WEST NILE VIRUS

WHAT IS THE PUBLIC HEALTH ISSUE?

The human and animal epidemic of West Nile encephalitis, which began in the northeastern United States in the summer and fall of 1999 and has since spread coast-to-coast, underscores the ease with which emerging infectious pathogens can be introduced into new areas. The persistence of virus activity in the United States over the past 5 years indicates that West Nile virus (WNV) has become established in North America. In 2002, WNV caused the largest ever human flaviviral epidemic in recent U.S. history, reinforcing the need to rebuild the public health infrastructure to deal with vectorborne diseases in this country. Extensive severe disease activity continued in 2003, expanding significantly westward, and increased availability of commercial testing lead to the identification of far greater number of West Nile Fever (less severe disease) and the total of human cases nearing 9,000.

WHAT HAS CDC ACCOMPLISHED?

- *Surveillance and Response:* CDC evaluates, revises, and publishes national guidelines for surveillance, prevention, and control of WNV on a continuing basis, issuing the third update during 2003. Using a national electronic surveillance system (ArboNet), CDC works with local and state health departments to track WNV infections in humans, birds, mosquitoes, horses, and other animals. Data from ArboNet guided prevention and control activities at the state and local level during 2003. Continually updated information on WNV surveillance is available at www.cdc.gov/westnile and at www.westnilemaps.usgs.gov.
- *Applied Research:* CDC developed/implemented new laboratory tests to detect the presence of WNV antigen in human, avian, veterinary, and mosquito specimens. CDC continued to monitor the genetic evolution of WNV worldwide and identified novel routes of WNV infection, including tissue transplantation and blood transfusion. CDC continued funding 13 universities and health facilities for applied research to better understand WNV biology. CDC scientists continued work to further characterize the behavior of the *Culex* vector mosquito and identify the most effective mosquito control measures.
- *Infrastructure and Training:* CDC provided funding to 56 state and local health departments to enhance epidemiologic and laboratory capacity for surveillance of and response to WNV infection and other arboviral diseases. This funding improves the overall readiness to response to vector-borne diseases. CDC also funds cooperative agreements for training in medical arbovirology at four universities. Formal training courses have been held in laboratory diagnosis of WNV infection and in medical entomology. CDC has sponsored 5 national meetings on WNV.
- *Prevention and Control:* CDC has promoted an integrated strategy for prevention and control of WNV, including large-scale emergency plans for mosquito control to be used by states in response to a large human outbreak. CDC funded and collaborated in the development of informational and educational materials for the public, specific audiences, and healthcare workers. Testing of all blood donations in the United States began in July 2003 to respond to the risk of WNV transmission through blood transfusion and organ donation identified in 2002. CDC worked with the Food and Drug Administration, the Health Resources and Services Administration, blood collection agencies, state and local health departments, and the pharmaceutical industry to implement this testing, which has reduced the risk of transfusion-associated WNV infection substantially by removing hundreds of units of potentially infectious blood products donated by asymptomatic donors.

WHAT ARE THE NEXT STEPS?

WNV is now established in North America, with a geographic range now stretching from coast-to-coast and into Latin America, the Caribbean, and Canada. Effective systems are needed to ensure expanded monitoring for WNV and other arboviral diseases in North America and further development of prevention and control measures, including integrated pest management, public education, optimal mosquito control measures, vaccines, and antiviral therapy. Further research on the basic biology of the virus and its natural ecology is also being pursued.

For additional information on this or other CDC programs, visit www.cdc.gov/program *January 2004*