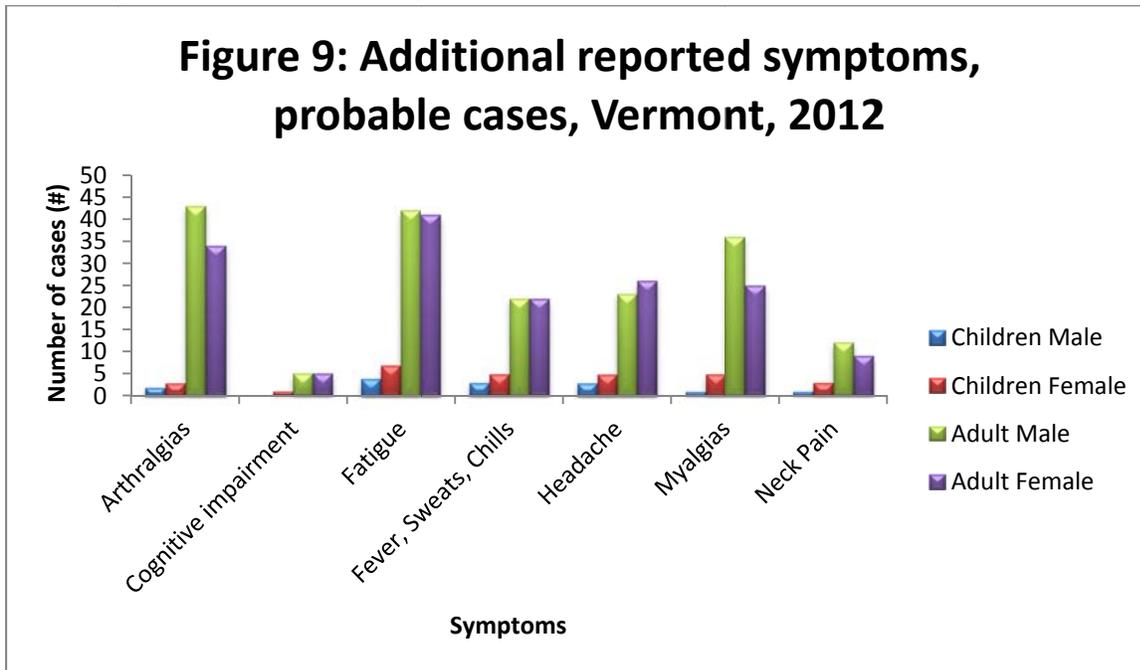
**Table 3: Reported major symptoms among adults in confirmed cases, Vermont, 2012**

Adult	Symptom		Gender	
	Cases (#)	Cases (%)	Female	Male
EM	196	65.3	98	98
Arthritis	134	49.6	58	76
Bells palsy	19	7.3	9	10
Radiculoneuropathy	15	6.2	8	7
Lymphocytic meningitis	8	3.3	2	6

Additional symptoms are also frequently reported [Figures 8 and 9]. These include arthralgias, fatigue, myalgia, and flu-like symptoms such as fever, sweats, chills, headache and neck pain.



The CDC updated the Lyme disease case definition in 2008 to include 'probable' as a possible case status assignment. A 'probable' case is any physician-diagnosed case with clinical symptoms that do not fall into one of the major musculoskeletal, neurologic or cardiac symptom classifications. Symptoms frequently reported include fatigue, joint pain, muscle aches, and fever. **[Figure 9]**



## **2012 Lyme disease: Number of cases by county, Vermont 2012**

Most Lyme disease occurs in residents of the four most southern Vermont counties. Although Chittenden County also has a large number of cases, when adjusted for population size, the four southern counties have the highest incidence rates (number of cases per 100,000 people). [Table 4]

**Table 4: Incidence Rate of Confirmed and Probable Lyme disease cases, Vermont 2012**

<b>County</b>	<b>Number of Confirmed Cases</b>	<b>Incidence Rate: Confirmed Cases</b>	<b>Number of Confirmed and Probable Cases</b>	<b>Incidence Rate: Confirmed and Probable Cases</b>
<b>Addison</b>	20	54.3	29	78.8
<b>Bennington</b>	89	239.7	128	344.8
<b>Caledonia</b>	4	12.8	6	19.2
<b>Chittenden</b>	55	35.1	68	43.4
<b>Essex</b>	0	0.0	0	0.00
<b>Franklin</b>	11	23.0	12	25.1
<b>Grand Isle</b>	4	57.4	5	71.7
<b>Lamoille</b>	3	12.3	3	12.3
<b>Orange</b>	18	62.2	19	65.7
<b>Orleans</b>	1	3.67	2	7.34
<b>Rutland</b>	77	124.9	98	159.0
<b>Washington</b>	8	13.4	12	20.2
<b>Windham</b>	44	98.9	69	155.0
<b>Windsor</b>	52	91.8	71	125.3

### **Conclusion:**

Evidence shows that the incidence of Lyme disease continues to be high in Vermont. An increase in infected tick populations, better recognition and reporting by health care providers, and habitat and environmental changes may account for the high number of cases reported in the Green Mountain State.

**The best way to prevent Lyme disease is to prevent tick bites. It is important to take measures to prevent exposure to ticks and reduce the risk of contracting Lyme disease.**

- Wear light-colored clothing with a tight weave, so you can spot ticks easily.
- Wear enclosed shoes, long pants and long sleeves. Tuck pant legs into boots or socks and shirt into pants.

- Apply insect repellent containing DEET or permethrin, following label instructions carefully.
- Avoid sitting on the ground or on stone walls.
- Do a final, full body tick check at the end of the day, looking for what may seem like nothing more than a new freckle or speck of dirt.
- Remove ticks promptly.
- Shower soon after coming inside from tick habitat.

**Learn more about preventing tick bites and protecting yourself, your family & pets against Lyme disease by visiting the Vermont Department of Health website- [http://www.healthvermont.gov/prevent/lyme/lyme\\_disease.aspx](http://www.healthvermont.gov/prevent/lyme/lyme_disease.aspx)**