Review article describes epidemiology, characteristics and prevention of West Nile virus

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Lyle R. Petersen, M.D., M.P.H., of the Centers for Disease Control and Prevention, U.S. Public Health Service, Department of Health and Human Services, Fort Collins, Colo., and colleagues conducted a review of the medical literature and national surveillance data to examine the ecology, virology, epidemiology, clinical characteristics, diagnosis, prevention, and control of West Nile virus.

"West Nile virus has become endemic in all 48 contiguous United States as well as all Canadian provinces since its discovery in North America in New York City in 1999. It has produced the 3 largest arbovirai neuroinvasive disease (encephalitis, meningitis, or acute flaccid paralysis) outbreaks ever recorded in the United States, with nearly 3,000 cases of neuroinvasive disease recorded each year in 2002, 2003, and 2012,"according to background information in the article.

The authors found that since 1999, there have been 16,196 human neuroinvasive disease cases and 1,549 deaths reported; more than 780,000 illnesses have likely occurred. Incidence is highest in the Midwest from mid-July to early September. "West Nile fever develops in approximately 25 percent of those infected, varies greatly in clinical severity, and symptoms may be prolonged. Neuroinvasive disease (meningitis, encephalitis, acute flaccid paralysis) develops in less than 1 percent but carries a fatality rate of approximately 10 percent. Encephalitis has a highly variable clinical course but often is associated

with considerable long-term morbidity. Approximately two-thirds of those with paralysis remain with significant weakness in affected limbs."

The authors add that diagnosis usually rests on detection of IgM antibody in serum or cerebrospinal fluid. No licensed human vaccine exists. "Prevention uses an integrated pest management approach, which focuses on surveillance, elimination of mosquito breeding sites, and larval and adult mosquito management using pesticides to keep mosquito populations low. During outbreaks or impending outbreaks, emphasis shifts to aggressive adult mosquito control to reduce the abundance of infected, biting mosquitoes. Pesticide exposure and adverse human health events following adult mosquito control operations for West Nile virus appear negligible."

"The resurgence of West Nile virus in 2012 after several years of decreasing incidence in the United States suggests that West Nile virus will continue to produce unpredictable local and regional outbreaks," the researchers write. "… sustainable community-based surveillance and vector management programs are critical, particularly in metropolitan areas with a history of West Nile virus and large human populations at risk."

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