

2016

# Lyme Disease in Brattleboro, VT: Office Triage and Community Education

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## Recommended Citation

Evans, Peter, "Lyme Disease in Brattleboro, VT: Office Triage and Community Education" (2016). *Family Medicine Clerkship Student Projects*. 153.  
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# Lyme Disease in Brattleboro, VT: Office Triage and Community Education

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PETER EVANS

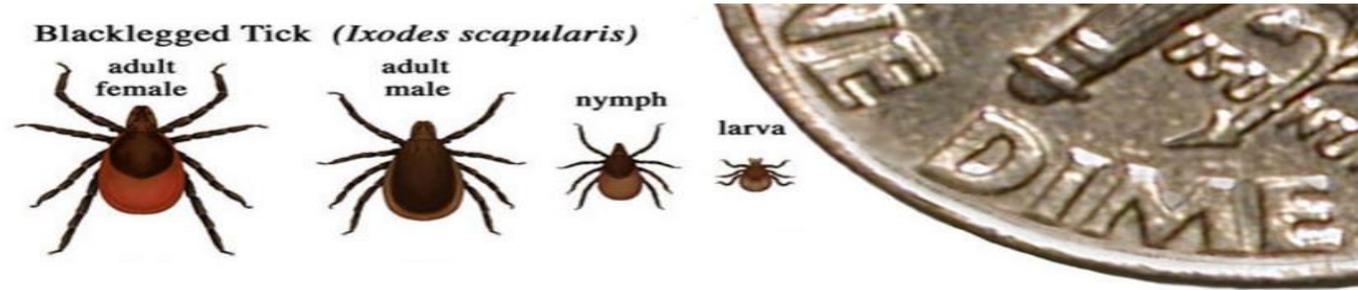
UVM COLLEGE OF MEDICINE, CLASS OF 2018

ROTATION 1, MARCH-APRIL 2016

BRATTLEBORO, VT

PROJECT MENTOR: DR. ROBERT TORTOLANI

# The Problem



Lyme disease is caused by transmission of *Borrelia burgdorferi*, a spirochete carried primarily by the deer tick species (*Ixodes scapularis*). The disease commonly causes a rash, flu-like symptoms, migratory arthralgias, and neurologic and cardiac issues

Lyme disease is preventable by avoiding tick bites, rapidly removing embedded ticks, and with post-bite antibiotic prophylaxis when indicated. Additionally, it is readily treatable with prompt antibiotic therapy

The rates of Lyme disease are rising in Vermont since 2005; however, most tick bites do not result in Lyme disease and not all bites require the use of antibiotics

- Most deer ticks do not carry Lyme disease
- The tick must be attached for at least 36 hours for transmission to occur
- An observed tick bite only has a 1.2-1.4% chance of resulting in Lyme disease

Medical offices are experiencing increasingly high volume of calls for more information regarding Lyme disease and requests for antibiotic prophylaxis

# Public Health Cost and Brattleboro, VT

There are over an estimated 300,000 diagnoses of Lyme disease each year, costing the U.S. Health Care system an estimated \$1.3 billion a year

- Only 30,000 of these cases are reported to local health departments and to the CDC
- Each diagnosis costs the health care system approximately \$3,000

Preliminary data from Vermont Department of Health Infectious Disease Program suggests that in 2015, there were 710 cases of Lyme disease in Vermont

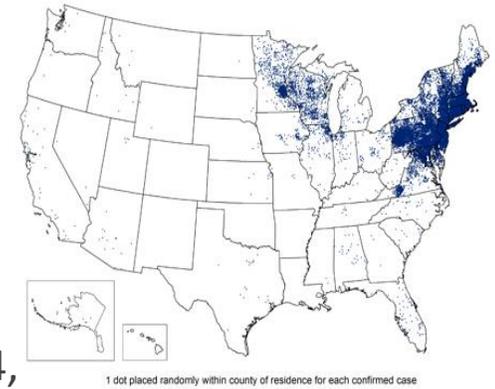
- The incidence in Vermont was 71 cases per 100,000

Windham County, where Brattleboro is located, reports 107 probable cases in 2015. In 2014, the county had the third highest incidence rate in the state, reaching 189.9 cases per 100,000 individuals

Local medical offices report that their patients have difficulty with tick species identification, lack proper education regarding symptoms, and often request use of antibiotics in cases of suspected Lyme disease regardless of medical indication

Many Brattleboro primary care offices note that they do not have a clear or consistent protocol for addressing patient calls regarding Lyme disease and potential treatment

Reported Cases of Lyme Disease -- United States, 2014



# Community Perspectives

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## Survey of Brattleboro Family Physicians and Clinical Support Staff (n=10)

### Interview with Megan Lynde, RN, BSN, Public Health Nurse, Vermont Department of Health, Brattleboro Office

- Patient outreach remains a challenge, but use of educational materials in an office setting and utilizing an electronic medical record, if available, to identify at risk patients and provide them preventative education are potentially effective tools
- Physician education is crucial-- use of a triage protocol for clinical support staff, lectures at medical staff meetings, and provision of written materials may be useful to address current weaknesses in clinician education regarding Lyme disease
- Community outreach is a key element in preventing Lyme disease
  - Writing a letter to the editor about tick bite prevention could be effective means of reaching the broader population that might not always visit their primary care physicians or have a primary care office

### Interview with [Name withheld], Vermont Department of Health Infectious Disease Program

- The most current epidemiology of Lyme disease in Vermont and Windham county suggests that there is a generally increasing trend of reported Lyme cases
  - It is believed that reported cases underrepresent the number of diagnosed cases of Lyme
- Tick species identification is crucial for deciding whether treatment for Lyme is necessary, particularly as prophylaxis
  - The Vermont Department of Health provides tick species identification cards for use in offices and is able to supply several hundred cards for use in this project
- Lyme Corp is a CDC and Vermont Department of Health collaboration that has medical students educate colleagues and the general public about Lyme disease

# Community Perspective, cont.

Created a six question survey distributed to local Family Physicians and their clinical support staff

Survey assessed:

- Number of calls made to offices during peak Lyme season
- Number of calls resulting in office appointments
- Top reasons for calls to local offices
- Clinical perspectives on ability of patients to identify deer ticks, request antibiotics appropriately, and need for a triage protocol for calls about tick bites and Lyme disease

Surveyed **10** Family Physicians and RNs working in Brattleboro Family Practice offices

**Lyme Survey- Brattleboro Family Medicine Physicians and Clinical Support Staff  
April, 2016**

Please check only ONE box unless otherwise stated.

<p><b>On average, how many calls do you or your office receive each week regarding Lyme disease from March 1-November 30?</b> (include your time on call)</p> <p><input type="checkbox"/> 0-2   <input type="checkbox"/> 3-5   <input type="checkbox"/> 6-8   <input type="checkbox"/> &gt;8</p>
<p><b>How many of these calls result in an office appointment?</b>   <input type="checkbox"/> 0-2   <input type="checkbox"/> 3-5   <input type="checkbox"/> 6-8   <input type="checkbox"/> &gt;8</p>
<p><b>What do you estimate are the most common reasons for calls to your office regarding Lyme disease?</b> (check the top FIVE that apply)</p> <p><input type="checkbox"/> Questions regarding tick identification</p> <p><input type="checkbox"/> Questions regarding tick removal</p> <p><input type="checkbox"/> Concern if a bite mark is from a tick bite</p> <p><input type="checkbox"/> Question if rash is caused by a tick bite</p> <p><input type="checkbox"/> Request for antibiotic therapy</p> <p><input type="checkbox"/> Questions regarding non-antibiotic therapy</p> <p><input type="checkbox"/> Concern about chronic Lyme disease</p> <p><input type="checkbox"/> Questions regarding diagnosis of Lyme disease</p> <p><input type="checkbox"/> Requests of how to prevent tick bites</p> <p><input type="checkbox"/> Questions if joint pain is being caused by Lyme disease</p> <p><input type="checkbox"/> Other (please describe): _____</p> <p>_____</p>

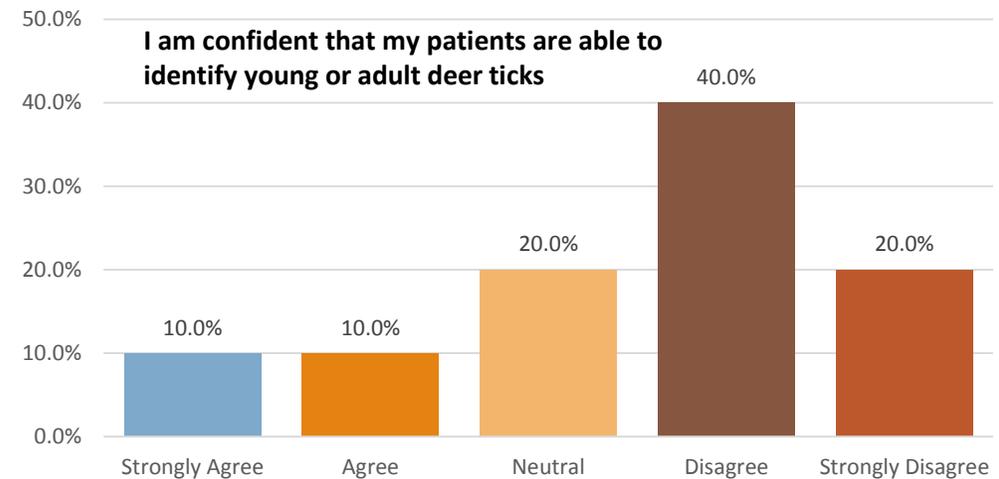
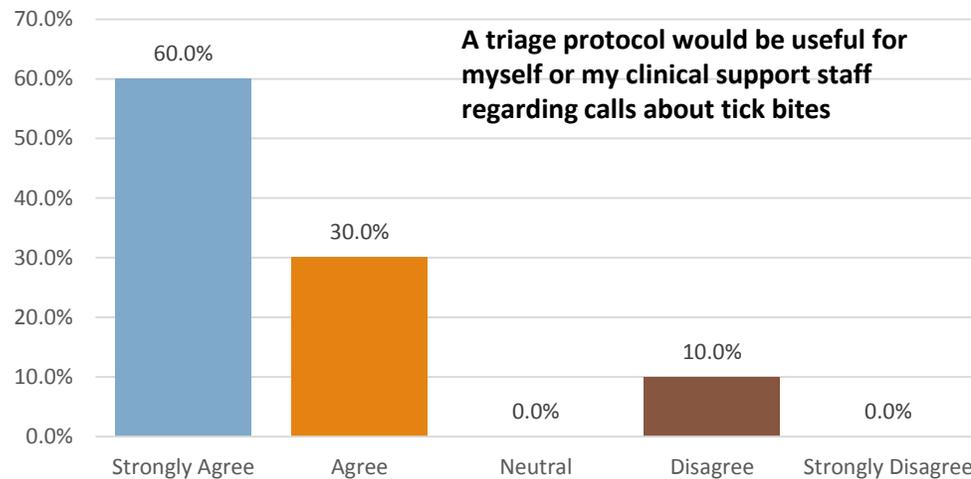
**For the following statements, please tell us how strongly you agree or disagree with each one. Please check only ONE box per question.**

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I am confident that my patients are able to identify young or adult deer ticks.					
My patients understand when antibiotics should be used to treat a tick bites.					
A triage protocol would be useful for myself or my clinical support staff regarding patients calling about tick bites.					

# Community Perspectives, cont.

## Survey Results

1. Over 80.0% (n=8) of clinicians surveyed noted their offices received  $\geq 1$  call per business day about Lyme during peak Lyme season, resulting in multiple appointments each week
2. Clinicians were asked to rate how strongly they agreed with the below statements:



3. The most commonly reported calls were questions regarding: (1) request for antibiotics, (2) tick identification, (3) diagnosis of Lyme, (4) concern about chronic Lyme, (5) removal of ticks

# Methodology and Intervention

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The interventions were aimed at addressing identified need for in-office information for patients, a triage protocol for patient calls to offices, and broader community outreach

Designed and distributed the poster “I have been bitten by a tick: Do I need antibiotics?” for use in local primary care offices and public health facilities

Distributed the Vermont Department of Health “Tick ID card” and “Be Tick Smart” to local primary care offices

Designed a triage protocol for Brattleboro primary care offices to use when patients call regarding tick bites. The protocol assesses patient need for an office appointment, if antibiotic prophylaxis is warranted, and addresses the most common questions patients have about Lyme disease. The protocol was designed for use by the clinical support staff that initially handles patient calls

- The protocol utilizes the guidelines and recommendations of the Infectious Disease Society of America, CDC, and Vermont Department of Health, as well as input from Brattleboro primary care offices

Wrote and submitted an editorial in the local Brattleboro paper, discussing tick bite prevention, removal, and the current guidelines on antibiotic prophylaxis

# Sample Patient Poster

Antibiotics as prophylaxis for a tick bite are warranted if the patient fulfills the following criteria

- The tick is identified as a deer tick
- The tick has been attached for 24-36 hours
- Contact the doctors office if you are unable to identify the tick species or are uncertain regarding how long it has been on your skin

**I have been bitten by a tick:  
Do I need antibiotics?**

**Was the tick a deer tick?**  
Lyme disease comes from bite of a deer tick of any age; no other tick species causes Lyme disease. Refer to the Vermont Department of Health Website to review types of ticks and their markings:  
[http://healthvermont.gov/prevent/lyme/lyme\\_disease.aspx](http://healthvermont.gov/prevent/lyme/lyme_disease.aspx)  
If the tick was **NOT** a deer tick, you do **NOT** need antibiotics for Lyme disease.



**How long was the tick attached?**  
If the tick was attached less than 36 hours, transmission of Lyme is unlikely to have occurred and you do **NOT** need antibiotics.

**I have been bitten by a deer tick and it has been attached for 36 hours**  
Call your primary care office promptly. A course of antibiotics can prevent Lyme disease from occurring.

**I am not sure what type of tick bit me and/or how long it has been attached**  
Call your primary care office. Carefully reviewing your history and monitoring your symptoms is crucial and will help determine if you need treatment.

# Response and Results

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The Vermont Department of Health expressed strong support of patient education, support for clinicians, and community outreach. Additionally, they successfully recruited me to participate in Lyme Corps, a CDC and Vermont Department of Health collaboration designed to have medical professionals educate their colleagues and community about Lyme disease

Local family doctors were extremely eager to receive a triage protocol that helped answer patient calls regarding tick bites

- At least 4 primary care offices in Brattleboro will be using the triage protocol, with more considering use

Brattleboro primary care offices were pleased to have educational resources to share with patients that helped with tick identification, provided general information regarding Lyme disease, and discussed when to call asking for antibiotics

- Posters were distributed to all Brattleboro Family Medicine practices and the local free medical clinic
- The Family Medicine offices were delivered over 400 “Tick ID Cards” and numerous “Be Tick Smart” booklets

Submitted editorial to the Brattleboro Reformer, potentially reaching thousands of individuals in the community

# Effectiveness and Limitations

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The project achieved its goal of giving Brattleboro primary care offices a triage tool for calls regarding Lyme disease, providing education to the community about preventing Lyme disease, and to offer local offices educational materials about Lyme disease

Effectiveness can be assessed through numbers of patients who receive information from their primary care offices regarding Lyme disease, either in the office, during calls, and in the local paper. This can be measured by determining the number of unique individuals visiting offices with the triage protocol and educational materials, by directly surveying patients and community members, and through tracking number of patient requests to offices for information

- It is challenging to assess patient retention of knowledge- short-term increases in patient information may not change behavior associated with preventing tick bites and Lyme disease
- Patient behavior relies on patient trust in their providers to provide accurate information regarding Lyme disease— This is a particular challenge with patients who believe that any tick exposure warrants antibiotics
- Patient education relies on clinician knowledge, resources, motivation, and time- While this project addresses this through use of an informational poster, newspaper editorial, and Vermont Department of Health materials, verbal communication may be more effective in some settings
- It is possible that other educational efforts in the community make it difficult to measure the impact of this particular intervention, though specifically assessing the same practices may limit confounders

# Effectiveness and Limitations, cont.

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Another measure of effectiveness would include further assessment of offices, re-surveying family doctors and their clinical support staff. Assessment may include re-evaluating office requests for clinical support tools, satisfaction with the triage protocol, number of calls received regarding Lyme, number of calls resulting in office appointments, and the most common questions asked by patients

- Calls regarding Lyme disease might change seasonally or yearly with climate alterations impacting tick population and disease incidence. Additionally, as the public grows more concerned with Lyme disease, call rates may naturally increase
- Assessment of office need relies on the memory and subjective opinion of clinical staff
- While the survey captured the vast majority of family physicians and clinical support staff in Brattleboro, there are relatively few clinicians to sample and the short duration of the rotation limits the ability to repeatedly survey offices

# Future Directions

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The scope of the project can be further expanded to include other specialties, such as pediatrics and outpatient internal medicine. The existing triage protocol, educational poster, and other materials can be tailored to fit the needs of these specialties.

Formal education can be offered to clinicians regarding Lyme disease, particularly regarding prevention and antibiotic administration

- The Brattleboro office of the Vermont Department of Health expressed willingness to lecture at Brattleboro Memorial Hospital medical staff meetings

Community outreach can include radio and web-based information, as well education at local schools and public events

Encourage offices to identify patients at risk for tick bites and Lyme exposure, either by age, occupation, or outdoors activity and discuss prevention of tick bites

- Incorporate Lyme disease education at physical exams and well-visits
- Offices that participate in a patient-centered medical home or utilize an electronic medical record could mail selected patients information regarding Lyme disease and tick bite prevention

# References

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*Duration of tick attachment as a predictor of the risk of Lyme disease in an area in which Lyme disease is endemic.* Journal of Infectious Diseases. July 1996. <http://jid.oxfordjournals.org/content/175/4/996.full.pdf>. Accessed on 4/9/16

*How many people get Lyme disease?* Centers for Disease Control and Prevention. <http://www.cdc.gov/lyme/stats/humancases.html>. Accessed on 4/14/16

*Lyme Disease Surveillance and Data.* Vermont Department of Health. [http://healthvermont.gov/prevent/lyme/surveillance\\_data.aspx](http://healthvermont.gov/prevent/lyme/surveillance_data.aspx). Accessed on 4/9/16

*Preliminary 2015 Vermont Lyme Disease Data.* Vermont Department of Health Infectious Disease Program. Interview on 4/15/2016.

*Preventing Tick Bites.* Centers for Disease Control and Prevention. <http://www.cdc.gov/lyme/prev/>. Accessed on 4/22/16.

*Prevention of Lyme Disease.* Pediatrics. January 2000, Volume 105, Issue 1. <http://pediatrics.aappublications.org/content/105/1/142>. Accessed on 4/22/16.

*The Clinical Assessment, Treatment, and Prevention of Lyme Disease, Human Granulocytic Anaplasmosis, and Babesiosis: Clinical Practice Guidelines by the Infectious Diseases Society of America.* Infectious Diseases Society of America. <http://cid.oxfordjournals.org/content/43/9/1089.full>. Accessed on 4/1/16

*Tickborne Diseases of the United States: A Reference Manual for Health Care Providers.* Centers for Disease Control. <http://www.cdc.gov/lyme/resources/tickbornediseases.pdf>. Accessed on 4/14/16