Overview

The rapid spread of the potentially deadly West Nile virus has reawakened the public health effort to control mosquito-borne diseases, which were once a common scourge in many parts of the United States. West Nile virus caught many states unaware and unprepared, demonstrating the importance of responsive mosquito control programs. The slow response in some states resulted from languishing state mosquito control programs, many of which were cut back due to the lull in outbreaks that occurred in the decades leading up to the emergence of West Nile.

The risk of outbreaks caused by mosquito-borne disease has become larger due to the increase in global travel and commerce, which has improved the ease and speed with which diseases can spread. West Nile virus highlighted these risks, inspiring many states to enhance their work on mosquito control. Still, reduced mosquito control funding at both the federal and state levels has made state efforts more difficult.

Mosquito-Borne Disease in the United States

Mosquito-borne diseases such as yellow fever and malaria have existed in America since colonial times. Yellow fever claimed nearly 100,000 lives in the 18th century, and malaria was still common in the southeastern part of the country through the 1940s. State and local mosquito control efforts, combined with other public health interventions, helped to eradicate these lethal diseases.

Still, many different types of mosquito-borne illnesses remain in the United States, the most common being West Nile virus. West Nile was first documented in Africa in 1937, and the first U.S. case occurred in 1999. By 2004, West Nile virus had spread to 48 states. In 2005, nearly 3000 cases of West Nile were reported; 116 of those cases resulted in fatalities. The average medical cost per case is $35,000.

Other mosquito-borne illnesses that are found in the United States include eastern and western equine encephalitis, St. Louis encephalitis, dengue fever and malaria, although cases of dengue fever and malaria are rare, they are being seen for the first time in many years, probably due to the upsurge in cases worldwide.

The Emerging Threat

Increasing global commerce, the recurrence of once-eradicated mosquito-borne diseases and the emergence of new ones, contribute to the increased risk of outbreaks in the United States. Disease activity in poorer countries—many of which are unable to conduct effective mosquito control due to political upheaval, uncontrolled population growth, poverty, and a lack of basic public health infrastructure and sanitation—add to this risk. Mosquito-borne illness remains a major health threat in much of the developing world; dengue fever and malaria cause more than 2.5 million deaths each year.

Climate, which plays a critical role in mosquito ecology, may compound the threat. Scientists predict that rising global temperatures will exacerbate the spread of disease-carrying mosquitoes.

Federal Action

The Centers for Disease Control and Prevention (CDC) is the main federal agency that works on mosquito control, providing technical assistance and funding to state and local governments. The U.S. Department of Agriculture (USDA) also is involved in controlling mosquito-borne illness, since many mosquito-borne diseases can infect and seriously threaten the health of livestock.

In 2003, recognizing the growing hazard that emerging mosquito-borne diseases pose to public health, Congress passed the Mosquito Abatement for Safety and Health Act (HR 342). The bill authorized CDC to provide grants and technical assistance to states and political subdivisions to prevent mosquito-borne disease, permitting appropriations of $100 million for CDC through 2006. Congress never appropriated funds to support these efforts, however.

State Action

The lack of mosquito-borne disease outbreaks previous to West Nile led many states and localities to cut or elimi-
nate their mosquito control programs, which weakened their ability to respond to mosquito-born disease outbreaks.7

State lawmakers, recognizing the need to improve the public health response to newly emerging mosquito-borne diseases, have introduced 116 bills relating to mosquito control and have enacted 27 since 2003. Enacted legislation includes bills to create mosquito control districts (local districts that may conduct mosquito control and levy taxes to pay for these measures); appropriate money to fund local mosquito control efforts; and increase in efforts to reduce the threat of West Nile virus through mosquito control, disease surveillance and research.

To raise money for mosquito control efforts, some states are collecting fees when car tires are sold or disposed of, since waste car tires often become breeding sites for mosquitoes. Illinois S.B. 361, enacted in 2003, increases the fee charged for the sale of tires and adds it to the Emergency Public Health Fund. The Department of Public Health uses this fund to help localities fight West Nile virus.

In 2004, South Dakota enacted HB 1065, creating a grant program to support integrated local mosquito control and prevent the spread of disease. It allowed the Department of Health to provide municipalities and counties with funds that could be to purchase equipment and materials necessary for mosquito prevention and control. The bill requires municipalities or counties to provide a written mosquito control plan to receive a grant. The bill states that these measures are necessary for the immediate preservation of public health and declares an emergency.

Bills have been enacted to deal with authorizing mosquito control activities.

Arkansas S.B. 583, enacted in 2005, authorizes counties to regulate unsanitary conditions that may promote the breeding of mosquitoes and allows counties to collect fees and place liens to recover unpaid costs.

States also are active in efforts to enhance surveillance. Arizona currently is considering H.B. 2036, which requires the director of the Department of Health Services to submit information on West Nile virus from counties with populations greater than 175,000 people. The director must report information to the director of the Legislative Council on human cases and human deaths from West Nile virus, as well as cases in animals.

On the Horizon

States continue to struggle with balancing needed public health protection and available resources. Pressures to maintain or increase surveillance and control of mosquito are likely to continue, given the risk of emerging mosquito-borne disease, and that West Nile virus is likely to be in the United States for a long time.

Resources


Notes

2. One thousand to 2,000 malaria cases still occur each year, but 99 percent of cases are thought to have been acquired abroad; www.cdc.gov/malaria/history/eradication_us.htm.
3. CDC, Map of West Nile Virus Activity, 2005; www.cdc.gov/ncidod/dvbid/westnile/surv&control/CaseCount05_detailed.htm.
5. CDC, National Center for Infectious Diseases, “The Impact of Malaria, a Leading Cause of Death Worldwide,” (September 13, 2004), www.cdc.gov/Malaria/impact/index.htm.
7. Madigan.

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