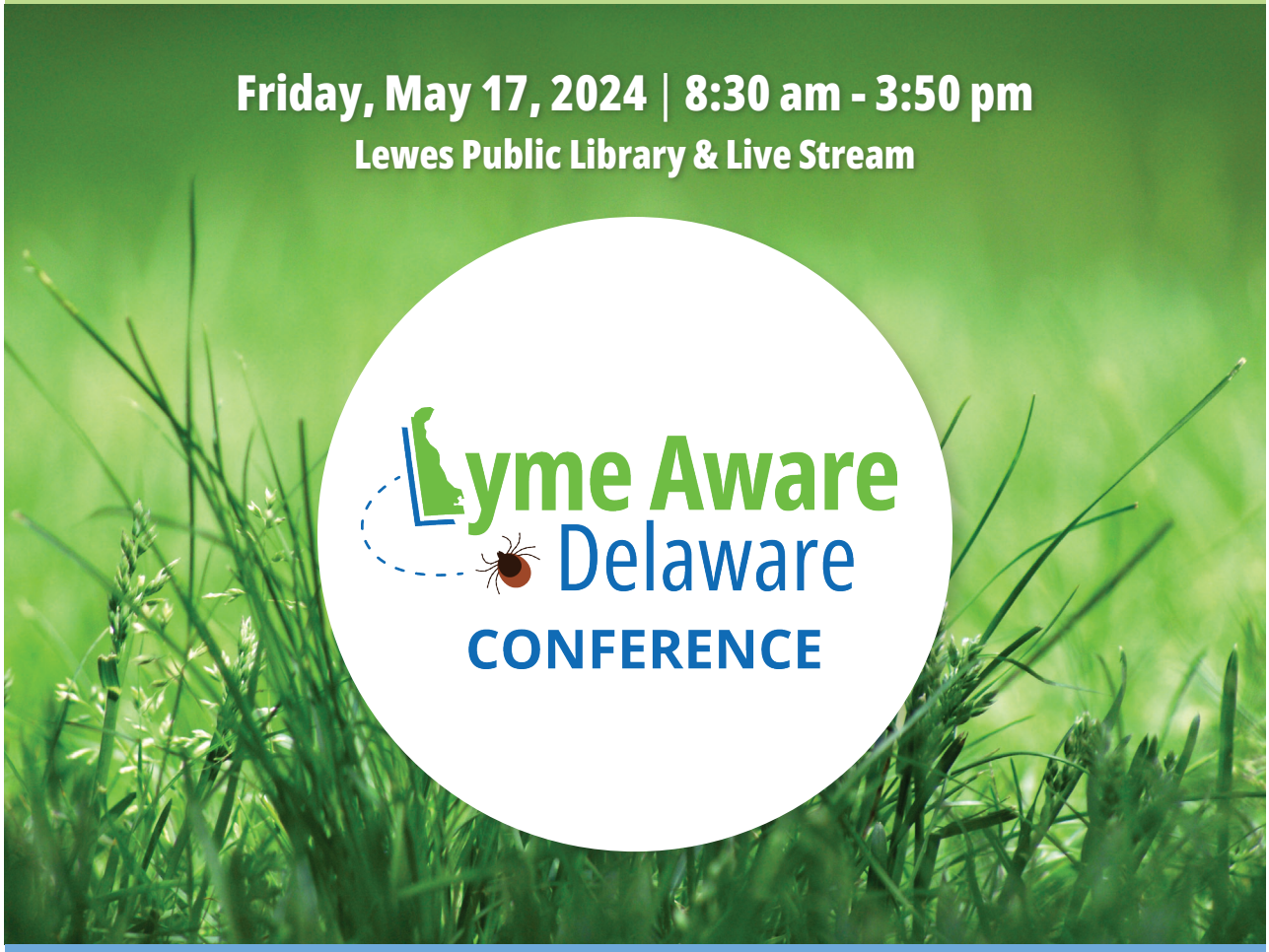


Delaware's **Lyme Disease Education Oversight Board** & Host **Beebe Healthcare** present the **Lyme Aware Delaware Conference**, a continuing education opportunity for Delaware healthcare professionals to learn more about Lyme and other tickborne diseases. **Welcome!**

DELAWARE'S Lyme Disease Education Oversight Board

Beebe Healthcare

Lyme Aware Delaware CONFERENCE
LymeDiseaseEducation.org

Program Overview

Friday, May 17, 2024
8:30 am – 3:50 pm
Lewes Public Library & Live Stream

Activity Description

Convened by Delaware's Lyme Disease Education Oversight Board (LDEOB) which was created per state law, and hosted by Beebe Healthcare, the Lyme Aware Delaware Conference will provide current research on the risks and incidence of tickborne illnesses in Delaware along with pertinent clinical information. This course provides valuable and evidence-based updates for all Delaware medical providers, as well as advanced topic learning providers who wish to improve their knowledge regarding tickborne illnesses endemic to Delaware including: Lyme disease, Babesiosis, Rickettsiosis, Anaplasmosis, and Ehrlichiosis, and more.

Statement of Need

This CME activity was designed to improve the medical providers ability to 1) assess the risk of tickborne illnesses in their patient population, 2) improve accurate and timely diagnosis and treatment of tickborne illnesses in Delaware patients.

Target Audience

The target audience for this conference is Allied Health Professional, Audiologist, Dentist, EMT, Medical Assistant, Medical Student, Non-Physician, Nurse, Nurse Practitioner, Occupational Therapist, Paramedic, Pharmacist, Pharmacy Technician, Physical Therapist, Physician, Physician Assistant, Podiatrist, Psychologist, Registered Dietitian, Resident Physician, Social Worker, Sonographer, Speech-Language Pathologist.

Global Objectives

At the conclusion of this activity, the participant should be able to:

- Relate the current data on Delaware tick species, tick behavior, ranges and population data to the risk of tick bites for their patients.
- List tickborne illnesses endemic to Delaware along with their major signs and symptoms.
- Identify clinical and laboratory studies to diagnose tickborne illnesses relevant to Delaware.
- Describe Lyme testing sensitivity, specificity, and accuracy in the context of normal immune function and immune dysregulation.
- Assess the variable presentations of Lyme disease rashes on the range of patient skin tones.
- Review the evidence for antibiotic efficacy in the treatment of Lyme disease.
- Distinguish the neuropsychiatric presentations of Lyme disease from non-Lyme disease causes.
- Describe the variable clinical presentations of Babesiosis and current treatment paradigms.
- Formulate a treatment plan for tickborne illness that includes longitudinal follow-up.
- Explain how a One Health approach to tickborne illnesses in Delaware can improve community health.

Faculty Disclosures

Brian Fallon, MD, MPH; Choukri Ben Mamoun, PhD; Michael Buoni, PhD; Monica Embers, PhD; Ashley Kennedy, PhD, BCE; Elizabeth Maloney, MD have disclosed no relevant financial relationships. John Aucott, MD has disclosed that he is a consultant for Pfizer and Lilly and a board member for Tarus. Dr. Aucott further disclosed that his presentation has been peer-reviewed for clinical validation, balance and bias.

Course Director/Planner

All persons (activity director, planners, and content reviewers) in control of content for this CME activity have no relevant financial relationships to disclose.

Accreditation Statement

This activity has been planned and implemented in accordance with the accreditation requirements and policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint providership of the University of California, Irvine School of Medicine and Beebe Healthcare. The University of California, Irvine School of Medicine is accredited by the ACCME to provide continuing medical education for physicians.

Credit Designation Statement

The University of California, Irvine School of Medicine designates this live activity for a maximum of 6.0 AMA PRA Category 1 Credit™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

ADA Statement

In compliance with the Americans with Disabilities Act, we will make every reasonable effort to accommodate your request. For any special requests, please contact Tanya Ray, MS at 302-645-3100, ext. 5221 or at tray@beebehealthcare.org before the meeting date.

CME Information

Please see the CME website, https://uci.cloud-cme.com.

California Assembly Bill 1195 and 241
This activity is in compliance with California Assembly Bill 1195 and 241, which require CME activities with patient care components to include curriculum in the subjects of cultural and linguistic competency & implicit bias. It is the intent of AB 1195 and AB 241 to encourage physicians and surgeons, CME providers in the State of California, and the Accreditation Council for Continuing Medical Education to meet the cultural and linguistic concerns of a diverse patient population and reduce health disparities through appropriate professional development.

DELAWARE'S Lyme Disease Education Oversight Board

Beebe Healthcare

Delaware's **Lyme Disease Education Oversight Board** (LDEOB) & Host **Beebe Healthcare** welcome you to the

Lyme Aware Delaware CONFERENCE

Friday, May 17, 2024
8:30 am – 3:50 pm

Lewes Public Library & Live Stream
FREE Event | May earn up to 6 CMEs/CEUs

Agenda*

Time	Topic	Speaker
8:30-9:00am	Registration	
	OPENING	
9:00-9:05am	**Conference Opening Remarks**	**Douglas Riley, DVM**, DE State Public Health Veterinarian, USAF Lt. Colonel (Ret.), Delaware's Lyme Disease Education Oversight Board (LDEOB) Member & **Judy Setting, BSN, RN** (Inactive), **CCRA**, LDEOB Chair
9:05-9:10am	**Welcome**	**David Tam, MD, FACHE**, President & CEO, Beebe Healthcare
9:10-9:20am	**Delaware Lyme Law History**	**Rep. Peter Schwartzkopf,** Delaware State Speaker Pro Tempore
	DELAWARE TICK RESEARCH	
9:20-9:50am	**Delaware Tick Program**	**Ashley Kennedy, PhD, BCE**, Former Delaware State Tick Biologist, Delaware DNREC Division of Fish and Wildlife, LDEOB Member
9:50-10:20am	**Multiplex Assays for Surveillance of Delaware Tickborne Pathogens**	**Michael Buoni, PhD, EdD**, Instructor of Genetics, Microbiology and Molecular Biology, Delaware Technical Community College
	LYME AND OTHER TICKBORNE DISEASES	
10:20-11:05am	**Antibiotic Efficacy Against Lyme**	**Monica Embers, PhD**, Director of Vector-Borne Disease Research, Associate Professor of Microbiology and Immunology, Tulane National Primate Research Center, Tulane University School of Medicine
11:05-11:10am	Break	
11:10-11:55am	**Lyme Disease Rashes & Research**	**John Aucott, MD**, Director, Johns Hopkins Lyme Disease Clinical Research Center, Associate Professor of Medicine, Johns Hopkins School of Medicine
11:55 am-12:40pm	**Lyme Disease Testing**	**Elizabeth Maloney, MD**, Physician, Former Member of the Federal Tick-Borne Disease Working Group, Founder and President, Partnership for Tick-Borne Diseases Education
12:40-12.45pm	**One Health & Reporting**	**Douglas Riley, DVM**, Delaware State Public Health Veterinarian, U.S. Air Force Lieutenant Colonel (Retired), LDEOB Member
12:45-1:10pm	Lunch	
1:10-1:20pm	**Afternoon Welcome**	**Comm. Trinidad Navarro**, Delaware State Insurance Commissioner
1:20-2:05 pm	**Neuropsychiatric Lyme Disease**	**Brian Fallon, MD, MPH**, Director, Lyme & Tick-Borne Diseases Research Center, Director, Center for Neuroinflammatory Disorders & Biobehavioral Medicine, Professor of Clinical Psychiatry, Columbia University Irving Medical Center
2:05-2:50pm	**Babesia & Translational Medicine**	**Choukri Ben Mamoun, PhD**, Professor of Medicine (Infectious Diseases) and of Microbial Pathogenesis and Pathology, Yale School of Medicine
2:50-3:00pm	Evaluations & CME Information	**Lori Maramante, EdD**, Delaware Tech, LDEOB Vice Chair & **Tanya Ray, MS**, Administrative Director of Graduate Medical Education, Beebe Healthcare
3:00-3:45pm	**Treatment Presentation**	**Neil Rellosa, MD**, Infectious Diseases Physician, Nemours Children's Hospital, LDEOB Member & **Elizabeth Maloney, MD**, Physician, Former Member of the Federal Tick-Borne Disease Working Group, Founder and President, Partnership for Tick-Borne Diseases Education
	CLOSING	
3:45-3:50pm	**Gratitude**	**Lori Maramante, EdD**, Delaware Tech, LDEOB Vice Chair

**Agenda subject to change without notice*

Speakers


John Aucott, MD
Johns Hopkins Medicine


Choukri Ben Mamoun, PhD
Yale School of Medicine


Michael Buoni, PhD, EdD
Delaware Tech


Monica Embers, PhD
Tulane University Medicine


Brian Fallon, MD, MPH
Columbia Dept. of Psychiatry


Ashley Kennedy, PhD, BCE
Delaware Tick Program


Elizabeth Maloney, MD
Federal Tick-Borne Disease Working Group


Comm. Trinidad Navarro
DE State Insurance Commissioner


Neil Rellosa, MD
Nemours Children's Hospital


Douglas Riley, DVM
Delaware Public Health


Rep. Peter Schwartzkopf
DE Speaker Pro Tempore


David Tam, MD, FACHE
Beebe Healthcare

Hosted by Beebe Healthcare

LymeDiseaseEducation.org | BeebeHealthcare.org/Calendar/Classes/Lyme-Aware-Delaware-Conference

Lyme Aware Delaware CONFERENCE

May 17, 2024

Speakers

John Aucott, MD
Johns Hopkins Medicine

Dr. Aucott is Director of the Johns Hopkins Lyme Disease Clinical Research Center and an Associate Professor of Medicine at The Johns Hopkins University School of Medicine. He is principal investigator for the longitudinal SLICE studies of Lyme disease where his research interests center on the pathophysiology, diagnosis, immunology and treatment of Lyme disease-associated persistent illness.

He is an active clinician, medical educator, and the director for the Johns Hopkins Lyme and Tickborne Disease Fellowship Program. Dr. Aucott is the past chair of the U.S. Department of Health and Human Services (HHS) Tick-Borne Disease Working Group and currently serves as a scientific advisor for the HHS LymeX diagnostic program.

Choukri Ben Mamoun, PhD
Yale School of Medicine

Dr. Ben Mamoun is a Professor of Medicine (Infectious Diseases) and of Microbial Pathogenesis and Pathology at Yale School of Medicine. His research at Yale is dedicated to unraveling the development and survival mechanisms of infectious agents, including the tick-borne pathogen, Babesia, while pioneering innovative diagnostic and therapeutic strategies for combatting infectious diseases.

His body of work is reflected in the publication of 130 papers in various journals, including *Nature*, *Nature Microbiology*, *Cell*, *PNAS*, *Structure*, *Plos Pathogens*, *JBC*, and *JID*. Dr. Ben Mamoun's influence extends beyond his research. He is affiliated with the Yale Institute for Global Health and is a sought-after international keynote speaker.

Michael Buoni, PhD, EdD
Delaware Tech

Dr. Buoni is a faculty member at Delaware Tech with over 27 years of teaching experience in the sciences. He holds a PhD in Medical and Molecular Sciences and an EdD in Education (Science). His publications include research on pathogen identification testing in ticks and on scientific pedagogy.

Dr. Buoni is the lead research professor at the Owens campus of Delaware Tech where he oversees undergraduate research in areas of tick-borne pathogen testing in ticks, CRISPR gene editing and novel yeast metabolism with support from NSF EPSCoR, INBRE, and a partnership with DNREC. His lifelong passion for teaching has been recognized with Teacher of the Year Awards from the three different institutions where he has worked.

Lyme Aware Delaware CONFERENCE

May 17, 2024

Speakers (cont.)

Monica Embers, PhD
Tulane University Medicine

Dr. Embers is the Director of Vector-Borne Disease Research at the Tulane National Primate Research Center (TNPRC) and of the TNPRC Mentorship Program, and an Associate Professor in the Division of Immunology. By transmitting Lyme disease to mice and nonhuman primates via ticks, and then studying the natural course of infection, her team aims to attain a better understanding of the clinical quandaries of human Lyme disease, including effective diagnosis, prevention, and treatment. Her research is centered around four major efforts: (1) identifying treatments that can eradicate *B. burgdorferi* infection; (2) detection of persistent Lyme disease spirochetes in human (autopsy) tissues; (3) immunodiagnosis for *B. burgdorferi* infection and cure; and (4) prevention of Lyme and tick-borne diseases through vaccination.

Brian Fallon, MD, MPH
Columbia Dept. of Psychiatry

Dr. Fallon is the Director of the Lyme and Tick-Borne Diseases Research Center at the Columbia University Irving Medical Center (CUIMC) and of its national Clinical Trials Network Coordinating Center, and Director for the Center for Neuroinflammatory Disorders and Biobehavioral Medicine at the New York State Psychiatric Institute in the CUIMC Department of Psychiatry. He serves as a Professor of Clinical Psychiatry and his published research covers topics including: diagnostics, neuroimaging, biomarkers, phenomenology, neurocognition, and treatment studies. In addition to Lyme, he has published papers on other vector-borne diseases – *Borrelia miyamotoi*, Powassan Virus and Bartonella. His current work is focused on novel approaches to treat the long-hauler syndromes, especially the persistent neurological effects of Lyme disease.

Ashley Kennedy, PhD, BCE
Delaware Tick Program

Dr. Kennedy is a Board-Certified Entomologist with a specialty in medical and veterinary entomology. Dr. Kennedy completed a postdoctoral appointment at the Tick-Borne Disease Laboratory at the Defense Centers for Public Health (Aberdeen Proving Ground-South, MD) before serving as the Delaware state Tick Biologist within the Delaware Division of Fish and Wildlife (Newark, DE) from 2020-2023. Currently, she is serving as an American Association for the Advancement of Science (AAAS) Science and Technology Policy Fellow at the U.S. Fish and Wildlife Service (Falls Church, VA). Broadly, she is interested in disease ecology, host-vector-pathogen dynamics, and the intersection of conservation and public health. Dr. Kennedy is a member of Delaware's Lyme Disease Education Oversight Board.

Lyme Aware Delaware CONFERENCE

May 17, 2024

Speakers (cont.)

Elizabeth Maloney, MD
Federal Tick-Borne Disease Working Group

Dr. Maloney is a Minnesota family physician, policy consultant and medical educator. In 2021, she was appointed to the Tick-Borne Disease Working Group (TBDWG), a federal advisory committee on tick-borne illnesses. She served on several TBDWG subcommittees prior to her appointment, from 2018 to 2020. She has also provided testimony regarding tick-borne disease to several state legislative committees and Canada Health. Since 2007, Dr. Maloney has been providing comprehensive, evidence-based, accredited continuing medical education courses. Further, she has authored several peer-reviewed papers, including GRADE-based treatment guidelines on Lyme disease. She also speaks to the general public on the need to consistently use effective tick bite prevention strategies.

Neil Rellosa, MD
Nemours Children's Hospital

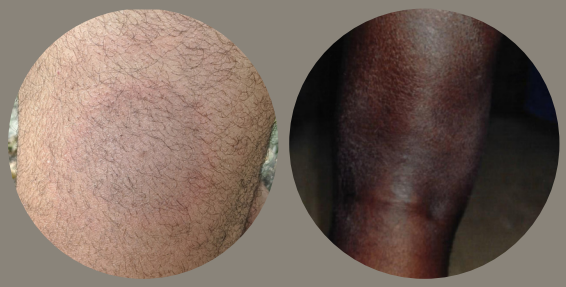
Dr. Rellosa is the HIV Program Director and an attending physician in the Division of Infectious Diseases at Nemours Children's Hospital, Delaware. He is also an Assistant Professor of Pediatrics at Thomas Jefferson University-Sidney Kimmel Medical College. His clinical and research interests include HIV, Lyme Disease, Hepatitis C and PrEP for adolescents. He completed his medical degree at Temple University School of Medicine, and his fellowship in Pediatric Infectious Disease at Children's National Medical Center in Washington, DC., during which he served as a Medical Officer for the Food and Drug Administration. He then served as an attending physician at St. Christopher's Hospital for Children in both the Sections of Infectious Diseases and HIV/Immunology before returning to Delaware. He is a member of Delaware's Lyme Disease Education Oversight Board.

Douglas Riley, DVM
Delaware Public Health

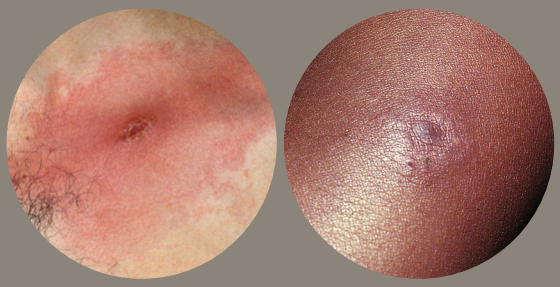
Dr. Riley is the Delaware State Public Health Veterinarian, a U.S. Air Force lieutenant colonel (retired), and a member of Delaware's Lyme Disease Education Oversight Board. Formerly, he was the commander of 436th Medical Group Public Health at Dover Air Force Base after three years as the strategic planner and International Health Specialist for Hickam Air Force Base, Hawaii. During his service at Hickam, he was the principal public health and veterinary medicine coordinator for the nine-member Pacific International Health Specialist Team responsible for conducting USAF humanitarian, disaster management, public health, and international security cooperation initiatives, One Health initiatives, and veterinary capacity growth initiatives in the Asia-Pacific region. Lt. Col. (Dr.) Riley entered the Air Force in 2006 as a former mixed-animal clinician and former U.S. Army Special Forces Veterinarian.

The Many Forms of Lyme Disease Rashes
(Erythema Migrans)

Faint colors and borders

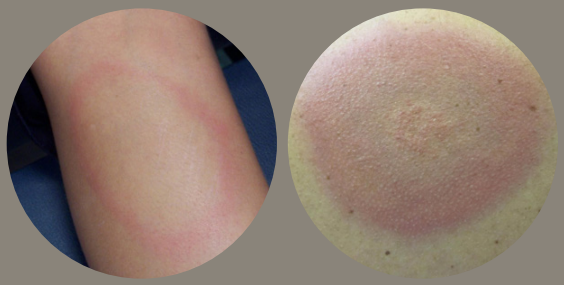


Crusted centers

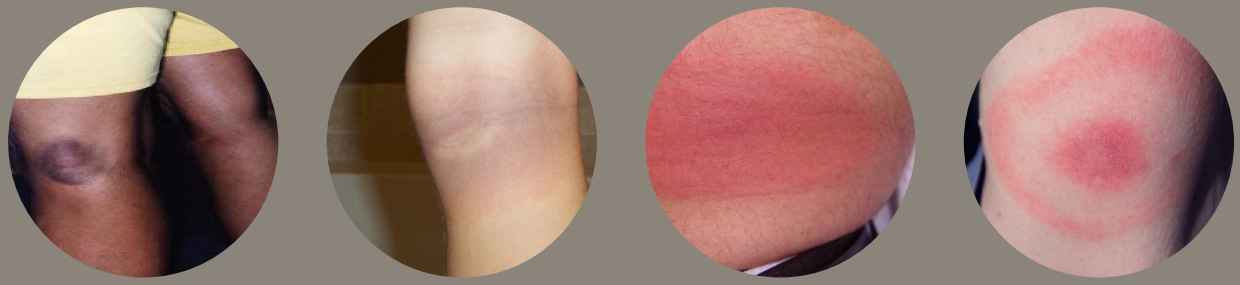


More than one rash

Different shapes and colors



Appearing anywhere on the body



Most people with Lyme disease develop an erythema migrans rash at the site of the tick bite. The rash usually expands slowly over several days reaching up to 12 inches or more (30 cm) across. **However, not all rashes are a sign of Lyme disease.** The redness in the picture to the left is caused by irritation to the tick bite — not a tickborne infection.

Photo credits (from top, left to right): 1. Centers for Disease Control and Prevention; 2. Courtesy of Dr. Gary Wormser, New York Medical College; 3. ©DermAtlas, Bernard Cohen. Used with permission; 4. Reprinted from Blhate C, Shwartz RA. Lyme disease: Part 1. Advances and Perspectives. Am Acad Dermatol 2011;64:619-36, with permission from Elsevier; 5. ©DermAtlas, Bernard Cohen. Used with permission; 6. Courtesy of Vermont Department of Health; 7. ©DermAtlas, Taryn Holman. Used with permission; 8. ©DermAtlas, Yevgeniy Balagula. Used with permission; 9.Courtesy of New York State Department of Health; 10. ©DermAtlas, Robin Stevenson. Used with permission; 11. ©DermAtlas, Alison Young. Used with permission; 12. Centers for Disease Control and Prevention, http://phil.cdc.gov/phil

Learn more about Lyme disease symptoms at
www.cdc.gov/lyme/signs_symptoms

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Accessible version:
https://www.cdc.gov/onehealth/basics/index.html

ONE HEALTH

Why is **ONE** Health IMPORTANT?

Human health is closely connected to the health of animals and our shared environment.

In today's world, people and animals interact more closely and more often than ever before, sharing environments, diseases, and other health concerns.

Every year, millions of people and animals around the world are impacted by zoonotic diseases (diseases that spread between animals and people).

Diseases don't recognize borders.

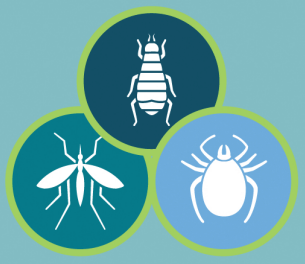
Changes in climate and land use affect animal habitat and movement.

DEPARTMENT OF HEALTH & HUMAN SERVICES USA
CDC

But **ONE** Health isn't just about zoonotic diseases. Other issues that can benefit from a **ONE** Health approach include:

ANTIBIOTIC RESISTANCE

Antibiotic-resistant germs can quickly spread through communities, the food supply, healthcare facilities, and the environment (soil, water), making it harder to treat certain infections in animals and people.



VECTOR-BORNE DISEASES

Vector-borne diseases are on the rise with warmer temperatures and expanded mosquito and tick habitats. Vectors are mosquitoes, ticks and fleas that spread disease. A person who gets bitten by a vector and gets sick has a vector-borne disease.

FOOD SAFETY AND SECURITY

Diseases in food animals can threaten food supplies, livelihoods, and economies.

MENTAL HEALTH

The human-animal bond can help improve mental well-being.

ENVIRONMENTAL CONTAMINATION

Contamination of water used for drinking, recreation, and more can make people and animals sick.

Recognizing these connections means a healthier world for all. The **ONE** Health approach can:

Prevent outbreaks of zoonotic disease in animals and people

Improve food safety and security and economies reliant on livestock production

Reduce antibiotic-resistant infections and improve human and animal health

And **protect** global health security

The ONE Health approach helps protect the health of all living beings by bringing experts across fields together to solve problems threatening humans, animals, and the environment.

CS322042AB

TOP TEN

Tick Facts You Need To Know!*

Lyme Aware Delaware CONFERENCE
LymeDiseaseEducation.org

1. **Ticks are active year-round.** Although we consider late spring-early summer prime "tick season," you can be bitten by a tick during any month, even the middle of winter.

2. **Not all ticks are equally dangerous.** Each species and life stage is associated with different risks; that's why tick identification is so important.

3. **Lyme disease may be the most common tick-borne infection, but it's just the tip of the iceberg.** Ticks vector numerous pathogens including bacteria, viruses, protozoan parasites, and even nematodes.

4. **Some ticks can make you allergic to meat.** Some people develop Alpha-Gal Syndrome, an allergic immune reaction to mammalian meat products (e.g., beef, pork, lamb, venison, and sometimes dairy products and byproducts such as gelatin) after being bitten by a lone star tick.

5. **You can greatly reduce your chances of getting a tick bite by applying tick repellent to your skin and clothes,** sticking to the middle of trails, and conducting frequent tick checks.

6. **You can make your yard tick-safe with a few key landscaping changes:** In the places where you recreate, keep the grass short and remove brush. Ticks need humidity to survive, so they are sensitive to direct sunlight.

7. **Ticks don't jump or fall out of trees.** This is a common myth, but ticks actually just wait on grass or other plants for a host to walk by so they can grab on. So, if you don't come into contact with vegetation, it's easy to avoid ticks.

8. **If you get bitten by a tick, it's important to remove it ASAP.** The longer it's attached, the more likely it is to transmit pathogens. Save the tick in a zip-seal bag for medical reference.

9. **Most tick-borne infections can be easily treated, but it's important to seek treatment early and stick to it.** Delayed treatment or failure to complete the full course of antibiotics or other treatment can lead to lingering symptoms that are more difficult to treat and may have severe complications.

10. **Don't forget to keep your pets safe from ticks, too!** Talk to your vet about the best anti-tick products to use. Note that products developed for dogs may not be safe for cats. Also, ask your vet about vaccinating your dog against Lyme disease.

For more information about ticks in Delaware:
Visit the **Delaware Tick Program** in the Department of Natural Resources and Environmental Control at **de.gov/ticks**, and the Delaware Division of Public Health at **de.gov/lyme**.

*Delaware DNREC, Division of Fish and Wildlife, Tick Program."Top 10 Tick Facts You Should Know" de.gov/ticks. 2024. documents.dnrec.delaware.gov/fw/mosquito/Top-10-Tick-Facts.pdf.

Keep Our Delaware Communities Healthy – Learn About Lyme and Other Tickborne Diseases

LymeDiseaseEducation.org

Did You Know? Delaware has averaged the **8th highest incidence of Lyme disease in the U.S**. since 2018.*

Delaware's **Lyme Disease Education Oversight Board** was created by law to educate DE state healthcare providers about Lyme and other tickborne diseases. This website offers balanced, quality, professional information reflecting CDC philosophy, ILADS guidelines, and up-to-date research. Visit often to find the resources you need!

DELAWARE'S
Lyme Disease Education
Oversight Board

*Source: 2024 CDC surveillance data