



Centers for Disease Control
and Prevention (CDC)
Atlanta GA 30329-4027

March 16, 2020

The Honorable Elizabeth Warren
United States Senate
Washington, DC 20515

Dear Senator Warren:

Thank you for your letter regarding the 2019 outbreak of Eastern equine encephalitis virus (EEEV). The Centers for Disease Control and Prevention (CDC) shares your concern about this rare but very serious mosquito-borne disease.

During 2003–2018, an average of eight EEEV disease cases were reported annually in the United States. In 2019, however, there were 38 confirmed cases of EEEV reported to CDC, including 15 deaths across ten states. The number of EEEV cases in 2019 represents the highest reported in more than 50 years. It is not clear why more cases were reported in 2019 than were reported in recent years; however, it is not uncommon to see spikes in the number of EEEV cases from year-to-year.

EEEV is estimated to have a 30 percent case fatality rate with more than half of survivors left with neurologic complications. Although veterinary EEEV vaccines are available for use in horses, there are no licensed vaccines or effective treatments for humans. The best way for people to protect themselves from mosquito-borne diseases such as EEEV is to use insect repellent, wear long sleeved shirts and long pants when outdoors, empty standing water around their homes, and keep mosquitoes out of their houses.

We have provided answers to your questions in an enclosure that we hope you will find helpful. If you have additional questions or concerns, please contact Jane Bigham in the CDC Washington Office at (202) 245-0600 or JBigham@cdc.gov.

Thank you for your interest in preparing communities to prevent and respond to vector-borne disease threats, such as EEEV. We are committed to working with our state and local public health partners, academic institutions, and commercial partners to decrease the impact of vector-borne diseases. A copy of this response is being sent to Senator Edward Markey.

Sincerely,

A handwritten signature in black ink that reads "Robert R. Redfield MD".

Robert R. Redfield, MD
Director, CDC

Enclosure

Responses to Questions Regarding Eastern Equine Encephalitis Virus

1. What is the CDC's understanding of factors contributing to the rise of EEE?

It is not unusual to see spikes in the number of EEEV disease cases from year-to-year. We saw similar increases in 2004-2006 and 2010-2012. For example, 2005 had 21 cases of EEEV disease. As with most mosquito-borne diseases there are several factors that contribute to higher than average annual case counts. These could include changes in the bird and mosquito populations, weather patterns, and even human behaviors, including increased awareness and testing.

2. What early-season surveillance activities is the CDC undertaking to assess the risk of EEE in 2020?

CDC routinely monitors and reports national-level surveillance data for mosquito-borne diseases, including EEEV. These data are gathered and submitted by state health departments through funding administered by CDC's Epidemiology and Laboratory Capacity for Prevention and Control of Emerging Infectious Diseases (ELC) Cooperative Agreement.

Additionally, CDC is updating its EEEV guidelines, which the agency will share with stakeholders prior to summer 2020. These guidelines will provide the most up-to-date information on public health surveillance and control techniques to local agencies responsible for maintaining vector control programs.

3. What kind of vector control support is the CDC providing to states impacted by EEE?

Supporting state and local vector-borne disease prevention and control programs is a priority for CDC, since disease cases from mosquitoes, ticks, and fleas in the United States tripled from 2004 and 2016, and state and local health departments and vector control organizations are the nation's main defense against this increasing threat.

CDC's Epidemiology and Laboratory Capacity for Prevention and Control of Emerging Infectious Diseases (ELC) cooperative agreement allows jurisdictions to design prevention and control programs that are tailored to their unique vector-borne disease threats and public health goals. In fiscal year 2019, CDC received \$49 million in requests for support from states for vector-borne disease prevention and control activities and awarded approximately \$18 million in funding to 64 states and jurisdictions, including \$551,000 to Massachusetts. CDC was also able to provide emergency funding to state health departments that requested support to respond to EEEV outbreaks. As a result, CDC provided Massachusetts with an additional \$235,000 in supplemental funding to respond to EEEV in the state.

CDC also provided individualized technical assistance through consultations on mosquito surveillance and control methods to states, including Alabama, Indiana, Massachusetts, Michigan, and Rhode Island during the 2019 outbreak.

We are continuing to work with our state and local partners throughout the year by providing funding, updated guidance, and information sharing opportunities. For example, CDC is currently working with affected states to review their historical mosquito control data to determine if there is anything we can learn and apply to control measures this year.

4. What information does CDC have on how chemicals used by states in vector control impact human safety and the environment?

State health departments and vector control districts hire licensed professionals and use EPA-registered insecticides, which have been studied for effectiveness and safety. When applied according to label instructions, EPA-registered insecticides do not pose a risk to human health or the environment.

During aerial spraying, a small amount of insecticide is sprayed over an area: about one ounce (two tablespoons) per acre, or about the size of a football field. This small amount does not pose a health risk to people or pets in the area that is sprayed.

5. What best practices does the CDC recommend to communities with regard to:

a. Preparing for future mosquito seasons,

Local and state governments would benefit from having plans in place for how they would respond to local threats, whether that's EEEV, West Nile virus, or another emerging mosquito-borne virus.

Additionally, local and state governments may benefit from having systems and tools in place to implement these plans. This includes routine mosquito and human surveillance, public awareness campaigns to promote personal protection measures, and mosquito control programs which have the ability to evaluate their control efforts.

b. Eradicating the EEE virus, and

As with other mosquito-borne diseases, it is extremely unlikely that we could eradicate EEEV. EEEV is found in the bird population. When mosquitoes feed on birds they become infected with the virus. There is no vaccine or treatment for EEEV; therefore, the best means of defense is prevention. State and local organizations can educate communities on personal protection measures as well as build vector control programs that can monitor and respond to warning signs.

c. Understanding and responding to climate change's impact on public health?

Climate change, together with other natural and human-made health stressors, influences human health and disease in numerous ways. Some existing health threats will intensify, and new health threats will emerge. Not everyone is equally at risk. Important considerations include age, economic resources, and location.¹

¹www.cdc.gov/climateandhealth/default.htm

In the U.S., public health can be affected by disruptions of physical, biological, and ecological systems, including disturbances originating here and elsewhere. The health effects of these disruptions include increased respiratory and cardiovascular disease, injuries and premature deaths related to extreme weather events, changes in the prevalence and geographical distribution of food- and water-borne illnesses and other infectious diseases, and threats to mental health.

Climate is one of the factors that influence the distribution of diseases borne by vectors (such as fleas, ticks, and mosquitoes, which spread pathogens that cause illness)². The geographic and seasonal distribution of vector populations, and the diseases they can carry, depends not only on climate but also on land use, socioeconomic and cultural factors, pest control, access to health care, and human responses to disease risk, among other factors. Daily, seasonal, or year-to-year climate variability can sometimes result in vector/pathogen adaptation and shifts or expansions in their geographic ranges. Such shifts can alter disease incidence depending on vector-host interaction, host immunity, and pathogen evolution. North Americans are currently at risk from numerous vector-borne diseases, including Lyme, dengue fever, West Nile virus disease, Rocky Mountain spotted fever, plague, and tularemia.

CDC's Climate and Health Program funds several partners through the "Building Capacity of the Public Health System to Improve Population Health through National, Nonprofit Organizations" program. Activities include establishing and convening workgroups, creating communication products and informational webinars, and providing grants to health departments.

6. What steps are the CDC taking to understand the role of climate change – including warming temperatures – in the rise of vector-borne diseases, including EEE?

In addition to the actions mentioned above, it is important to conduct research to determine how a changing climate is affecting regional patterns of risk for these diseases as defined by regional mosquito and bird species diversity and abundance. The same must be done for ticks and mammals as it relates to tickborne diseases. A long-term commitment must be maintained to mosquito and tick surveillance for the purpose of detecting and understanding the changes that occur from year-to-year and how these changes are redefining local risk. CDC is addressing these concerns through a variety of intramural research and service activities, through funding provided to state health departments through CDC's ELC cooperative agreement, and through the establishment of the Vector-Borne Diseases Regional Centers of Excellence, which were funded for the purpose of conducting applied research and for working together with state and local health departments to address regional vector-borne disease concerns.

7. What other actions can the federal government undertake to address the rise of EEE and other vector-borne diseases?

² www.cdc.gov/climateandhealth/effects/vectors.htm

The nation continues to be susceptible to existing and new vector-borne disease threats. CDC can best support states at risk for EEEV and other vector-borne diseases by continuing to provide technical assistance and increasing capacity for prevention and control within states and other U.S. jurisdictions, while identifying and disseminating new and improved tools for prevention and control.

Therefore, CDC's priorities address critical needs in the vector control system by:

- Continuing to build comprehensive programs at the federal, state, and local levels, including:
 - Developing a skilled vector workforce that can respond to the full variety of pathogens and the vectors that transmit them;
 - Supporting every state through our ELC cooperative agreement funding to ensure critical surveillance and response capacities; and
 - Supporting a selection of high-risk states to ensure access to entomological expertise and expand state activities in laboratory, case and outbreak investigations, and vector surveillance and management to identify and mobilize public health responses.

- Advancing innovation and discovery in the areas of vector-borne disease threats, such as Lyme and other tickborne diseases, West Nile virus, Zika, dengue, EEEV, and yellow fever, including disease detection, prevention, and control, by:
 - Identifying new and emerging vector-borne diseases and increasing understanding of the magnitude of existing vector-borne threats;
 - Developing cutting-edge diagnostic tools that maximize efficiency and minimize cross-reactivity for fast, accurate detection of vector-borne infections; and
 - Conducting priority research and development by supporting government, universities, and industry to develop ways to monitor and prevent insecticide resistance and foster new vector control technologies.