

City University of New York (CUNY)

## CUNY Academic Works

---

Publications and Research

CUNY Graduate School of Public Health &  
Health Policy

---

1999

### Update: West Nile Virus Encephalitis – New York, 1999

Centers for Disease Control and Prevention

Denis Nash

*CUNY School of Public Health*

[How does access to this work benefit you? Let us know!](#)

More information about this work at: [https://academicworks.cuny.edu/sph\\_pubs/21](https://academicworks.cuny.edu/sph_pubs/21)

Discover additional works at: <https://academicworks.cuny.edu>

---

This work is made publicly available by the City University of New York (CUNY).

Contact: [AcademicWorks@cuny.edu](mailto:AcademicWorks@cuny.edu)

*Poliomyelitis Eradication — Continued*

eradication has been the participation of eight officers in the CDC Stop Transmission of Polio (STOP) initiative. STOP mobilizes additional trained personnel for 3-month polio eradication assignments in high-priority countries. STOP officers in Nepal worked with RSOs to strengthen AFP surveillance, plan NIDs and sub-NIDs, and mobilize other sectors in support of polio eradication.

Fewer than 440 days remain to reach the target for global polio eradication by the end of 2000. Substantial and rapid improvement in NIDs and AFP surveillance has brought Nepal closer to the goal of eradication\*\*. Priorities for polio eradication in Nepal in 1999 and 2000 include 1) execution of high-quality NIDs and supplemental vaccination campaigns targeting high risk areas and populations (five monthly rounds will be synchronized with India during November 1999–March 2000); 2) maintenance of sensitive AFP surveillance, especially in the densely populated districts bordering India; and 3) improving routine OPV3 coverage.

*References*

1. World Health Assembly. Global eradication of poliomyelitis by the year 2000. Geneva, Switzerland: World Health Organization, 1988; resolution no. 41.28.
2. Rai C, Amornkul PN, Bohara R, et al. Update on polio eradication: global and South-East Asia regional status and progress in Nepal. *Nepal Medical College Journal* 1999;1:57–61.
3. Department of Health Services, His Majesty's Government of Nepal, Ministry of Health. Annual report. Kathmandu, Nepal: Ministry of Health, 1997–1998.
4. United Nations Children's Fund, World Health Organization, Child Health Division, Department of Health Services, His Majesty's Government of Nepal, Ministry of Health. Routine immunization and NID coverage survey report 1998. Kathmandu, Nepal: Ministry of Health, 1999.
5. CDC. Progress toward global poliomyelitis eradication—1997–1998. *MMWR* 1999;48:416–21.
6. CDC. Progress toward poliomyelitis eradication—South East Asia Region, 1997–1998. *MMWR* 1999;48:230–9.
7. CDC. Progress toward poliomyelitis eradication—India, 1998. *MMWR* 1998;47:778–81.
8. CDC. Progress toward poliomyelitis eradication—Bangladesh, 1995–1997. *MMWR* 1998;47:31–5.

\*\*The polio eradication initiative in Nepal is supported by His Majesty's Government of Nepal, WHO, Rotary International, United Nations Children's Fund, U.S. Agency for International Development, the governments of Norway and Japan, and CDC.

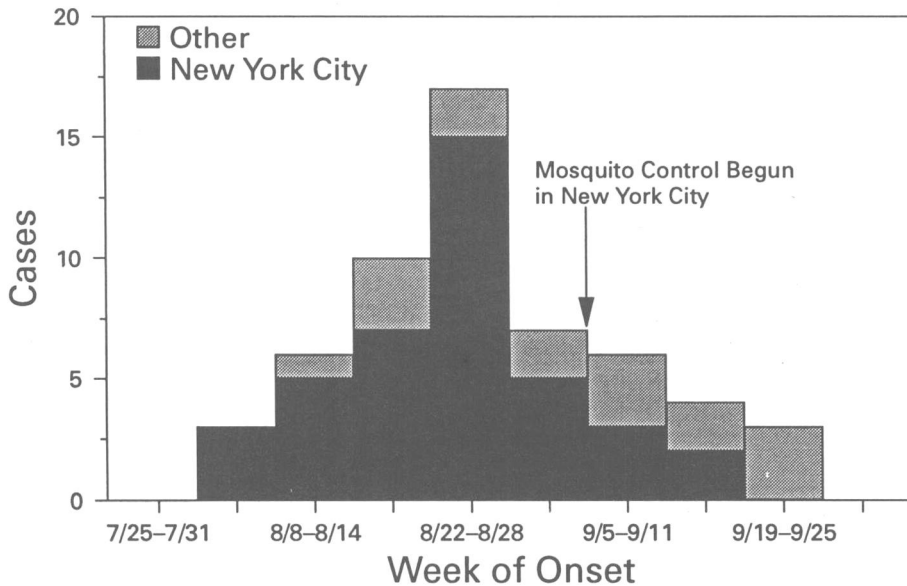
**Update: West Nile Virus Encephalitis — New York, 1999**

The West Nile virus (WNV) encephalitis outbreak continues to wane in the Northeast with the onset of cooler temperatures and continued vector-control operations. This report updates the progress of the ongoing investigation. Since the last published update (1), five additional domestic human cases and one international case have been identified. As of October 19, 56 (31 confirmed and 25 probable) cases of WNV infection have been identified, including seven deaths (Figure 1). The date of onset of the latest cases was September 22. The international case was a Canadian citizen who had visited the New York City (NYC) area in late August who had onset of fatal encephalitis on September 5. Active surveillance for human encephalitis cases in Connecticut and New Jersey has not detected any WNV cases.

Surveillance for WNV in mosquitoes and birds continues. As of October 19, 11 pools collected during September 12–October 4 of *Culex* spp. mosquitoes, positive for WNV, have been identified from NYC and Nassau and Suffolk counties. Pools of

West Nile Encephalitis — Continued

**FIGURE 1. Number of seropositive cases of West Nile virus, by week of onset — New York, 1999**



*Culex* and *Aedes vexans* mosquitoes collected during early to mid-September in Hudson County, New Jersey, tested positive for WNV by reverse transcriptase polymerase chain reaction (RT-PCR). Birds that tested positive for WNV now have been identified by RT-PCR on postmortem brain tissue from New York (NYC boroughs of Bronx, Brooklyn, Manhattan, Queens, and Staten Island; and Nassau, Orange, Rockland, Saratoga, Suffolk, and Westchester counties), New Jersey (Bergen, Burlington, Essex, Hudson, Hunterdon, Middlesex, Monmouth, Morris, Passaic, Somerset, Union, and Warren counties), and Connecticut (Fairfield County). In addition, postmortem brain tissue from birds from Fairfield and New Haven counties, Connecticut, have been reported as positive in culture for WNV by the Connecticut Department of Health. Although most WNV-positive birds have been American crows, infections also have been confirmed in other native species, including the ring-billed gull, yellow-billed cuckoo, rock dove, sandhill crane, fish crow, blue jay, bald eagle, laughing gull, black-crowned night heron, mallard, American robin, red-tailed hawk, and broad-winged hawk.

Laboratory studies conducted at CDC have identified the etiologic agent responsible for the human arboviral encephalitis outbreak in the NYC area as WNV. Confirmation of the genetic identity as WNV has been performed independently by collaborators at the United States Army Medical Research Institute for Infectious Diseases. WNV-specific gene sequences have been amplified by RT-PCR performed on RNA extracted from autopsy specimens (six case-patients). Sequences of genome fragments of WNV isolated from dead birds and mosquitoes are identical to gene sequences from the human autopsy specimens. Antigenic mapping of these isolates

*West Nile Encephalitis — Continued*

has been performed using a panel of monoclonal antibodies (Mabs) developed by CDC or provided by collaborators at the University of Queensland, Australia. These envelope (E)-glycoprotein specific Mabs, capable of distinguishing WN, Kunjin, and St. Louis encephalitis viruses, confirmed the sequence identification of these isolates as WNV.

*Reported by:* A Fine, MD, M Layton, MD, J Miller, MD, D Cimini, MPH, MC Vargas, DVM, A Inglesby, MD, the New York City Outbreak Investigation Team, N Cohen, MD; I Weisfuse, MD; A Ramon, MD, I Poshni, PhD, H Stirling, MPH, New York City Dept of Health; T McNamara, DVM, Wildlife Conservation Society, New York City; A Huang, MD, A Rosenberg, MD, P Yang-Lewis, MPH, HN Adel, MD, Westchester County Health Dept, New Rochelle; M Sherman, G Terillion, B Smith, R Porter, A Greenberg, MD, KA Gaffney, MD, Nassau County Dept of Health and Public Works; A Novello, MD, D White, PhD, D Morse, MD, K Spitalny, MD, R Gallo, S Wong, MD, L Grady, MD, M Eidson, DVM, B Wallace, MD, P Smith, MD, State Epidemiologist, New York State Dept of Health. M Cartter, MD, R Nelson, DVM, J Hadler, MD, State Epidemiologist, Connecticut Dept of Public Health; T Andreadis, PhD, Connecticut Agricultural Experiment Station. J Blumenstock, J Degraaf, F Sorhage, DVM, C Campbell, DVM, J Brook, MD, M Gerwell, MD, D Adams, K Bruder, R Kent, R Eisner, DVM, N Halpern, DVM, New Jersey Dept of Agriculture; D Roscoe, DVM, New Jersey Dept of Environmental Protection; E Bresnitz, MD, State Epidemiologist, New Jersey Dept of Health and Senior Svcs. W Crans, PhD, Rutgers Univ, New Brunswick, New Jersey. J Mackenzie, PhD, R Hall, PhD, J Sherret, MSc, Univ of Queensland, Australia. H Artsob, PhD, Laboratory Centre for Disease Control, Health Canada. J Smith, PhD, M Parker, PhD, K Steele, DVM, United States Army Medical Research Institute for Infectious Diseases; National Veterinary Svcs Laboratories, Animal and Plant Health Inspection Svc, US Dept of Agriculture, Ames, Iowa. Infectious Disease Pathology Activity, Div of Viral and Rickettsial Diseases, National Center for Infectious Diseases; Arbovirus Diseases Br, Div of Vector-Borne Infectious Diseases, National Center for Infectious Diseases; and EIS officers, CDC.

**Editorial Note:** The dates of onset of illness for laboratory-positive cases of WNV infection suggest that the outbreak peaked in late August. There have been no recognized cases of WNV infection with an onset date after September 22. WNV encephalitis has an incubation period of 5–15 days. The latest cases occurred outside NYC in Nassau and Westchester counties, which implemented mosquito-control measures later than NYC. Collectively, these data suggest that control measures, combined with cooler temperatures, have been effective in reducing the transmission cycle in nature and limiting further illnesses in humans. However, it is important to continue to recommend personal protective measures during outdoor activity at dusk and at night until the onset of cold weather in the affected areas (1).

The identification of WNV in birds from Orange and Saratoga counties, New York City, and Burlington County, New Jersey, may represent an extension northward and southward of the known area of natural transmission between birds and mosquitoes, but for this to be the case, either demonstration of WNV in vector mosquito populations or demonstration of neutralizing antibodies against WNV in resident birds is needed because these birds may have been infected elsewhere. The current known geographic distribution of infected dead birds is in counties surrounding the western half of Long Island Sound.

Serum samples collected from migrant and resident birds in several states will be analyzed for antibody to WNV. States included in this survey are New York, New Jersey, Maryland, Virginia, North Carolina, South Carolina, Georgia, and Florida. Collaborators in this survey include university ornithologists, state wildlife biologists, and state health departments. In addition, wildlife and health officials in all mid-Atlantic and southeastern states have been alerted to investigate reports of unusual clusters of dead birds.

*(Continued on page 955)*

*West Nile Encephalitis — Continued*

All state epidemiologists have been informed of the characteristics of this outbreak and encouraged to enhance surveillance for cases of human encephalitis. Monitoring of mosquitoes and birds has been increased in several states with existing vector-control programs. Training to institute programs for arbovirus and mosquito vector surveillance will be offered to states without programs, beginning with Atlantic coast states. In addition, the emerging infections sentinel networks coordinated by the Infectious Diseases Society of America (IDSA EIN) and the International Society of Travel Medicine (GeoSentinel) are assisting case-finding efforts to define the extent of the outbreak in the United States.

A previous publication indicated that the New York virus was more closely related to Kunjin virus (2). Data in this report based on phylogenetic analysis comparing published E-glycoprotein sequences from WNVs and other flaviviruses, including Kunjin, St. Louis encephalitis, and Japanese encephalitis indicate that the New York virus is WN. Complete genome sequencing of multiple WNV isolates is in progress.

*References*

1. CDC. Update: West Nile-like viral encephalitis—New York, 1999. *MMWR* 1999;48:890–2.
2. Briese T, Jia XY, Huang C, Grady LJ, Lipkin WI. Identification of a Kunjin/West Nile-like flavivirus in brains of patients with New York encephalitis [Letter]. *Lancet* 1999;354:1261–2.

*Notice to Readers***Update: Changes to *MMWR*  
Continuing Education Data Management System**

*MMWR Recommendations and Reports* first published a Continuing Education (CE) component on October 16, 1998. Since then, eight additional CE programs have been published in *MMWR Recommendations and Reports* to provide continuing medical education (CME), continuing nursing education (CNE), and continuing education unit (CEU) credits for physicians, nurses, and other health-care professionals at no cost to the user. Approximately 35,000 examinations have been submitted in print or electronically by *MMWR* readers. Because of the unexpectedly large response to the program, reviewing print examinations and mailing certificates to *MMWR* readers have been delayed.

To address the backlog in processing previously submitted examinations, and to effectively manage a program of this size, *MMWR* has installed a new examination management system. The new system speeds processing of examinations submitted by mail and allows the user to complete tests and receive credit through the World-Wide Web (<http://www2.cdc.gov/mmwr/cme/conted.html>). To reduce the costs of this free service, *MMWR* readers are encouraged to use the online examinations. The new system will require prior users of the online system to re-register. Users who registered and took examinations online before October 21, 1999, will not be able to view their complete transcripts until the old database is merged with the new database, which should be completed by January 2000. Questions concerning the change should be sent by e-mail to the continuing education coordinator at [mmwrce@cdc.gov](mailto:mmwrce@cdc.gov).