CDC Nat’l Framework: Strategy for Vector-Borne Diseases Prevention & Control

First announced at the HHS Tick-Borne Disease Working Group’s (TBDWG) September 22 meeting, the Centers for Disease Control (CDC), in a Capitol Hill Announcement, presented plans to join with five federal departments and the Environmental Protection Agency in developing the *National Public Health Framework for the Prevention and Control of Vector-Borne Diseases in Humans* (Framework). The CDC acknowledges that over the past 15 years, the number of vector-borne disease cases has dramatically increased due to expanding vector ranges and the proliferation of emerging pathogens. The Framework will address Americans’ continually increasing risk for contracting vector-borne diseases, which are a growing public health threat that the U.S. has not sufficiently responded to.

Framework Schematic (CDC.gov)

Vision & Mission

The vision of the Framework is to achieve “a nation where vector-borne diseases are no longer a threat to human health and well-being” with a mission “to protect people from illness, suffering, and death due to vector-borne diseases” (CDC.gov). The CDC’s website outlines the following goals of the federal alliance:

- Better understand when, where, and how people are exposed to and get sick or die from vector-borne diseases
- Develop, evaluate, and improve tools and guidance for the diagnosis and detection of vector-borne diseases
- Develop, evaluate, and improve tools and guidance for the prevention and control of vector-borne diseases
- Develop and assess drugs and treatment strategies for vector-borne diseases
- Disseminate and support the implementation of effective public health and vector control products, tools, and programs to prevent, detect, diagnose, and respond to vector-borne disease threats – (CDC.gov)

Strategy & Stakeholders

The strategy, authorized by the Kay Hagan TICK Act of 2019, establishes priorities and lays a framework for critical vector-borne disease prevention and control activities. However, in their statement, the CDC acknowledges that the federal government cannot tackle the complex challenges presented by vector-borne diseases alone, and therefore outlines a multidisciplinary set of stakeholders including state, tribal, local, and territorial health departments; vector control agencies; healthcare providers; academic and industry partners; policy and decision-makers, including Congress and elected community leaders; public health partners, such as nonprofit organizations and associations of medical, entomological, and vector control professionals; and the public (including patients).

Participating Federal Agencies & Departments

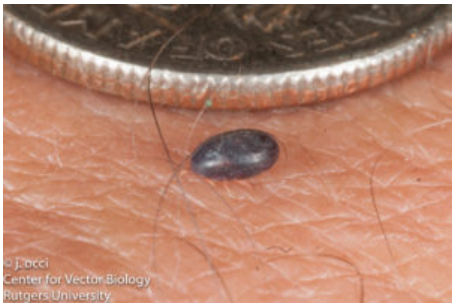
Other federal agencies and departments participating in the Framework include Food and Drug Administration (FDA), National Institutes of Health (NIH), Department of Defense (DOD), Department of Agriculture (USDA), and Department of The Interior (DOI).

The CDC's brochure for the *National Public Health Framework for the Prevention and Control of Vector-Borne Diseases in Humans* states that, "To protect the nation and save lives, success depends on continued collaboration, support, leadership, and excellence in innovation and program implementation."

Learn More About the Framework
To learn more read the CDC's brochure, *A National Public Health Framework for the Prevention and Control of Vector-Borne Diseases in Humans* from the CDC website.

Click here to review the National Framework fact sheet from the CDC website.

Bat Tick: Researchers Identify Carios kelleyi in New Jersey



Live larval bat tick

(Carios kelleyi) removed in 2019 from big brown bats in Mercer County, New Jersey. Photo: J. Occi/Rutgers Center for Vector Biology

In a recent Rutgers University-led study, researchers identified *Carios kelleyi*, a "soft" tick species associated with bats, for the first time in New Jersey. This parasite, of almost exclusively bats, is thought widespread in the US (as well as parts of Canada, Mexico, Costa Rica, and Cuba), with known occurrences in 29 of the 48 contiguous United States. Larvae collected from big brown bats (*Eptesicus fuscus*) in Mercer and Sussex counties were confirmed as *C. kelleyi* and added to the list of New Jersey ticks.

Live larval bat ticks (Carios kelleyi) removed in 2019 from big brown bats in Mercer County, New Jersey. Photo: J. Occi/Rutgers Center for Vector Biology

The risk of this tick to human health in New Jersey is unknown although *C. kelleyi* has been reported to feed on humans in other states. Unlike hard ticks, soft ticks feed multiple times over many years for short periods of time, with blood

meals lasting just minutes to hours. The species of bats that host these ticks commonly roost in human-made structures such as attics of homes as well as barns. When not host-seeking or feeding, these ticks shelter in the cracks and crevices of bat roosting structures and may not be easily surveyed or detected. Occupants of these structures including humans, pets, and livestock, may potentially be bitten without awareness of these parasites. In other states, microbes, including a novel spotted fever *Rickettsia*, a novel relapsing fever-related *Borrelia*, and *Bartonella henselae* have been found in *C. kelleyi.* These microbes can be harmful to humans, pets, and livestock, and more research is needed to assess the medical and veterinary significance of these ticks.

The Lyme Disease Association (LDA) thanks study lead author, James L. Occi, who is also a member of the LDA's Scientific & Professional Advisory Board, for his continued research on ticks and tick-borne diseases and for the tick photos he provided to the LDA for this article.

Read Rutgers Today article: Bat Tick Found for the First Time in New Jersey

Read Journal of Medical Entomology Article: First Record of *Carios kelleyi* (*Acari: Ixodida: Argasidae*) in New Jersey, United States and Implications for Public Health

NIH Grants 1.9 Million for Vaccine to Prevent Lyme

West Virginia University researchers received a $1.9 million grant from the National Institute of Allergy and Infectious Diseases, an institution of the National Institute of Health (NIH), for a vaccine to prevent humans from contracting Lyme disease.

Mariette Barbier, assistant professor in the School of Medicine's Department of Microbiology, Immunology and Cell Biology, is leading the five-year project, along with Timothy Driscoll, assistant professor of biology in the Eberly College of Arts and Sciences, and Heath Damron, assistant professor and director of the WVU Vaccine Development Center.

Barbier and her team will try to develop a vaccine effective against the various species of *Borrelia* (the Lyme disease bacteria). They will be using RNA sequencing to examine how pathogens respond in both infected ticks and mice, and identify relevant antigens during infection.

Driscoll will be studying the proteins made by *Borrelia* during the black-legged ticks life cycle. "In vaccine development, what we try to do is identify those proteins and target them in hopes of clearing the pathogen out, killing it, essentially. If a protein is essential for survival, it makes it harder for the pathogen to change it and evade the immune system," says Driscoll.

Barbier has studied bacterial pathogens, including *Pseudomonas aeruginosa*, which requires iron to grow and infect their host.

“We figured out which antigens could be used to formulate a vaccine, and found the Achilles heel to the bacteria to use against it,” Barbier said. “We focused on one system, which is the iron acquisition system of *Pseudomonas*.” Since *Borrelia* does not require iron, she is driven to find what would be required of *Borrelia*.

Barbier said. “If it doesn’t use iron, what else can we use against it? By bringing in the expertise of others, we’re going to crack the problem.”

Read more about the project here (eurekalert.org)

Click here for Project Info on NIH site

Read about another recent NIH-funded Lyme Vaccine study here

Speak up on Chronic Lyme in WG/Lyme in Insurance Plan/New Repellent Ingredient/Tick Virus Outbreak in China/LDA-Approved Nat’l. Charity/Increased $$-Lyme Amendment/TBD in Fleas/NIH Awards Vaccine $$/Lyme-

Dementia

Lyme Patients: Speak Up Now on Persistent/Chronic Lyme! Sept 4 Deadline

Background: The upcoming meeting of the HHS Working Group on Sept. 15 may be your last chance to influence language on persistent/chronic Lyme. At the last meeting, several members of the Working Group (WG) worked hard to have language related to patients with persistent Lyme symptoms removed from the WG report which will go to Congress at end of year. Read more about the last TBDWG meeting.

At the upcoming September meeting, the WG will vote on proposed changes in language that can affect patient access to care. Please submit verbal or written comments now, deadline to request verbal comment or to submit written comment **11:59 p.m., ET, Friday, September 4, 2020**.

Meeting Details: The fifteenth meeting of the Tick-Borne Disease Working Group (TBDWG) will be held on two non-consecutive days, September 15 and 22. This is an online meeting and everyone is welcome to attend. The TBDWG will review the draft 2020 report to the HHS Secretary and Congress, as well as review and approve graphics and images

for the report.

Register to Attend the Online Meeting.

View the Federal Register Meeting Notice.

View the Meeting Agenda.

How to Submit Your Request for Verbal Public Comment at September 15 meeting (heard online at meeting): Verbal remarks will be provided by the public over the phone during the live webcast and will become part of the archived recording and meeting summary that is posted afterward on the HHS website.

- **Deadline:** All sign-up requests must be received by **11:59 p.m., ET, Friday, September 4**
- **Submit an email request** to tickbornedisease@hhs.gov
- **Use the email subject line:** Verbal Public Comment – September 15

Next steps: If more requests to provide verbal public comment are received than can be accommodated during the meeting, speakers will be randomly selected. You will receive notification on the status of your request on **Wednesday, September 9**.

- **If you are selected to provide verbal public comment at the meeting,** you will be asked to confirm that you are still available to speak during the assigned time. Upon confirmation, you will receive a call-in number and time to provide your comment. Each person will be limited to 3 minutes in order to accommodate as many speakers as possible. If you are no longer able to provide verbal public comment, HHS will randomly select another speaker.
- **If you are not selected,** you are welcome to submit your name for consideration in a future meeting of the

Working Group once the meeting information is posted.

- Please note: All public comment requests that were made for the postponed August meeting will be reviewed for possible speaking opportunity at the September 15 meeting. Those who did not request to speak at the August meeting may also apply to speak for the September 15 meeting.

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How to Submit Your Written Public Comment: Written public comments are shared with Working Group members and are also posted on the HHS webpage. Written public comments will be made accessible to the public in advance of the meeting.

- **Submit an email** to tickbornedisease@hhs.gov
- **Use the email subject line:** Written Public Comment – September 15
- **Provide your preferred identification:** Explain how you prefer to be identified with your comment. Without this information, your comment will not be posted. You may choose one or more of the following options:
  - Use your name
  - Be listed as anonymous
  - Include your city and/or state
  - Provide comments on behalf of an organization (please include the organization's full name)
- **Deadline:** All written comments must be received by **11:59 p.m., ET, Friday, September 4**

Writing your public comment:

- **Format:** Comments must be in the body of your email or in

an attached Word document.

- **Page Limit:** Comments must not exceed four (4) pages in Calibri or Times New Roman, 11 point font (text that exceeds four pages will be deleted).
- **Graphics:** Do not include graphics, images, text boxes, or tables. If included, they will not be retained.
- **Links:** Hyperlinks will only be added for ".gov" sites (local, state, or federal). For all other reference sites, please insert the full URL (e.g., http://learn.genetics.utah.edu/content/epigenetics).
- **Attachments:** Do not include any attachments. It is not possible to include attachments as supporting documentation to written comments.

Next steps: Your written comment will be posted to the HHS website before the meeting. If you have any questions or concerns about submitting your comment, contact tickbornediseases@hhs.gov.

NIH awards $3.5 Million for Novel Lyme Disease Vaccine Study

With a new $3.5 million grant from the National Institutes of Health (NIH), Utpal Pal, PhD, professor in Veterinary Medicine at the University of Maryland (UMD) will be partnering with Matthias Schnell, director of the Jefferson Vaccine Center at

Thomas Jefferson University to develop a novel "next-generation" Lyme disease vaccine.

Pal, a tick immunobiologist, and Schnell, whose lab studies rabies virus as a platform for vaccination, will adapt the rabies virus platform to fight Lyme disease. The inactivated rabies virus, which helps the body produce antibodies to fight rabies, will be repurposed to produce other types of proteins that can fight *Borrelia burgdorferi,* the Lyme disease bacteria, a technique found effective for other viral vaccinations.

This study will test the four already identified vaccine candidate proteins, as well as the three major types of rabies vaccine platforms– using live attenuated virus, inactivated virus, and the shell of a virus with viral proteins on the outside but no virus inside to trick the body. Pal is also studying both *Borrelia* proteins and the tick proteins that keep the *Borrelia* alive so it can be tramsmitted to humans.

Read more about this project here – (prweb.com)

Click here for Project Info on NIH site

Utpal Pal, PhD lectured at LDA's 2018 Annual Scientific Conference – *Immune Evasion of Lyme Disease Agents*

Read about Pal's previous research – UMD Research Isolates *Bb* Protein that Disables Immune System

Lyme Disease Included in Insurer Critical Illness Plan

American insurer Colonial Life is offering a new critical illness plan with optional rider that offers a lump sum benefit for hospitalization for treatment of COVID-19 and over 12 other infectious diseases, such as Lyme disease, antibiotic-resistant bacteria, Legionnaires' disease, meningitis, and sepsis.

For the critical illness plan's Lyme disease coverage: the date of Lyme disease diagnosis must be verified and confirmed to not be a pre-exisiting condition. Payment of the lump sum benefit varies by state and the type of coverage, ranging from $5,000 – $100,000; one lump sum per lifetime. A rider for hospitalization for various conditions, including Lyme disease can be added with a maximum payout of $150,000 per lifetime. Both individual and group plans are available.

Coverage is available for up to 56 different serious conditions and treatment procedures. Additional conditions are covered for children. Riders can be added to coverage which provide additional benefits for infectious diseases, cancer, first diagnosis, heart procedures and Alzheimer's disease.

According to Pam Jenkins, assistant vice president for product development at Colonial Life: "Even employees with good health insurance can face significant expenses from copays, deductibles and nonmedical costs related to a serious illness. Group critical illness insurance helps relieve financial worries by providing a lump-sum benefit payable directly to you to use as needed."

Read more about Colonial Life's new critical illness plan – prnewswire.com

Disclaimer: The Lyme Disease Association Inc. (LDA) provides this information as a public service. LDA does not make product or services endorsements nor give permission to companies or individuals to use the LDA's name to endorse their products or services.

2006 LDA/Columbia Medical Conference – Video Clips

Links below are video clips are from the "Lyme & Other Tick-Borne Diseases: Seeking Answers Through Science 2006," held in Philadelphia. PA

Download Free Real Player by clicking here.

Emerging Infections: Universal Biosensor Detection – David Ecker, Ph.D.
Beyond PCR to Whole Genome Amplification – Roger Lasken, Ph.D.
B-Lactam Antibiotics Offer Neuroprotection by Increasing Glutamate Transporter Expression – Jeffery D. Rothstein, MD, Ph.D.
Laboratory Diagnosis of Lyme Disease in Europe – Elisabeth Aberer, MD
Babesia microti Causes Down Regulation of Cytokines and Increased Severity of Lyme Arthritis – Manuel Moro, DVM, MPH, Ph.D.
Tissue Response to Chronic Borrelia Infection – Diego Cadavid, MD
Medical Hypothesis: Links Between Bb and Dementia – Alan MacDonald, MD

Cyst and L Forms in Dermatological Lyme amd Persistance – Elisabeth Aberer, MD
Cyst Forms and Antimicrobial Efficacy – Oystein Brorson, MD
Looking Beyond Lyme: Differential Diagnosis – Ernest Visconti, MD
Uses and Abuses of Neuroimaging in Lyme Disease – Brian A. Fallon, MD, MPH

Like what you saw? A full set of (2) DVD's of the conference including these clips and Q & A and any discussion are available for sale. **NOT CURRENTLY AVAILABLE**

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2006 Lyme & Other Tick-Borne Diseses: Seeking Answers Through Science Confernce

Philadelphia 2006 LDA/Columbia University Lyme & Other Tick-Borne Diseases: Seeking Answers through Science Conference

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NOT CURRENTLY AVAILABLE

$49 for 2 DVD set, plus compendium Hard to find discussions about the elusive Borrelia burgdorferi cyst forms by world renowned researchers including Øystein Brorson, MD, and the possible links between Lyme disease & dementia by Alan MacDonald, MD. Also Jeffrey D. Rothstein, MD, Ph.D. from Johns Hopkins University discusses new discoveries about antibiotics: "β-Lactam Antibodies Offer Neuroprotection by Increasing Glutamate Transporter Expression." Other Speakers:

David Ecker, Ph.D. – “Emerging Infections: Universal Biosensor Detection” Roger Lasken, Ph.D. – “Beyond PCR to Whole Genome Amplification” Keith Clay, Ph.D. – “Microbial Diversity within Ticks” Elisabeth Aberer, MD – “Laboratory Diagnosis of Lyme Disease in Europe ” Manuel Moro, DVM, MPH, Ph.D. – “Babesia microti Causes Down Regulation of Cytokines and Increased Severity of Lyme Arthritis” Daniel Cameron, MD, MPH – “Designing Research in the Clinical Setting” Diego Cadavid, MD – “Tissue Response to Chronic Borrelia Infection” Elisabeth Aberer, MD – “Cyst and L Forms in Dermatological Lyme and Persistence” Øystein Brorson, MD – “Cyst Forms and Antimicrobial Efficacy” Ernest Visconti, MD – “Looking Beyond Lyme: Differential Diagnosis” Brian A. Fallon, MD, MPH – “Uses and Abuses of Neuroimaging in Lyme Disease” Also, Pat Smith, LDA President, Lyme Disease: National Overview

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Study Reveals Some Tick-Borne Pathogens Found in Fleas

Photo by CDC, *Peromyscus leucopus*

In a recent study conducted in central Pennsylvania, evidence

of emerging pathogens, some also common to ticks, have been found in fleas. Various pathogens can be spread by ectoparasites among animal host populations in nature. Along with ticks, fleas are found to commonly infest small mammals. The role of pathogen transmission cycles for these vectors is unknown.

In this study, small mammals were captured and fleas were collected in an effort to better understand the enzootic cycle of flea-borne pathogens in central Pennsylvania. Pathogen testing was conducted in both the small mammal hosts and the fleas collected.

Seven species of small mammals were captured of which white-footed mice (*Peromyscus leucopus*) and southern red-backed voles (*Myodes gapperi*) accounted for over 94% of the captures. Only *P. leucopus* tested positive for the blood-borne pathogens examined, with 47 (18.1%) positive for *Anaplasma phagocytophilum* and ten (4.8%) positive for *Babesia microti.*

Of the 61 fleas collected from small mammals and tested for pathogens, *Orchopeas leucopus* was the most common flea species. Pathogenic bacteria and parasites were detected in 33.3% of total fleas collected, and included *Bartonella vinsonii* subspecies *arupensis*, *B. microti*, and a *Rickettsia felis*-like bacterium. Researchers believe this to be the first report of *B. microti* DNA detected from a flea, as well as the first report of a *R. felis*-like bacterium from rodent fleas in eastern North America.

At this time, only plague (*Yersinia pestis*) is a nationally reportable flea-borne disease in the United States. Like tick-borne diseases, under-reporting of flea-borne illnesses limits understanding of the burden of disease from these vectors. The potential for new and re-emerging pathogens in fleas as well as the potential for fleas to play a role in natural transmission cycles of tick-borne pathogens is not understood. This study elucidates that further investigation is needed to

understand the ecology of flea-borne disease transmission cycles, vector competence of fleas for tick-borne pathogens, and the risk to human health.

Read full article: Host distribution and pathogen infection of fleas (Siphonaptera) recovered from small mammals in Pennsylvania