



PUBLIC HEALTH PREPAREDNESS TO COMBAT VECTOR-BORNE DISEASE

ESA Transition Document

OVERVIEW

The ongoing COVID-19 crisis has shown how a lack of coordination in response has compromised our efforts to protect public health, and our nation must prepare now to prevent and respond to future pandemic-level threats posed by infectious diseases. To ensure that the public health challenges of the next pandemic can be met effectively, the Entomological Society of America (ESA) urges the next administration to address pressing needs in disease surveillance, public health capabilities, and federal cross-agency coordination, with a particular eye toward vector-borne diseases.

CHALLENGES

Vector-borne disease (VBD) is one of the most pressing public health issues facing our country today, and a top priority for ESA. VBD includes well-known illnesses such as Lyme disease, West Nile virus, and Zika virus, as well as less familiar diseases like the eastern equine encephalitis (EEE) virus that appeared in several U.S. communities in late 2019. Between 2004 and 2016, reported human disease cases in the U.S. resulting from bites from disease-carrying arthropods—primarily ticks and mosquitoes—tripled, according to the U.S. Centers for Disease Control and Prevention (CDC). Meanwhile, nine new pathogens spread by ticks and mosquitoes were discovered or introduced in that same timeframe. Beyond their impact on people, disease vectors also pose significant risks to livestock, companion animals, and wildlife. Both the underlying causes and the potential solutions for these trends are varying and complex, and they merit strong, sustained attention and support from the federal government.

The emergence and rapid spread of COVID-19 demonstrate that threats to public health are escalating in scale and severity. Like COVID-19, the spread of VBD is closely tied to increases in the speed and frequency of global travel, and most VBDs have no effective vaccines or treatments—and some have high mortality or disability rates. Furthermore, we know that VBD is exacerbated by climate change, as the ranges of insects and ticks that transmit disease expand in response to a warming climate. Supporting and expanding public health preparedness and infrastructure targeted toward VBD, particularly through vector surveillance and management, will better prepare our nation to combat a potential VBD pandemic in the future. Below are recommendations for leveraging the expertise of the entomological community to address this public health challenge.

RECOMMENDATIONS

Cases of VBD will only continue to rise without active efforts to prevent infections and protect people, pets, and livestock. To protect domestic health and productivity we recommend the following.

Expand Disease Surveillance: ESA supports expanding research in the following areas:

Increased Vector Surveillance and Systems Assessment: A sustained investment in passive and active vector-surveillance programs that are readily translatable to both policy makers and the public will help people understand what threats are present locally in real time. Additionally, more public resources are needed to prevent introduction of exotic disease-carrying arthropods at ports of entry and to build risk-mapping and habitat-assessment tools capable of providing accurate determinations of entomological risk at multiple geographic scales across diverse ecosystems.



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Creating and Promoting Markets for Tick Research Innovation: Translating tick-control technologies and promising new inventions into consumer products requires collaboration across government, industry, and research universities. Joint programs that foster dynamic partnerships between federal government, university researchers, and industry, such as the Small Business Innovative Research (SBIR) program, are needed to move patents off the shelf and into the field.

Increase Education and Citizen Engagement: New and improved systems are needed to deliver tailored messages, understand barriers to adopting prevention measures, and engage individuals on tickborne disease prevention. Greatly expanding the funding for tickborne disease prevention expertise within cooperative extension programs and for local- to national-scale civic outreach holds great promise for increasing citizen engagement and empowerment.

Support Critical Public Health Capabilities:

Robust, sustained funding for programs across the CDC is crucial in developing and maintaining readiness to respond to emerging infectious diseases, no matter their origin or vector. Unfortunately, front-line state, county, and city health departments are subject to dramatic fluctuations in funding through state and local government budgets as well as the CDC's Epidemiology and Laboratory Capacity (ELC) program funding. In 2019 the CDC was only able to fund one-third of the grants requested by the states to address VBD prevention, surveillance, and management. This is a clear hindrance to sustainable employment of highly qualified and trained entomologists and epidemiologists, who play a critical role in the vector surveillance and management. To ensure challenges can be met, public health and vector-control professionals must be consistently equipped with the resources and capacity necessary for the prevention, treatment, and control of VBD. Full funding for the ELC program can help to accomplish this goal. ESA also supports full funding for other crucial programs within the CDC's Division of Vector-Borne Diseases, including the five CDC Regional Centers of Excellence in Vector-Borne Disease.

Promote Better Federal Coordination.

To ensure that the U.S. is appropriately prepared for future threats, a comprehensive federal strategy for multi-agency investment in emerging infectious diseases—especially VBD—is required. ESA has advocated for the development of a national strategy aimed at minimizing the detrimental effects of diseases carried by ticks, and an analogous strategy could be applied to mosquito-borne diseases as well as VBD more broadly. For maximum impact, such a national strategy should be implemented across federal health, agriculture, and environmental agencies. ESA's priorities for this strategy include:

- Broadly expanding basic knowledge of tick biology through increased investment in research across funding agencies;
- Greatly enhancing vector surveillance at the local and regional levels;
- Promoting citizen engagement and education through cooperative extension programs and other civic-outreach avenues;
- Training the next generation of vector-management professionals;
- Encouraging commercialization and marketing of promising discoveries from tick and VBD science; and
- Seeking greater investment in international partnerships.

The Entomological Society of America is the largest organization in the world serving the needs of entomologists and other insect scientists. ESA stands as a resource for policymakers and the general public who seek to understand the importance and diversity of earth's most diverse life form—insects. Learn more at www.entsoc.org.

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