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https://scholarworks.uvm.edu/fmclerk/264
Education on Tick Bites, Tick Borne Disease, and Prevention in Middlebury, VT

Florence DiBiase, MS3
Family Medicine Rotation: May-June 2017
Clinical Site: Middlebury Family Health, Middlebury, VT

Faculty Mentors: Dr. Andersson-Swayze, Dr. Fuller, Dr. Larson, Dr. Miller, Dr. Puls, Dr. Wilhelm
Problem Identification and Need

• Tick bites and tick borne diseases are increasing in prevalence in Vermont
  • A 2015 study found US cases of Lyme disease had risen 200% since 2005
    • VT is one of 14 states that account for 95% of Lyme disease
    • Incidence of 240,000-440,000 cases/year
  • 2017 has thus far continued this upward trend
  • Over 60% of I. scapularis ticks in Vermont carry at least one pathogen, and 52.8% of the ticks tested carried Borrelia burgdorferi

• Patient awareness and preventative actions are lacking, especially in regards to more recently identified diseases
  • A 2015 study demonstrated 21% of US respondents had a household member that had found a tick on his or her body in the previous year, but patients were not well informed on endemic areas
  • In the same study, 20.8% of respondents from New England reported they had not heard of any tick borne diseases in their area, and 51.2% of respondents reported they did not routinely take personal prevention steps against ticks

• There is increased need for education of both patients and providers
  • **Patients**: Prevention, how to remove ticks safely, and when to seek medical help
    • This can help to prevent disease, allow patients to enjoy the outdoors safely, and eliminate unnecessary healthcare spending
  • **Providers**: How to educate patients, when to suspect disease, when to treat prophylactically, and how to treat disease
    • This can help prevent disease, eliminate complications of disease, and decrease antibiotic resistance
Public Health Cost and Unique Cost Considerations in Host Community

• Burden of diseases- chronic multisystem complications and can even be fatal
  • Lyme Disease
    • Patient with Lyme disease spend on average $2,968 higher total healthcare costs and 87% more outpatient visits over the course of 1 year in comparison to matched controls with no evidence of Lyme exposure
    • Testing for Lyme disease alone costs $492 Million annually
  • Anaplasmosis
  • Erlichiosis
  • Babesiosis
  • Powassan Virus
    • No cure, 10% fatality rate
• Antibiotic resistance due to excessive prophylactic treatment
• Threatening enjoyment of rural living, working in natural habitats, and maintaining an active lifestyle
  • Farmers, owners of sugarwoods, and outdoor leisure enthusiasts make up a significant portion of the community in Addison county
Community Perspective on Issue and Support for Project

• Community Interviews:
  • Dr. Chris Grace, MD, FIDSA- Medical Director of Infectious Disease at UVMMC
  • Jeffrey Heath, RN- Public Health Nurse Supervisor at Middlebury Office of Local Health
  • Sydney White, BSN, RN- Public health Nurse at Vermont Department of Health

• Interview Takeaways:
  • Addison County is both identifying tick borne diseases and testing for tick borne diseases more frequently, esp. Lyme Disease and Anaplasmosis
    • Likely a combination of increased prevalence as well as increased awareness/clinical suspicion
    • Tick panels have increased ease of testing
  • Warmer winters, fluctuations in populations of animal hosts, and migration of new diseases northward suggest these issues will continue to rise
  • The most vital changes for providers to make
    • Continuing to research and share information on these diseases
    • Self-educate regarding presenting disease symptoms
    • Educate patients whenever possible
    • Standardize prophylaxis and treatment regimens based on evidence based guidelines
Intervention and Methodology

- A 6-page educational guide was created by combining information from online articles, the CDC, the VT Department of Health, and community interviews:
  - **Provider Handout (pg. 1-5)**
    - *Fast Facts:* Recent statistics on VT tick borne diseases
    - *Recognizing VT Native Ticks:* color images, diseases transmitted, and peak seasons
    - *Tick borne diseases Cheat Sheet:* Signs and symptoms, lab findings, diagnostic testing, and treatment

- **Patient Education Handout (pg. 6)**
  - Attachable PDF handout created to be implemented into electronic health record patient education materials
    - Contains a 2 in x 3 in card that patients can cut out and keep handy in wallet
Results

- Educational materials compiled and presented to Middlebury Family Health in guide
  - Help providers make clear and educated decisions in patient care
  - Help patients avoid tick bites and when bitten, know the next steps
- Results of this intervention should be more apparent over time and are something to watch for beyond the end of this clinical rotation

Samples from Different Sections of Educational Guide:
Evaluation of Effectiveness and limitations

• In the process of sharing pamphlet with MFH staff and obtaining feedback

• Limitations:
  • No matter how educated we become, these issues are unlikely to disappear
  • This project is just one way to spread awareness and educate patients and providers
  • It would be helpful to discuss handout with patients presenting for tick bites and obtain their input on its usefulness
  • Results could be strengthened using additional resources from the Vermont Department of Health and the CDC, especially the “Be Tick Smart” program material
Recommendations for Future Interventions and Projects

• MFH could continue to order Be Tick Smart pamphlets and tick identification cards for the waiting room/office
• Hosting a class in the community to increase awareness of disease rates and prevention strategies
  • Before and after surveys to determine benefit
• Surveying Providers about use of prophylactic Doxycycline for Lyme Disease
• Streamlining the triage process for patients calling or using the online portal for complaints of tick bites
• Working with UVMMC, Middlebury College, and other academic institutions in the state to improve research, understanding, and treatments available
• Learn more about new research efforts for a Lyme Vaccine (new clinical trial in the U.S. and Belgium as of 2017)
References


• Centers for Disease Control. How to Remove a Tick. June 1, 2015. https://www.cdc.gov/ticks/removing_a_tick.html (image also obtained from this page)


• White, Sydney. (2017, June 13). Email interview.


IMAGES:

• Images of Blacklegged tick with dime, Life cycle, Insect repellent, embedded tick, engorged tick, and erythema migrans rash all obtained from Dr. Grace’s lecture (cited above)

• Images of Ticks Species: Centers for Disease Control and Prevention, National center for Emerging and Zoonotic Infectious Diseases. “Geographic distribution of ticks that bite humans.” June 1, 2015. https://www.cdc.gov/ticks/geographic_distribution.html


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