14-05

STATEMENT OF POLICY

Vector-Borne Diseases

Policy

The National Association of County and City Health Officials (NACCHO) strongly urges the federal government to provide sufficient funds to maintain, strengthen, and expand the surveillance, disease prevention, and research capacities necessary to identify, track, and address existing and emerging vector-borne diseases (VBDs).

NACCHO supports local public health activities to prevent, monitor, and control such diseases, including the following:

- Working collaboratively with local, state, and national partners from multiple disciplines.
- Training local health department staff to investigate VBD cases in humans and animals, collect vector samples, and perform abatement.
- Expanding laboratory capacity to develop and maintain testing capacity for established and emerging vector-borne pathogens in human, animal, and vector samples.
- Improving data collection systems for identifying and tracking VBD cases and distribution in humans and animals.
- Increasing the effective use of human and animal surveillance data to target prevention and control efforts.
- Enhancing data-sharing systems to facilitate effective communication and monitoring.
- Participating in longitudinal monitoring programs to study changes in vector distribution and density over time.
- Developing prevention and control plans to reduce the impact of established and emerging vector-borne diseases on local communities, including vulnerable populations, and to address environmental sources of emerging infectious diseases through a "One Health" approach.[1]
- Educating the public through social media, local media, and educational materials.
- Educating healthcare providers to improve VBD diagnosis and reporting.

Effectively addressing VBDs will also require consideration of related topics covered in NACCHO's policy statements Climate Change and Mosquito Control.

Justification

Vector-borne diseases are diseases transmitted by living organisms to humans and domestic animals. Common vectors include arthropods, parasites (nematodes and plasmodium), and even mammals such as rodents and raccoons. These diseases can lead to significant morbidity, including long-term sequelae, and mortality in the United States. Surveillance for these vectors and human/animal diseases is necessary for their prevention and control. There is also a critical need to maintain and strengthen local public health systems' capacity to prevent cases and contain outbreaks of VBDs through effective abatement efforts, public and provider education, and preparedness planning. Reductions in vector surveillance and prevention capacity compromise local, state, and national ability to detect changes in vector activities, as well as mitigate the impact of established and emerging vector- borne diseases on local communities.

The need for a robust vector surveillance infrastructure is critical in reducing the impact of a variety of VBDs. Lyme disease is endemic in North America and since standardized reporting began in the U.S., case counts have increased steadily. The U.S. is seeing an expansion in the geographic range of tick-borne Powassan virus. In 2012, the nation experienced one of the most intense outbreaks of West Nile virus (WNV), resulting in 286 deaths.[2] Dengue has also established itself in the continental U.S., with local transmission documented in Florida and Texas. The U.S. periodically experiences outbreaks of other endemic mosquito-borne encephalitides including Eastern Equine, LaCrosse, St. Louis, and California Group encephalitis viruses. These and other emerging vector-borne diseases pose a significant threat to public health.[4] La Crosse encephalitis virus (LACV) is most common in the eastern US (approx. 68 cases per year) and can cause severe neuroinvasive disease--most often in children under the age of 16. St. Louis encephalitis virus (SLE) can be found throughout the continental US and has seen a recent resurgence in the southwestern US. SLE has a similar ecology to WNV and has been co-circulating in areas with WNV.

In addition, the introduction of the Zika virus in the Americas in 2015 presented an extraordinary challenge for public health systems. The rapid spread of the virus in mosquitoes and its newly-detected association with severe birth defects illustrate how vector-borne diseases may spread rapidly and may change in their clinical presentation. Range expansion of medically important tick and mosquito species will also impact VBDs. After its introduction into the U.S. in the mid-1980s, *Aedes albopictus*(Asian Tiger mosquito), which can transmit several viruses including yellow fever, dengue, chikungunya, and Zika viruses, has been expanding its range throughout the southeastern U.S. into the northeast and western parts of the country.[5]

Prior to the introduction of WNV in the U.S. in 1999, there was no federal support for state or local VBD surveillance infrastructure.[6] In response to the introduction and subsequent spread of WNV, approximately $24 million federal dollars was awarded to states and the six largest cities/counties that year. A survey in 2004 showed this funding had created a robust and well-integrated national surveillance infrastructure for arthropod-borne viruses (arboviruses), a common type of VBD. The surveillance system that was developed, ArboNET, depends on state and local health departments to submit human case information, mosquito testing data, and laboratory testing data. However, from 2004 to 2012, annual federal arbovirus surveillance funding declined to $9.3 million, a reduction that negatively affected national surveillance capacity. A survey of the arbovirus surveillance infrastructure, conducted in 2013 and compared to the 2004 survey, showed substantial erosion of public health capacity to detect disease and mosquito infection and conduct essential laboratory testing.[2, 6, 7] The survey revealed that active surveillance for human cases declined by 22% and mosquito surveillance declined by 9%. Further, NACCHO's 2017 assessment, Mosquito Capabilities in the U.S., revealed that about 46% of vector control programs are not conducting routine surveillance for mosquitoes. Overall, the assessment identified 84% of vector control programs as “needing improvement”.[7,9] Reductions in mosquito surveillance affect the ability of health departments and vector control programs to understand the local and seasonal mosquito species and abundance and the presence of mosquito-borne pathogens. This data is the foundation for determining the optimal management strategies to implement and determine their effectiveness.

Well-funded programs with strong surveillance systems, local technical expertise, appropriate laboratory capacity, and established prevention programs through integrated pest management techniques are needed to prevent and control the spread of established and emerging VBDs. Given that current vector and vector-borne disease surveillance and research efforts remain underfunded [10], it is vital that additional funds be allocated to maintain, strengthen, and expand surveillance and research capacities of universities and more importantly, local districts. Reductions in public health funding compromise the capacity of local health departments and vector control programs to conduct surveillance and control of mosquitoes, rodents, and other vectors, and associated diseases.[5,6,8,11,12] The public health infrastructure must be strengthened to sustain surveillance; detect emerging diseases; and prevent disease spread through effective vector control and behavioral change strategies to protect communities against these serious and potentially devastating vector-borne diseases.

References

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Record of Action
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