PUBLIC HEARING

NEW YORK SENATE TASK FORCE ON LYME AND TICK BORNE DISEASE AND

THE SENATE STANDING COMMITTEE ON HEALTH

SUBJECT: Lyme and Tick-Borne Diseases

PURPOSE: To identify and determine best practices for combatting the spread of Lyme and tick-borne diseases in New York State.

August 29, 2017
11:00 am
Hearing Room A
Legislative Office Building
Albany, NY 12247

Thank you, Senators Hannon, Serino, and others, I am honored to participate in this public hearing about what NYS should do about this scourge of Lyme and TBD, both as a patient and an activist. For 20 years I taught others about the importance of tick population reduction to minimize tick illness transmitted to people, pets and reservoir animals!

It remains undiagnosed in many due to the lack of a gold standard test causing long term illness and even death. Too many remain ill, some totally disabled.

For myself, I was undiagnosed for a decade. I had been to physicians but they just tapped me on the shoulder, implying it was all in my head. One even said, "Oh well, you're a woman!" When you are sick who needs to be treated as if you were just a hypochondriac, so I stopped going to the doctors.

I finally had to leave my job as an IBM systems programmer. Almost a year later when my life seemed as if it were over, a friend who had Lyme disease diagnosed me and sent me to a physician who was well versed in its symptoms! Finally, correctly diagnosed, I thought two aspirins and I'll be better in the morning! In total disbelief, I found out otherwise and was treated for almost a year. Following that, I was able to return to my profession a productive member of society again; however, I've never returned to the person I was previously. I have relapses for which oral antibiotics seem to get me back on my feet. I thank God for the compassionate physicians who stood by the Hypocratic Oath to do no harm, by not deserting us in spite of the threat to their medical licenses!

As horrid as the physical symptoms were the cognitive were devastating, such as, not knowing whether to put a stamp on the left or right side of an envelope, not being able to find words or remember. I felt as if I were standing outside of my body looking in wondering how this could be going on? From head to toe, a horrid paralyzing headache extending into my neck and shoulders, a twitch in my right eye, vision so blurry that I could not read the large signs at the ends of the row in the supermarket, ringing in my ears which has never resolved, stiff vocal chords making speaking difficult, an irregular heartbeat, a tremor in my hand, wandering pains in my joints and muscles, shooting pains that would come and go, burning spots on my skin but nothing was there, electric like tingling in various places in my body; all of these along with crushing fatigue for which I could not sleep. Was I imagining it; was it possible?

My entire family was affected, our son a high school senior was horrified, it impacted his college education; it almost broke up my marriage, our finances were affected, & more. When I told my husband I was scared because I could not think and remember, he would tell me if I'd just knock it off I'd be alright. I'd cry, he'd get angry, I'd run out of the house, speeding away in the car trying to run away to someplace that was safe. I felt so alone, maybe I should just kill myself! Spirochetes in your brain can do some amazing things to you. It is called Lyme Rage. And, I consider myself one of the lucky ones, some people are stuck in that Hell because they are denied treatment by insurance companies and for other obvious reasons.

I also contracted babesiosis a year later, running fevers of 104 -105 and luckily survived. At the time babesia was not considered an inland pathogen, so no one knew what I had. Together in Dutchess County with Dr Horowitz, Dr Ostfeld, myself, and some others, we proved otherwise, and ticks from Dutchess tested positive.[1,2]

This oh so clever Lyme bacteria intrigued me. I dove into study. The Ticks became my enemy. Children were no longer safe even playing outdoors, rolling down a grassy hill, or jumping in the leaves. Actually no one was safe as ticks do not discriminate!

In 2000, previous Assemblyman Joel Miller arranged a meeting with NYS Commissioner of Health, Antonia Novello, about Lyme disease, but one of the topics I added was about babesiosis. I also asked Brian Fallon MD, MPH (currently Director of Columbia University Lyme and Tick-borne Disease Research Center), and Kenneth Liegner MD (inventor, author, published physician) with a few of their patients to participate. NYS investigated and within about 2 years, a notice by NYS DOH was sent to all NYS physicians by the NYS DOH about its presence in non-coastal areas of the state. [3]

In the USA in 2015, the estimated treatment cost of just Lyme disease was $1.3 Billion[4], while far exceeding that was the estimated total cost burden to society was well over $3 Billion [5,6,7,8], while in NYS in 2013 it was $476,300,000 [9]. Those estimates do not include all the other TBDs[10],[11]. At least one of which, babesia, has affected our blood supply and has sickened and killed some transfusion recipients[13,14,15,1619]; however, governmental agencies only spend a pittance on research.

When a three-year old had 32 nymphal ticks removed from her body after visiting a park, and a seventeen-year old teen, Joseph Elone, died from undiagnosed untreated Lyme disease after less than a month of illness[12], you know it's way past time to do something!

The one thing everyone agrees upon is early diagnosis and treatment is critical for the best outcome. Even the CDC says in an endemic area, given suspicion of early Lyme a physician should treat even without serology. Yet, so many physicians do not without serology or the infrequent bulls eye rash. A one fits all cookbook approach doesn't work for every patient. Yet physicians turn patients away after 2-4 weeks of treatment, Co-infections aren't always considered. Most physicians follow the IDSA guidelines as if it were a Bible. They are concerned about the insurance companies and their own group policies about treatment. NYS physicians are in dire need of TBD education that is much broader than IDSA guidelines and includes ILADs guidelines. The insurance companies must stop dictating treatment. Had that been the case 17-year-old Joseph would be alive today. And many like myself would not have become incapacitated by Lyme disease or almost died from other TBDs.

An issue exemplifying issues with the CDC, is the research treatment of a tick bite with one double dose of doxy[20] which is based upon faulty research (Determination of illness was the development of the classic bullseye, which only 10% exhibit. Patients were followed for only 6 weeks. There are other documented reasons as well in CDC research). Even the CDC could not duplicate this in their research[21,22,23]. The worst about this practice is that the antibiotic can block the body from building an antibody response. Therefore, a patient who was not cured, has Lyme disease, is sero-negative, and left in purgatory, untreatable. I strongly suggest NYS DOH advise against this one dose treatment by physicians.

There are expectations that the federal bipartisan law on Tick-Borne disease will bring the brightest and the best on all sides together in a workgroup to look at all of the science to address real answers under the Secretary of Health and Human Services, Dr. Price! What an opportune time for NYS to act on this issue at the same time!

The answers that are needed:

1. An accurate test for active disease.
2. Cures to suffering.
3. Tick research for drastic reduction of the tick population and to block tick ability to transmit disease.
4. Increased funding commensurate with the impact of the disease on society.

For 43 years ticks, and their pathogens have been allowed to spread unabated like wildfire. What was once a local CT problem is a problem across the USA. Tick research holds the most promise to bring about fruitful solutions to STOP TICKS and STOP DISEASE, yet this field of study has been ignored and receives only a pittance of funding! Therefore, I organized a coalition of prestigious scientists, Tick Research to Eliminate Disease, (TRED) to support this dire need. (see included announcement and scientist membership list) Until then this scourge of Tick Borne disease will continue to increase and march across NYS, the USA, and the world!

A Lyme vaccine would merely be a patch of a gigantic environmental problem. It is not a solution, the ticks and their many pathogens would continue to increase and spread, infecting us with serious and fatal diseases.

Currently, PREVENTION measures are all we have to try to protect ourselves against the bite of these cesspools of infection the almost invisible miniscule ticks!

Again, our deepest gratitude to all of you for taking action to stop TBD suffering in NYS!

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Stop Ticks On People (S.T.O.P.), Board Member
"What's the problem? Well it's the ticks of course"

FOOTNOTES

1 – Assessing Risk for Human Babesiosis in Dutchess County, New York: Infection of nymphal black-legged ticks (Ixodes Scapularis), Thomas N. Mather, Ph.D., Nathan J. Miller, M.S., Richard S. Ostfeld, Ph. D. Center for Vector-Borne Disease, University of Rhode Island, Kingston RI; Institute for Ecosystem Studies, Millbrook, NY

2 –Dutchess County Department of Health, William R. Steinhaus, County Executive, Michael C. Caldwell, MD, MPH, Commissioner of Health; Public Health Bulletin October 1, 2001

3 – State of New York Department of Health, March 25, 2002; SUBJECT: Babesiosis and Lyme Disease Alert

4 – Lyme Diseases Costs Up to $ 1.3 Billion Per Year to Treat, Study Finds; John Aucott, MD et al; 2015 News Releases, Johns Hopkins Bloomberg School of Public Health

5 – Zhang X, Meltzer M, Pena C, Hopkins A, Wroth L, Fix A, Economic Impact of Lyme Disease, *Emerging Infectious Dis*. 2006 April; 12(4): 653-660

6 – Critical Needs and Gaps in Understanding Prevention, Amelioration, and Resolution of Lyme and other Tick Borne Diseases: The Short-Term and Long-Term outcomes: Workshop Report. Institute of Medicine, 2011.

7 – Bureau of Labor Statistics CPI Inflation Calculator; http://www/bis/gov/data/inflation calculator.htm

8 – The Public Health Burden of Lyme disease in the United States presented by Dr. Paul Mead, CDC 08/19/2013; http://www.cdc.gov/media/releases/2013/p9819-lyme-disease.html.

9 – US Biologic; Cost of Lyme Disease in New York; 2013

10 – Lorraine Johnson, JD, MBA; LD; Financial Burden of Illness; May 21, 2012

11 - Chronic Care: Making the Case For Ongoing Care; 2010 Robert Wood Johnson Foundation; www.rwjf.org/pr/product.jsp?id=50968

12 – Lyme disease: a case report of a 17-year-old male with fatal Lyme carditis;

13 - #27: Babesia Parasite Taints the Blood Supply; Discover Magazine Jan-Feb 2012

14 – Cost -effectiveness of blood donor screening for Babesia microti in endemic regions of the United States; Transfusion 2014 Mar 889-99.

FOOTNOTES (Continued)

15 - Transfusion-Transmitted Babesia microti. Fang DC, Mayo Clinic, Jacksonville FL, McCullogh J, University of Minnesota, Minneapolis, MN; Transfusion Medicine Reviews, 2016 July 132-8

16 – Vector-Borne and Zoonotic Diseases, Volume 16 Issue 12: December 1, 2016; Seroprevalence of Babesia microti in Individuals with Lyme Disease, Sabino R. Curcio, Laurel P. Tria, and Azad L. Gucwa

17 – FDA looks at Babesia blood donor screening; Outbreak News Today May 25, 2015; Robert Herriman; http://outbreaknewstoday.com/fda-looks-at-babesia-blood-donor-screening-67431/

18 – Babesiosis occurrence among the Elderly in the united States, as Recorded in large Medicare Databases during 2006-2013, Mikhail Menis et al, PLOS One October 15, 2015

19 – A global map of genetic diversity in Babesia microti reveals strong population structure and identifies variants associated with clinical relapse, Jacob E. Lemieux et al; nature microbiology published 13 June 2016

20 - Prophylaxis with Single-Dose Doxycycline for the prevention of Lyme Disease after an Ixodes Scapularis tick bite, The New England Journal of Medicine July 12, 2001; Robert B. Nadelman, M.D., et al

21 – Sustained–Release Formulation of Doxycycline Hyclate for Prophylaxis of Tick Bite Infection in a Murine Model of Lyme Borreliosis; N. S. Zeidner et al; Division of Vector-Borne Infectious Diseases, Centers for Disease Control and Prevention, Fort Collins, CO 80522; American Society for Microbiology July 2004 2697-2699

22 – A sustained-release formulation of doxycycline hyclate (Atridox) prevents simultaneous infection of Anaplasma phagocytophilum and Borrelia burgdorferi transmitted by tick bite; Zeidner NS, et al; Division of Vector-Borne Infectious Diseases, Centers for Disease Control and Prevention, Fort Collins, CO 80522; Journal of Medical Microbiology Apr 2008 463-8

23 – Protective value of prophylactic antibiotic treatment of tick bite for Lyme disease prevention: An animal model; Piesman J, Hojgaard A, Bacterial Diseases Branch, Division of Vector-Borne Diseases, The Centers for Disease Control and Prevention, 3150 Rampart Road, Fort Collins, CO 80521; Ticks and Tick-Borne Diseases Volume 3 Issue 3 June 2012 193-196

April 11, 2017 - Announcement For Distribution

Announcing the formation of a consortium of scientists titled,
"Tick Research to Eliminate Diseases: Scientist Coalition (TRED)."
TRED is a group of scientists, who joined together for synergy in promoting the need to address the ticks, the primary vector as an answer to the environmental piece of this puzzle of Lyme and Tick-Borne Diseases. There has been a pittance of funding for this field which holds such promise in its ability to solve the tick problem: reduce the tick population and tick ability to transmit pathogens.

TRED GOALS

1. Educate policy makers about the seriousness of tick-borne disease, and demonstrate the necessity and efficiency of addressing this serious problem at the source, the ticks.

2. Increase tick-borne disease research funding which specifically addresses the reduction of the tick population and/or blocking the ability of ticks to transmit all TBDs at federal, state and county levels.

3. Develop, test and implement research technologies to reduce incidence of tick-borne disease by reducing the risk of exposure to ticks and pathogens.

4. Coordinated implementation of these TBD prevention measures by federal, state, local governments and the public.

5. Representation by Scientists in the field of Tick Research to the Federal Workgroup as described in Section 2062 of the 21st Century Cures Act.

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Tick Research to Eliminate Diseases: Scientist Coalition (TRED) Membership List

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Tickborne Diseases of the United States

In the United States, some ticks carry pathogens that can cause human disease, including:

- **Anaplasmosis** is transmitted to humans by tick bites primarily from the blacklegged tick (*Ixodes scapularis*) in the northeastern and upper midwestern U.S. and the western blacklegged tick (*Ixodes pacificus*) along the Pacific coast.
- **Babesiosis** is caused by microscopic parasites that infect red blood cells. Most human cases of babesiosis in the U.S. are caused by *Babesia microti*. *Babesia microti* is transmitted by the blacklegged tick (*Ixodes scapularis*) and is found primarily in the northeast and upper midwest.
- ***Borrelia mayonii*** infection has recently been described as a cause of illness in the upper midwestern United States. It has been found in blacklegged ticks (*Ixodes scapularis*) in Minnesota and Wisconsin. *Borrelia mayonii* is a new species and is the only species besides *B. burgdorferi* known to cause Lyme disease in North America.
- ***Borrelia miyamotoi*** infection has recently been described as a cause of illness in the U.S. It is transmitted by the blacklegged tick (*Ixodes scapularis*) and has a range similar to that of Lyme disease.
- **Bourbon virus** infection has been identified in a limited number patients in the Midwest and southern United States. At this time, we do not know if the virus might be found in other areas of the United States.
- **Colorado tick fever** is caused by a virus transmitted by the Rocky Mountain wood tick (Dermacentor andersoni). It occurs in the the Rocky Mountain states at elevations of 4,000 to 10,500 feet.
- **Ehrlichiosis** is transmitted to humans by the lone star tick (*Ambylomma americanum*), found primarily in the southcentral and eastern U.S.
- **Heartland virus** cases have been identified in the Midwestern and southern United States. Studies suggest that Lone Star ticks can transmit the virus. It is unknown if the virus may be found in other areas of the U.S.
- **Lyme disease** is transmitted by the blacklegged tick (*Ixodes scapularis*) in the northeastern U.S. and upper midwestern U.S. and the western blacklegged tick (*Ixodes pacificus*) along the Pacific coast.
- **Powassan disease** is transmitted by the blacklegged tick (*Ixodes scapularis*) and the groundhog tick (*Ixodes cookei*). Cases have been reported primarily from northeastern states and the Great Lakes region.
- ***Rickettsia parkeri* rickettsiosis** is transmitted to humans by the Gulf Coast tick (*Amblyomma maculatum*).
- **Rocky Mountain spotted fever (RMSF)** is transmitted by the American dog tick (*Dermacentor variabilis*), Rocky Mountain wood tick (*Dermacentor andersoni*), and the brown dog tick (*Rhipicephalus sanguineus*) in the U.S. The brown dog tick and other tick species are associated with RMSF in Central and South America.
- **STARI (Southern tick-associated rash illness)** is transmitted via bites from the lone star tick (*Ambylomma americanum*), found in the southeastern and eastern U.S.
- **Tickborne relapsing fever (TBRF)** is transmitted to humans through the bite of infected soft ticks. TBRF has been reported in 15 states: Arizona, California, Colorado, Idaho, Kansas, Montana, Nevada, New Mexico, Ohio, Oklahoma, Oregon, Texas, Utah, Washington, and Wyoming and is associated with sleeping in rustic cabins and vacation homes.
- **Tularemia** is transmitted to humans by the dog tick (*Dermacentor variabilis*), the wood tick (*Dermacentor andersoni*), and the lone star tick (*Amblyomma americanum*). Tularemia occurs throughout the U.S.
- **364D rickettsiosis** (*Rickettsia phillipi*, proposed) is transmitted to humans by the Pacific Coast tick (*Dermacentor occidentalis* ticks). This is a new disease that has been found in California.

Learn more about trends in tickborne diseases.

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Content source: Centers for Disease Control and Prevention (http://www.cdc.gov/)
National Center for Emerging and Zoonotic Infectious Diseases (NCEZID) (http://www.cdc.gov/ncezid)
Division of Vector-Borne Diseases (DVBD) (http://www.cdc.gov/ncezid/dvbd/index.html)

New York State
Lyme and Tick Borne Disease
What Are The Problems
What Should Be Done

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"What's the problem? Well it's the ticks of course!"

1

THE ISSUES

MEDICAL COST AND COST TO SOCIETY
NUMBERS OF PEOPLE AFFECTED
COMMENSURATE ALLOCATIONS
TICK POPULATION INCREASES AND SPREADS
TICKBORNE DISEASES INCREASE
TESTS/SEROLOGY
THREAT TO BLOOD SUPPLY

TICK RESEARCH REQUIRED

2

Health Care Costs, Utilization and Patterns of Care following Lyme Disease

Adrion ER, Aucott J, Lemke KW, Weiner JP.

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Lyme Disease Costs Up to $1.3 Billion Per Year to Treat, Study Finds
Research suggests prolonged impact of the tick-borne illness in some patients is greater and more widespread than previously understood.

Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland

http://www.jhsph.edu/news/news-releases/2015/lyme-disease-costs-more-than-one-billion-dollars-per-year-to-treat-study-finds.html or http://tinyurl.com/m5wyhfg

* This report does not include the entire cost burden of Lyme disease and other TBDs

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Public Health Cost of Lyme Disease

Cost Logic and Sources
The impact of direct medical costs, lost income, lost taxes and related disease costs are all important components when calculating the total cost of Lyme disease. The calculation below is based on information from the U.S. Centers for Disease Control and Prevention, *The Emerging Infectious Diseases Journal*, and the U.S. Bureau of Labor Statistics.

Costs
Xinzhi Zhang, MD/PhD, then an epidemiologist at the CDC who is now with the NIH, showed that the average cost of Lyme disease was $8,172/reported case in 2002 (1). The paper was co-authored by Dr. Martin Meltzer, the CDC's Lead of its Health Economics and Modeling Unit. This cost was cited in a 2011 report from the Institute of Medicine (2). When adjusted for inflation (3), the cost in 2013 is 30% higher, or $10,611/reported case.

Summary
The annual U.S. costs of Lyme disease average $10,611 per case. In 2013 the CDC stated that "the number of Americans diagnosed with Lyme disease each year is around 300,000" (4) which puts the total annual Public Health burden of Lyme disease in the United States at $3.2 billion.

Citations:
1) Zhang X, Meltzer M, Peña C, Hopkins A, Wroth L, Fix A. Economic Impact of Lyme Disease. *Emerg Infect Dis*. 2006 April; 12(4): 653–660.
2) Critical Needs and Gaps in Understanding Prevention, Amelioration, and Resolution of Lyme and Other Tick-3) Borne Diseases: The Short-Term and Long-Term Outcomes: Workshop Report. Institute of Medicine. 2011.
3) Bureau of Labor Statistics CPI Inflation Calculator; http://www.bls.gov/data/inflation_calculator.htm
4) The Public Health burden of Lyme disease in the United States presented by Dr. Paul Mead the CDC on 8/19/2013; http://www.cdc.gov/media/releases/2013/p0619-lyme-disease.html.

The **burden** of tick-borne illness, in terms of cost to both individuals and society, is astronomical and **only getting worse**.

Annual Cost of Lyme disease in the United States

Annual Cases of Lyme Disease The CDC raised case estimates based on national survey data by a factor of 10X in 2013 — 300,000

* **Lyme Disease Cost Per Case** Direct Medical Costs, Indirect Medical Costs, Lost Income, Lost Taxes, and Related Lyme Disease Costs Per Case and adjusted for 2014 dollars — X $10,769

Total Annual Cost Burden — $3,230,700,000

*Source: Zhang, X., Meltzer, M.I., Pena, C.A., Hopkins, A.B., Wroth, L., and Fix, A.D. (2006) Economic Impact of Lyme Disease, Emerging Infectious Diseases, 12(4). 653 – 660. Adj. for inflation 2006 - 13)

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Cost of Lyme Disease in New York

Annual NY Cases of Lyme Disease
Centers for Disease Control and Prevention — 44,900

Direct Medical Costs, Indirect Medical Costs, Lost Income, Lost Taxes, and Related Lyme Disease Costs Per Case as reported in the CDC's *Emerging Infectious Diseases* and adjusted for 2013 dollars. — X $10,611

Total Annual Cost Burden — $476,300,000

US BIOLOGIC

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Chronic Illness is a Huge Cost Burden to Society

Chronic illness consumes **84% healthcare costs. ****

LD survey *
- 79% productivity loss (work, school)
- 25% on disability
- most reported improvement with retreatment.

Two NIH Human Studies
47% Lyme research patients had a duration of illness >10 yrs

*Lorrane Johnson,JD, MBA "LD: Financial Burden of Illness
**"Chronic Care:Making the Case For Ongoing Care 2010 Robert Wood Johnson Foundation
www.rwjf.org/pr/product.jsp?id=50968

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Reported Cases of Vector-Borne Diseases in the U.S., 2014

Diseases	2014 Cases	Median (range) 2004-2014
Tick-borne		
Lyme disease (10x=3,346,100)**	33,461	30,831 (19,804 – 38,468)
Spotted Fever Rickettsioses	3,647	2,288 (1,713 – 4,470)
Anaplasmosis/ Ehrlichiosis	4,488	2,267 (875 – 4,551)
Babesiosis*	1,759	1,444 (940 – 1,792)
Tularemia	180	137 (93 – 203)
Powassan virus disease	8	7 (1-16)
Mosquito-borne		
West Nile virus infection	2,205	2,205 (712 – 5,673)
Malaria*	1,653	1,494 (1,255 – 1,773)
Dengue*	677	677 (254 – 843)
California serogroup viruses	96	80 (55 – 137)
Eastern Equine Encephalitis	8	8 (4 – 21)
St. Louis encephalitis	6	10 (1-13)
Flea-borne		
Plague	10	4 (2 – 17)

* Dengue and malaria cases are primarily imported. Babesiosis and Dengue have only been notifiable since 2011 and 2009, respectively. Median and range values encompass cases reported from 2011 to 2014 for babesiosis and 2010 to 2014 for dengue.
** 2013 CDC reported that the estimated numbers of Lyme disease are 10 times the number of reported cases

Ticks should be Safer and Easier than Mosquitoes to Control

Safety: smaller area to implement control.
Ticks exist mostly on the ground. climbing up to 3 ft height
Mosquitoes fly thus other beneficial flying insects such as bees may be affected

More opportunity over longer life cycle to implement control.
Ticks have 3 blood meals during a 2 year life cycle
Mosquito can bite multiple times during their short life cycle (5-40) days

Tick Research, like Mosquito Research should be a Governmental Priority because:

Lyme disease alone is the number one vector borne disease in the USA.
Some of the other Tickborne disease (TBD) are highly fatal.
Ticks and TBDs are increasing in number and spreading geographically.

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While case numbers went **UP**, NIH funding for Lyme research did not

Disease	New cases (annual)	NIH funding
Hepatitis C 2012	1,300	$112 million
West Nile Virus 2012	5,700	$29 million
HIV/AIDS 2012	56,000	$3 billion (11% total NIH budget)
Influenza 2012	73,000	$251 million
Lyme disease 2012	**312,000**	**$25 million**
Lyme disease 2013	**363,070**	**$20 million**

"We won't make progress until these dynamics change and without tests to diagnose and monitor Lyme and other tick-borne diseases. I have some trouble understanding how we could rapidly mobilize scientists to develop tests for MERS (Middle East Respiratory Syndrome), SARS (Severe acute respiratory syndrome), and Ebola, but have made little progress on Lyme over decades."

Judy Stone, "Ticked Off – What we Don't Know about Lyme Disease," Forbes Magazine, June 2015

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***Lyme disease 2004 198,040 $34.4 million**

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Tick-borne microbes (bacteria, protozoa, and viruses) are **adapted to live in human blood**. Some are now in the blood supply and **transmitted by transfusion**.

BUSINESS INSIDER

The FDA is worried about a growing, parasitic threat to the US blood supply

"But the true scope of Babesia's grasp on the country is unknown, and the government as well as blood centers are quick to admit it.

First, the CDC relies on states to compile and report cases to the government. But states aren't required to participate — and not all of them do. (Lyme disease has a similar problem with vast underreporting; 10 times the reported cases likely exist.)

"So far 31 states have participated, and the disease has been reported from 36 states," Sanjai Kumar, who studies pathogens for the FDA, said during the agency's most recent blood safety committee meeting on May 13, 2015."

Source: http://www.businessinsider.com.au/babesia-parasite-increasing-threat-blood-donations-fda-test-2015-8

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Tick Research to Eliminate Disease :
Scientist Coalition

The cause of Lyme and Tick-Borne Diseases is the TICKS and their reservoir animals in the environment.

In the past 43 years, Lyme disease alone has spread from the area surrounding Lyme, CT to at least 49% of all US counties!

Without addressing the TICK cause, the escalating voracious diseases caused by tick pathogens will continue increasing, spreading and infecting us and other animals!

Tick research which is the one field of science that holds the most promise in reducing TBDs has received the LEAST funding and recognition.

Tick Research is required to reduce tick populations and/or block tick ability to transmit disease pathogens to us!

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An Environmental Problem

Requires environmental solutions that are not harmful to us and the earth we live on.

The root causes, the TICKS and their reservoirs, must be addressed. Vaccinating the reservoirs would be a real step in the right direction to stop the cycle of disease.

Humans are just a dead end in the cycle of progression of TBD. Human vaccination is a insufficient patch and does nothing toward a solution.

Without addressing the cause, the escalating diseases caused by tick pathogens will continue increasing, spreading and infecting us and other animals!"

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REQUIREMENTS OF SUCCESSFUL TICK PREVENTION INTEGRATED PEST MANAGEMENT APPROACHES

- **Acceptance by Public**
- **Low Cost**
- **Ease of Maintenance**
- **Safety**
- **Self Propagating or Sustaining is Desirable**
- **Use in Varied Environments**

None of the currently available products have achieved these goals, therefore novel approaches are required.

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EXAMPLES OF NOVEL APPROACHES

Bait Vaccine for Reservoirs (Mice, Chipmunks, etc.)

Sex selection

Sterile eggs

Acaricide + pheromone => minuscule safe targeted acaricide

Anti Tick Vaccine to block pathogen transmission to reservoir animals and humans

Nootkatone

Fungus

Discover natural predators of ticks (spiders, ...

Wolbachia

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WHAT ARE SOME THINGS NYS SHOULD DO

NYS Physician Education - Include both guidelines
- One treatment approach doesn't fit all
- Science: persistence vs chronic infection is not settled

Insurance Companies - Should not dictate treatment
- Pay for physician documented illness beyond 4 weeks

One Dose Doxycycline - Discourage NYS Physician Use of Practice

Tick Population Reduction - Strongly encourage and support

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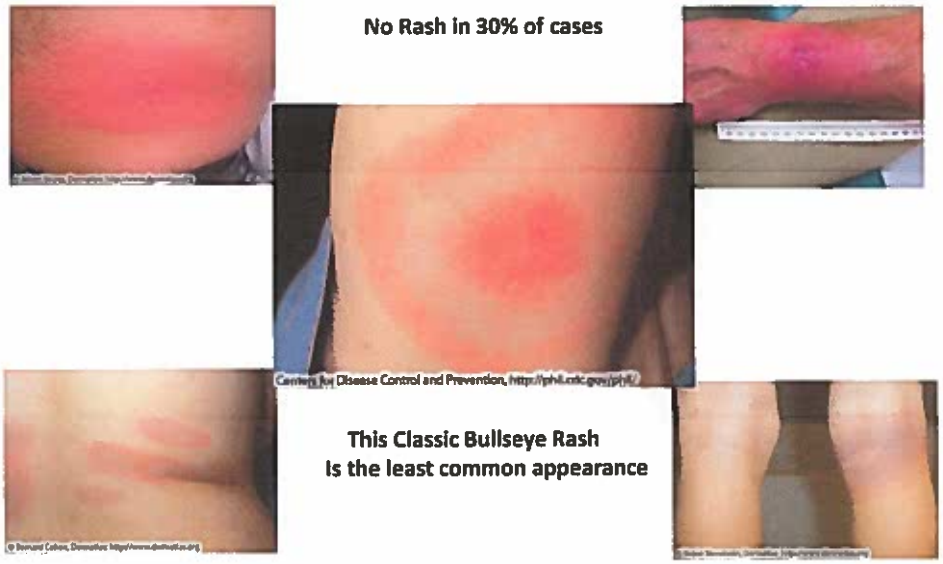
Lyme "EM" Rashes



No Rash in 30% of cases

This Classic Bullseye Rash
Is the least common appearance

PROTECT, PREVENT, CURE

and

STOP TICKS AND DISEASES DEAD IN THEIR TRACKS!

Jill Auerbach
845-454-9414

Hudson Valley Lyme Disease Association, Chairperson
Dutchess County Legislative Tick Task Force, Member
Stop Ticks On People (S.T.O.P.), Board Member
NYS Coalition on Lyme and Tick-borne Disease, Member
Public Integrated Pest Management Work Group, Member
NYS Senator Serino's Advisory Board on Lyme and TBD, Co-chair
Tick Research to Eliminate Diseases, Coalition of Scientists, coordinator
"What's the problem? Well it's the ticks of course!"

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