

Opening Statement of  
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Public hearing on Recommendations for Lyme Disease Funding

April 26, 2021

Hello. I'm Nicole Chinnici, Director of PA Tick Research Lab of East Stroudsburg University, currently the largest tick testing research facility in Pennsylvania and the United States.

Lyme disease, the most common infectious disease in the United States, is a rapidly growing public health concern that needs immediate and continuous attention. The topic you are addressing today is more important for residents of the Commonwealth than any other state. Since 2011, Pennsylvania has been the leading state for the number of Lyme disease cases per year nationwide.

Since 2005, the Tick Research Lab of ESU has been testing ticks for the public for a fee. In 2018, the Tick Research Lab received our first \$500,000 grant from the Committee of Health and Human Services to begin PA's first ever free tick-testing program. The funding was used to build a centralized data analytical website available to the public ([www.ticklab.org](http://www.ticklab.org)) and launch free testing which started April 1, 2019. Since the launch of this program, the lab has tested over 33,000 ticks from all 67 PA counties. This service has provided our residents and physicians with important information on the exposure to tick-borne diseases before symptoms begin. Additionally, this program has collected valuable scientific data on tick distribution, tick-borne disease prevalence and exposure information on ticks. All data on ticks and tickborne illnesses publishes live to our website daily under the statistics tab.

I would like to take this time to present to you the data we have collected over the past 2 years.

**Tick Activity:** The Blacklegged (deer) tick was the most common tick submitted for testing (80.5%), followed by the American dog tick (16.3%) and the Lone star tick (2.7%). In Pennsylvania and the United States, the blacklegged tick is a carrier of the majority of the tick-borne diseases associated with human illness.

**Tick-borne diseases in PA:** Lyme disease is the most prevalent tick-borne disease with an average infection rate of 37.0% and ranging as high as 58.6% in adult female blacklegged ticks and 31.1% in nymph blacklegged ticks. The most prevalent tick-borne disease in American dog ticks and Lone star ticks is *Ehrlichia chaffeensis* with a 1.0% average infection in American dog ticks and 2.2% in Lone star ticks. *Ehrlichia chaffeensis* is the causative agents for Ehrlichiosis. Rocky Mountain Spotted fever was also detected in 5 ticks (0.1%).

Understanding and considering the prevalence of these diseases is important for physicians when diagnosing a tick-borne disease. Symptoms among diseases may present the same and, without proper and accurate human diagnostic tests, it can become difficult for patients to receive early and accurate treatment. It is important to note, ticks are carriers of bacterial, protozoan, and viral diseases, which all have their specified treatment strategies based on CDC recommendations. On average 12.5% of the blacklegged ticks in PA are infected with more than one disease. Co-infections can complicate the diagnosis and recovery of a patient, especially in cases where the tick is a carrier of a bacterial and protozoan or bacterial and viral infection. Furthermore, we are in a unique time with the current COVID-19 pandemic which can complicate diagnosis of tickborne illnesses. Symptoms of tickborne illnesses overlap symptoms of COVID-19. It is essential healthcare practitioners of PA do not overlook the possibility of tickborne illnesses, especially this time of year.

**Exposure information:** Through our tick-testing program, we evaluated exposure to a tick bite, which included collecting data from the host on location, where the tick may have been picked up in the environment, activity they were doing when exposed, whether the host was a human or animal, age and gender of host, and location where the tick was attached. On average, 50% of tick bites occurred on residential properties. When we evaluate the age of the host, we identify children ages 2-10 are at greatest risk for a tick bite. While looking at activities for exposure, the riskiest activity was playing in the yard or doing yard work.

**Education:** In parallel with our research detecting tickborne diseases within the vector, in of April 2020 we started a social media campaign to spread awareness of ticks and tickborne diseases in PA. In one year, we have gained 15,908 followers and have had post reach greater

than 500,000 people. You can follow us on Facebook, Instagram, and Twitter to share our helpful prevention tips and weekly tick reports with your followers, @PATickLab.

Based on our research and data collected, I have summarized the following recommendations, which would have the greatest impact on slowing and reducing the number of Lyme disease cases in Pennsylvania per year.

- 1) Continue funding Statewide Environmental Survey and Surveillance Data Website through the PA Tick Research Lab
- 2) Develop a Health Care Provider Prevention and Educational Program
- 3) Develop an Educational Protocol and Funding Strategy for Schools in High-Risk Areas
- 4) Begin funding Integrated Pest Management Strategies\*

It is essential we continue to evolve with the rapidly evolving world of ticks. Continuing to fund the free tick-testing program is critical in generating important education and tick-borne disease prevalence data as well as giving physicians an extra diagnostic tool to better understand their patients risk of developing a tick-borne disease. The data has provided a baseline understanding of diseases within the PA tick population. Additionally, we have identified high-risk activities and ages at greatest risk for a tick bite. This provides us with a starting point to begin implementing key educational protocols within schools and communities within endemic areas. Knowing your greatest risk for a tick bite is in your own backyard is a public health concern that needs immediate attention.

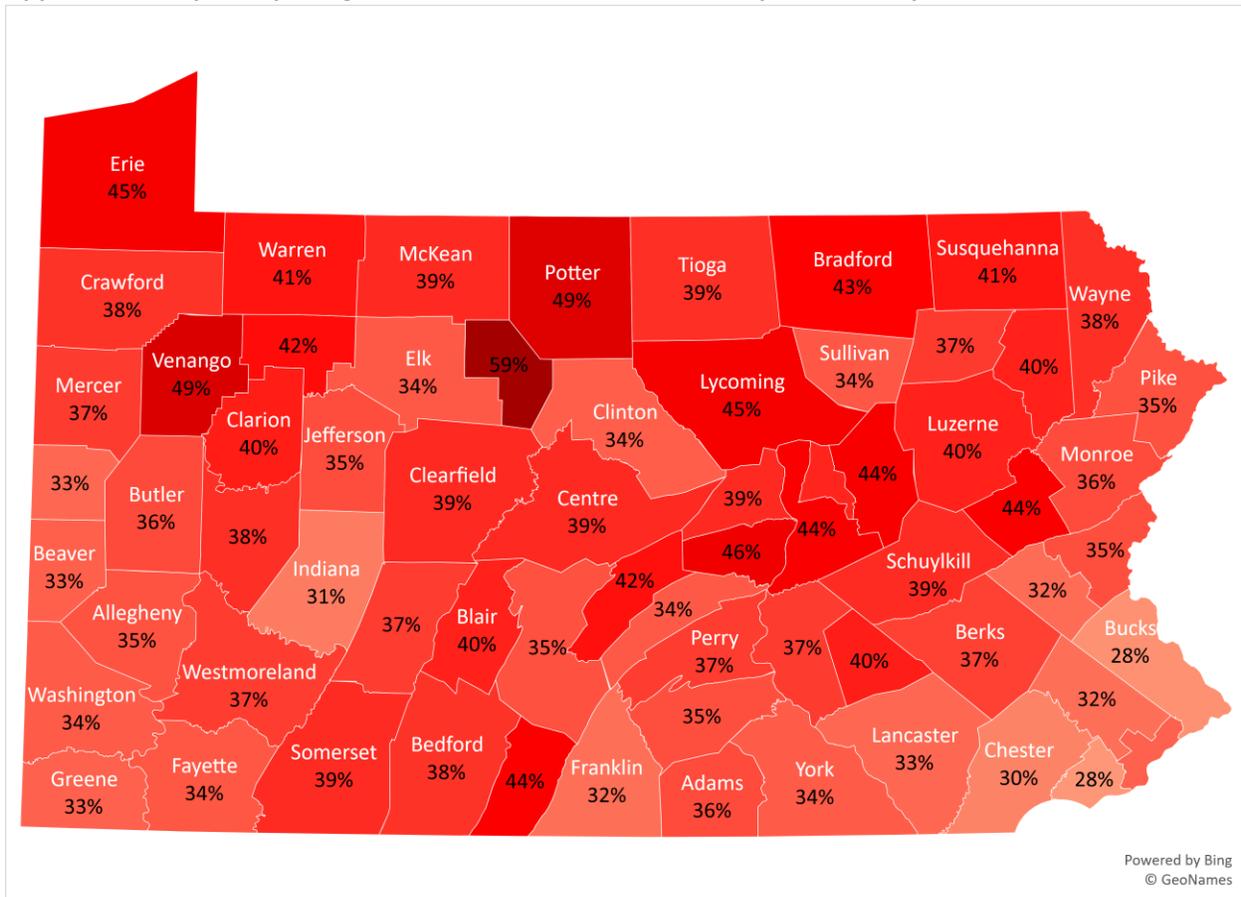
Furthermore, we need to start filling the gaps between physician and patient understanding of tick-borne diseases. Health care is rapidly changing and recommendations for treatment and diagnostic testing is changing. We are currently living through a pandemic which has highlighted the complexity of infectious agents (their diagnosis, treatment, and evolving transmission criteria), and even more so when little research is available. Mandating continuing medical education for PA registered physicians during this health crisis is needed. It is pertinent that at minimum, funding should be allocated to develop and implement a health care provider educational course in high-risk communities.

Lastly, research is needed to develop the most cost-effective pest management strategy that fits the geography of Pennsylvania. A proposed method of research the PA Tick Research Laboratory is ready to investigate includes distribution of anti-tick vaccines in the form of small

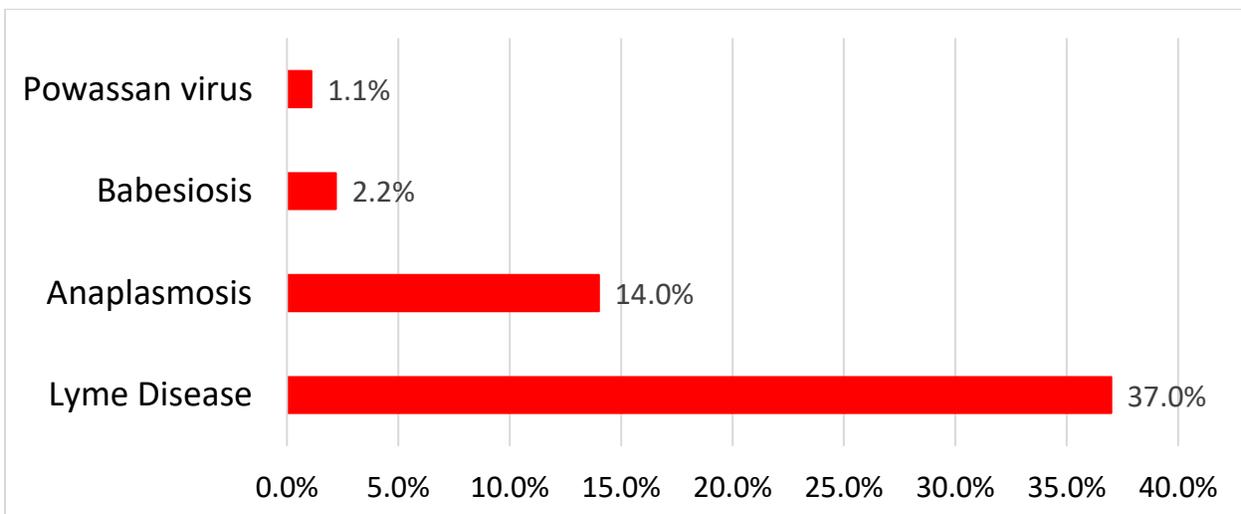
rodent bait boxes. The purpose of an anti-tick vaccine rather than a Lyme disease vaccine, is to target the reservoir host that carries and transmits the majority of our tickborne illnesses to the vector (tick). This type of pest management strategy would assist in reducing tick abundance, but most importantly the anti-tick vaccine will reduce the infection rates. Funding is needed to conduct pilot studies to evaluate the effectiveness and methodology to best implement such pest management across PA in the future.

In conclusion, based on my expertise and extensive observations across Pennsylvania, the recommendations provided have the greatest impact on slowing and reducing the number of Lyme disease cases in Pennsylvania. With your support, together, we can make Lyme disease a preventable disease across the Commonwealth. I thank you for the opportunity to speak today on behalf of East Stroudsburg University of Pennsylvania and the Commonwealth. I would be happy to answer any questions.

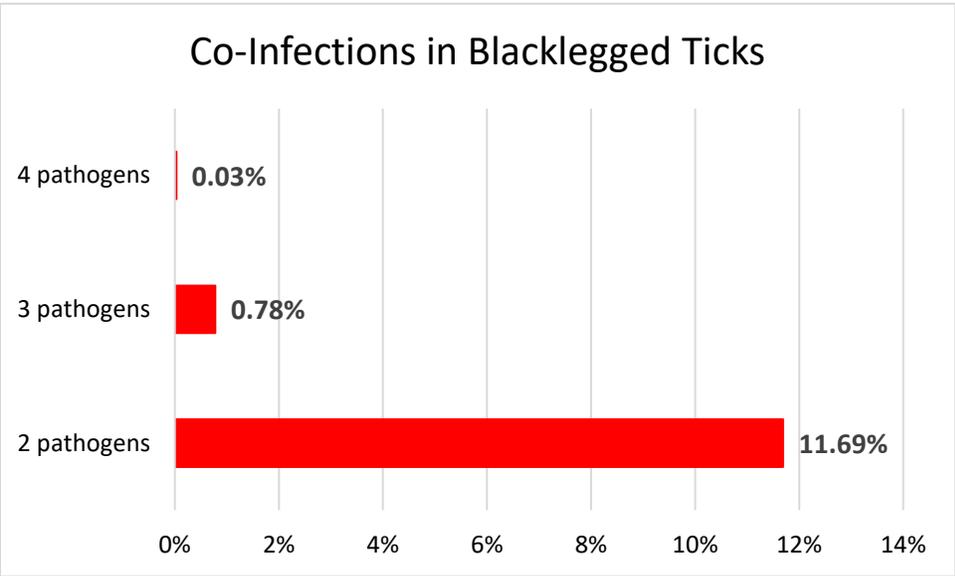
**Appendix - Graphs depicting research conducted in PA from April 2019 – April 2021**



**Figure 1:** Prevalence of Lyme disease in Blacklegged ticks by county in PA from April 1, 2019-April 26, 2021. A total of 19,096 ticks were tested with an average total ticks per county of 287.

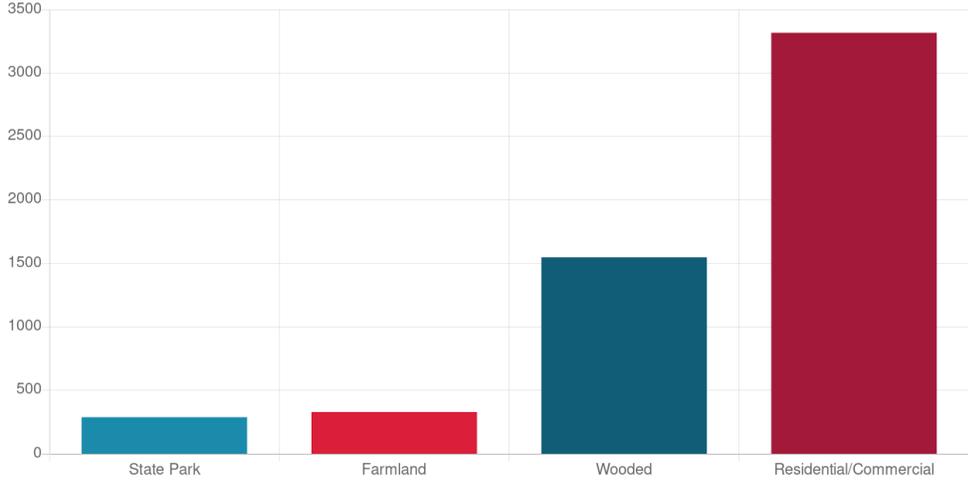


**Figure 2:** Prevalence of tickborne diseases in Blacklegged ticks by county in PA from April 1, 2019-April 26, 2021. A total of 19,096 ticks were tested with an average total ticks per county of 287.



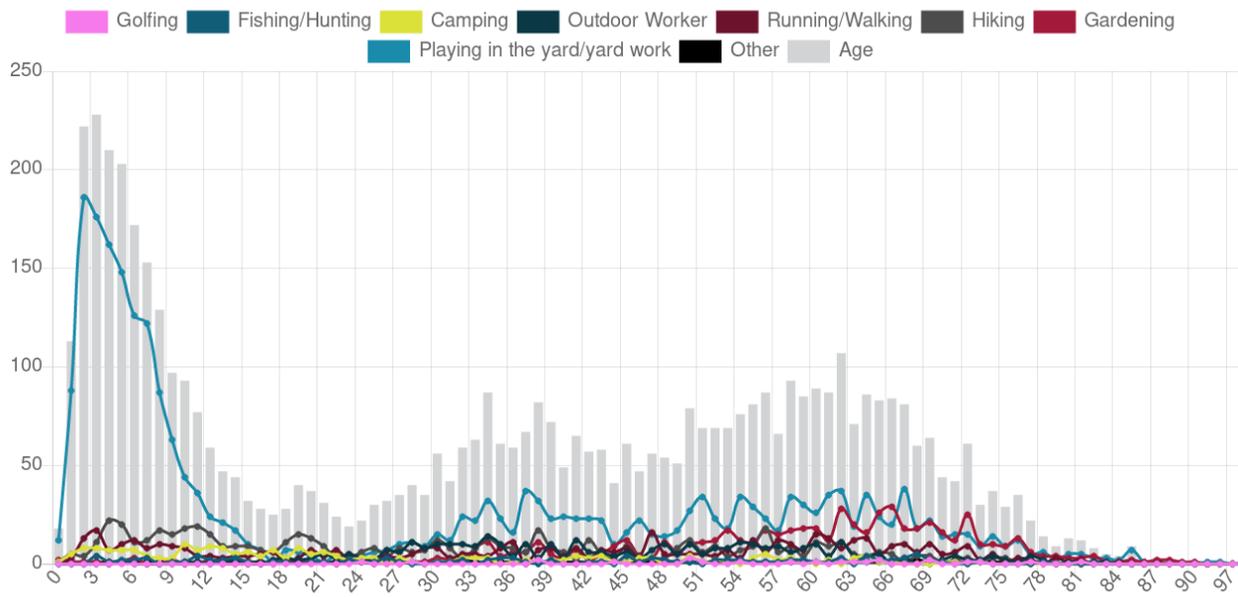
**Figure 3:** Co-infection rate among blacklegged (deer) ticks.

### Area of Exposure



**Figure 4:** Description of the area in which the resident was exposed to a tick bite. Over 50% of tick bites occurred on residential properties.

## Activity of Exposure across Ages



**Figure 5:** When evaluating activity of exposure across age classes, the activity putting you at greatest risk was playing in the yard and doing yard work. Additionally, ages 2-10 are at highest risk for exposure to a tick bite.