

TO: Kris Balderston/Irma Martinez (456-2525)
Chris Jennings/Devorah Adler (456-5557)
Maria Echaveste/Marge Tarmey (456-1907)

FROM: Liz Summy
Deputy Chief of Staff, HHS
690-7431

RE: Daily Update + NNWR

Pages: _____ (Including Cover)

WEST NILE-LIKE VIRUS OUTBREAK

**New York City, New York State, Connecticut, and New Jersey
Prepared by the Centers for Disease Control and Prevention (CDC)
October 7, 1999**

- As of October 7, four additional human cases from New York (three in New York City and one in Westchester County) were laboratory-confirmed for West Nile-like infection; the number of cases is now 54. One additional death (in Nassau County, NY) has occurred bringing the total number of deaths to six.
- West Nile-like virus has been identified in 55 birds collected in the Bronx, Brooklyn, Staten Island and Queens in New York City; Nassau, Rockland, Suffolk, and Westchester counties in New York; Bergen, Essex, Middlesex, and Union counties in New Jersey; and in the cities of Fairfield, Greenwich, Stamford, Westport, and New Haven, Connecticut.
- The first positive mosquito pool from Nassau County, NY has been confirmed as positive for West Nile-like virus. To date, positive mosquito pools have been confirmed from the Bronx, Queens and Brooklyn, NY.
- New York City's anonymous serosurvey of households in Queens was completed on October 6.
- A *Morbidity and Mortality Weekly Report (MMWR)* was published on October 1, 1999 and can be viewed: <http://www.cdc.gov/epo/mmwr/preview/mmwrhtml/mm4838a1.htm>
An updated article will be published in the *MMWR* on Friday, October 8 (copy attached).
Note: The number of confirmed West Nile-like Virus encephalitis cases and deaths have increased since this *MMWR* was published.
- Information on the outbreak is available at: <http://www.cdc.gov/od/oc/media/archives.htm>.

CDC FINAL
Centers for Disease Control and Prevention

October 8, 1999 / Vol. 48 / No. 39

MMWRTM

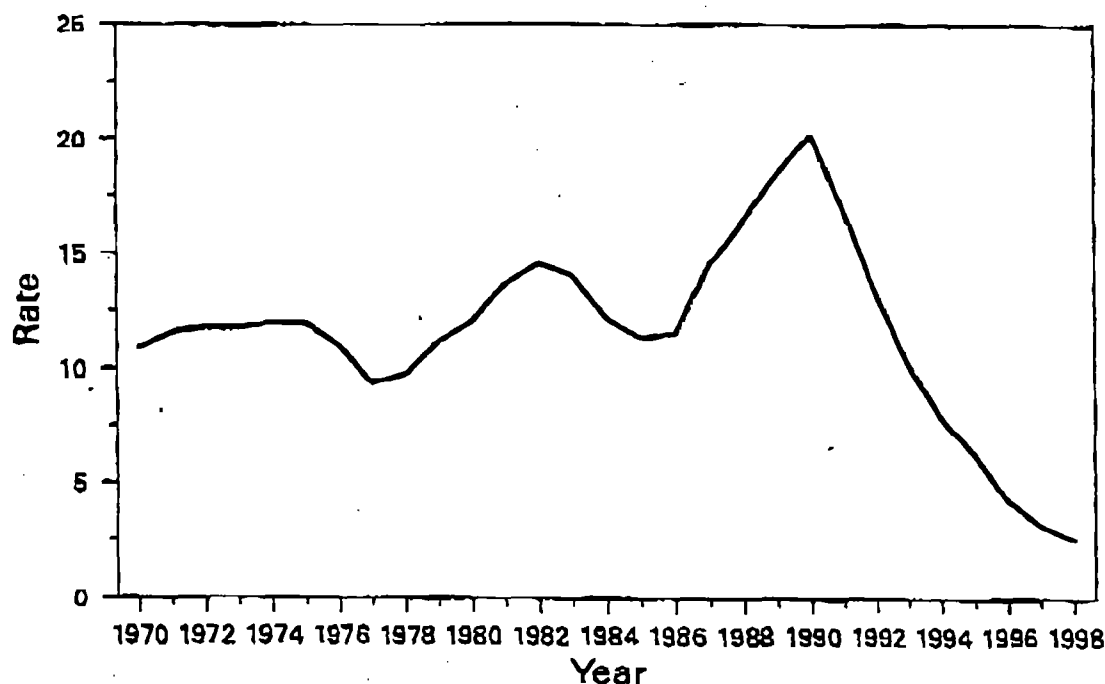
MORBIDITY AND MORTALITY WEEKLY REPORT

- 873 Primary and Secondary Syphilis — United States, 1998
- 878 Progress in Reducing Risky Infant Sleeping Positions — 13 States, 1996-1997
- 883 Update: Influenza Activity — Worldwide, May-September 1999
- 886 Reasons Reported by Medicare Beneficiaries for Not Receiving Influenza and Pneumococcal Vaccinations — United States, 1996
- 890 Update: West Nile-Like Viral Encephalitis — New York, 1999

Primary and Secondary Syphilis — United States, 1998

Rates of primary and secondary (P&S) syphilis have been declining in the United States since the last national epidemic in 1990 (Figure 1) (7). Syphilis causes substantial morbidity and mortality in the form of cardiac and neurologic disease, stillbirth and developmental disability from congenital syphilis, and by facilitating transmission of human immunodeficiency virus (2,3). Syphilis is both preventable and curable and has been successfully controlled in most developed countries (4). In the United States, declines in P&S syphilis have been followed by epidemics occurring approximately every 7-10 years. During 1960-1990, these cyclical epidemics resulted in

FIGURE 1. Rates* of primary and secondary syphilis, by year — United States, 1970-1998



*Per 100,000 population.

U.S. DEPARTMENT OF HEALTH & HUMAN SERVICES

Influenza and Pneumococcal Vaccinations — Continued

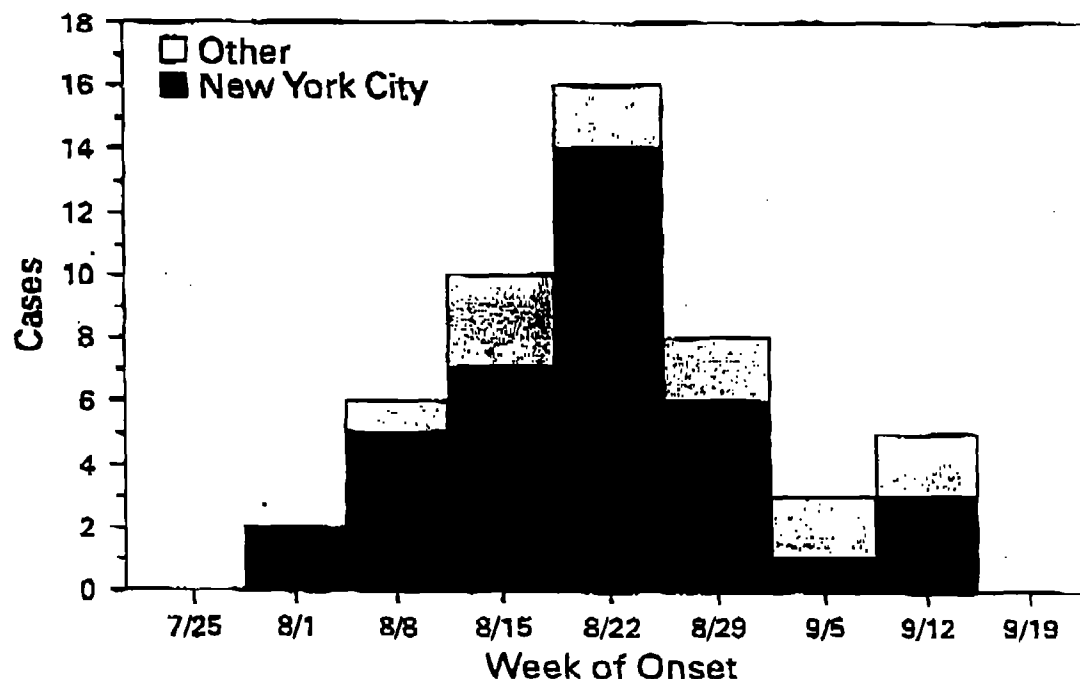
6. CDC. Vaccination levels among Hispanic and non-Hispanic whites aged ≥65 years—Los Angeles County, California, 1996. *MMWR* 1997;46:1165–8.
7. CDC. Adult immunization: knowledge, attitudes, and practices—DeKalb and Fulton counties, Georgia, 1988. *MMWR* 1988;37:657–61.
8. CDC. Influenza vaccination status of persons aged 65–79 years—Allegheny County, Pennsylvania, February–March 1997. *MMWR* 1998;47:1094–7.
9. MacDonald RM, Baken L, Nelson A, Nichol KL. Validation of self-report of influenza and pneumococcal vaccination status in elderly outpatients. *Am J Prev Med* 1999;16:173–7.
10. CDC. Vaccine-preventable diseases: improving vaccination coverage in children, adolescents, and adults. A report on recommendations of the Task Force on Community Preventive Services. *MMWR* 1999;48(no. RR-8).

Update: West Nile-Like Viral Encephalitis — New York, 1999

The outbreak of human arboviral encephalitis attributable to a mosquito-transmitted West Nile-like virus (WNLV) continues to wane in the Northeast (Figure 1). As of October 5, the number of laboratory-positive cases had increased to 50 (27 confirmed and 23 probable), including five deaths. The increase in cases is mainly a result of completed retesting with West Nile virus antigen of specimens previously tested with the related St. Louis encephalitis virus antigen and to intensive retrospective case finding in the ongoing epidemiologic investigations (1,2).

Of the 50 case-patients, none had onset of illness after September 17. Thirty-eight resided within boroughs of New York City (NYC): 26 from Queens, nine from the Bronx, two from Manhattan, and one from Brooklyn. An additional 12 cases were reported from the adjacent counties of Westchester (eight) and Nassau (four). In NYC, the earliest laboratory-positive case occurred in a patient on August 4, followed by

FIGURE 1. Seropositive cases of West Nile-like virus, by week of onset — New York, 1999



West Nile-Like Viral Encephalitis — Continued

11 cases in patients from Queens with onset dates ranging from August 5 to August 18.

The association of WNLV with deaths in crows and domestic and exotic birds was confirmed during September. As a result, CDC, state wildlife veterinarians, and an expanding group of federal agencies are using deaths in crows as sentinel events to define the current geographic distribution of mosquitoes and birds infected with WNLV (1). As of October 5, results from selected bird tissue samples tested indicate that WNLV has been identified from 41 avian tissue specimens collected in NYC; Nassau, Suffolk, Rockland, and Westchester counties in New York; Fairfield County, Connecticut; and Bergen, Union, Middlesex, and Essex counties in New Jersey. No human cases of encephalitis attributable to WNLV have been reported from either Connecticut or New Jersey. Pools of *Culex* mosquitoes collected in localized areas of Queens, Brooklyn, and the Bronx in mid-September and a pool of *Culex pipiens* collected from Nassau County in late September have been positive for WNLV by reverse transcriptase polymerase chain reaction testing. One pool of *Culex pipiens* and one pool of *Aedes vexans* mosquitoes collected from a single trap in Greenwich, Connecticut, on September 13 yielded isolates of WNLV.

Reported by: A Fine, MD, M Layton, MD, J Miller, MD, D Cimini, MPH, MC Vargas, DVM, A Inglesby, MD, A Labowitz, K Bornschlegel, MPH, B Maldin, E Samoff, MPH, D Haddow, the New York City Outbreak Investigation Team, S Mullin, MSW, J Gadd, MPP, E Giebelhaus, MPP, L Mascuch, MSW, A Sher, M Foggin, BJ Mojica, N Cohen, MD, I Weisfuse, MD, R Bhalla, MD, E Lee, MD, D Malebranche, MD, G Sacajiu, MD, A Sharma, MD, M Eisenberg, A Ramon, MD, I Poshni, PhD, H Stirling, MPH, A Goldberg, New York City Dept of Health; J Hauer, MHS, Mayor's Office of Emergency Management, New York City; A Huang, MD, A Rosenberg, MD, P Yang-Lewis, MPH, HN Adel, MD, Westchester County Health Dept, New Rochelle; 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 Carter, MD, R Nelson, DVM, J Hadler, MD, State Epidemiologist, Connecticut Dept of 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 Halperin, DVM, D Roscoe, DVM, E Brasnitz, MD, State Epidemiologist, New Jersey Dept of Health and Senior Svcs, W Crans, PhD, Rutgers Univ, New Brunswick, New Jersey; US Geologic Survey, Animal Plant and Health Inspection Svc, US Dept of Agriculture; Div of Applied Public Health Training, Epidemiology Program Office; Infectious Disease Pathology Activity, Div of Viral and Rickettsial Diseases, and Arbovirus Diseases Br, Div of Vector-Borne Infectious Diseases, National Center for Infectious Diseases; and EIS officers, CDC.

Editorial Note: Human cases of encephalitis attributable to WNLV should continue to decline in areas where WNLV activity has been documented because of the application of adulticidal and larvicidal mosquito-control compounds; however, persons in these areas should continue to use personal protective measures, including reducing outdoor exposures at dusk and at night; wearing long-sleeved shirts and pants; and applying to skin and clothing DEET-containing mosquito repellants according to label directions (1). Shorter days and the onset of colder weather eventually will lead to major declines in vector mosquito populations and will reduce human risk for exposure.

Confirmation that these WNLVs are virulent in a wide range of domestic and exotic birds has led to the formation of a cooperative federal working group. This working group, in cooperation with state and local health departments, will attempt to define the extent to which WNLVs are distributed in mosquito and bird populations outside the Northeast.

West Nile-Like Viral Encephalitis — Continued

The appearance of WNLV in the Western Hemisphere will necessitate enhanced vigilance for this virus during the transmission seasons for the next several years. Enhanced human surveillance for West Nile-like encephalitis will be a fundamental part of determining geographic distribution. To assist states in augmenting surveillance, CDC has distributed surveillance guidelines to state epidemiologists and state health laboratory directors. The guidelines include early warning tools for surveillance of arbovirus activity in nature, such as mosquito trapping for virus isolation and avian serologic and viral surveillance (3).

References

1. CDC. Outbreak of West Nile-like viral encephalitis—New York, 1999. *MMWR* 1999;48:871-4.
2. CDC. Case definitions for infectious conditions under public health surveillance. *MMWR* 1997; 46(no. RR-10):12-3.
3. CDC. Guidelines for arbovirus surveillance in the United States, 1993. Fort Collins, Colorado: US Department of Health and Human Services, CDC, 1994.

Notice to Readers**International Infection Control Week — October 17-23, 1999**

Each year, approximately 2 million health-care-associated infections occur in the United States. As many as one third of these infections is preventable, but prevention requires vigilance on the part of the entire health-care team. International Infection Control Week (October 17-23), observed by health-care facilities around the world, is intended to heighten public awareness of and professional commitment to, infection control. During the fall and winter months, infection-control professionals worldwide emphasize efforts to vaccinate persons against diseases such as influenza and pneumonia while confronting antimicrobial resistance in pathogens and emerging pathogens in the health-care setting. The Association for Professionals in Infection Control and Epidemiology has created an Infection Control Week Resource Kit addressing issues such as needlestick injuries, vaccinations, food safety, Lyme disease, and sexually transmitted diseases. This free kit is available on the World-Wide Web at <http://www.apic.org>*. Information about health-care-associated diseases also is available on the website of CDC's Hospital Infections Program, National Center for Infectious Diseases, at <http://www.cdc.gov/ncidod/hip>.

*References to sites of non-CDC organizations on the World-Wide Web are provided as a service to *MMWR* readers and do not constitute or imply endorsement of these organizations or their programs by CDC or the U.S. Department of Health and Human Services. CDC is not responsible for the content of pages found at these sites.

Erratum: Vol. 48, No. 38

In the box, "National Child Health Month—October 1999," on page 857 in the second paragraph, the last three World-Wide Web sites contained errors. The correct web sites are <http://salud.unm.edu/asthma/chm/Childmo.htm>; <http://www.census.gov/population/www/estimates/uspope.html>; and <http://www.hrsa.dhhs.gov/childhealth/outreach.htm>.

TO: Kris Balderston/Irma Martinez (456-2525)
Chris Jennings/Devorah Adler (456-5557)
Maria Echaveste/Marge Tarmey (456-1907)

FROM: Liz Summy
Deputy Chief of Staff, HHS
690-7431

RE: Daily Update + MNWR

Pages: _____ (Including Cover)

WEST NILE-LIKE VIRUS OUTBREAK
New York City, New York State, Connecticut, and New Jersey
Prepared by the Centers for Disease Control and Prevention (CDC)
October 7, 1999

- As of October 7, four additional human cases from New York (three in New York City and one in Westchester County) were laboratory-confirmed for West Nile-like infection; the number of cases is now 54. One additional death (in Nassau County, NY) has occurred bringing the total number of deaths to six.
- West Nile-like virus has been identified in 55 birds collected in the Bronx, Brooklyn, Staten Island and Queens in New York City; Nassau, Rockland, Suffolk, and Westchester counties in New York; Bergen, Essex, Middlesex, and Union counties in New Jersey; and in the cities of Fairfield, Greenwich, Stamford, Westport, and New Haven, Connecticut.
- The first positive mosquito pool from Nassau County, NY has been confirmed as positive for West Nile-like virus. To date, positive mosquito pools have been confirmed from the Bronx, Queens and Brooklyn, NY.
- New York City's anonymous serosurvey of households in Queens was completed on October 6.
- A *Morbidity and Mortality Weekly Report (MMWR)* was published on October 1, 1999 and can be viewed: <http://www.cdc.gov/epo/mmwr/preview/mmwrhtml/mm4838a1.htm>
An updated article will be published in the *MMWR* on Friday, October 8 (copy attached).
Note: The number of confirmed West Nile-like Virus encephalitis cases and deaths have increased since this *MMWR* was published.
- Information on the outbreak is available at: <http://www.cdc.gov/od/oc/media/archives.htm>.

CDC FINAL

October 8, 1999 / Vol. 48 / No. 39

MMWRTM

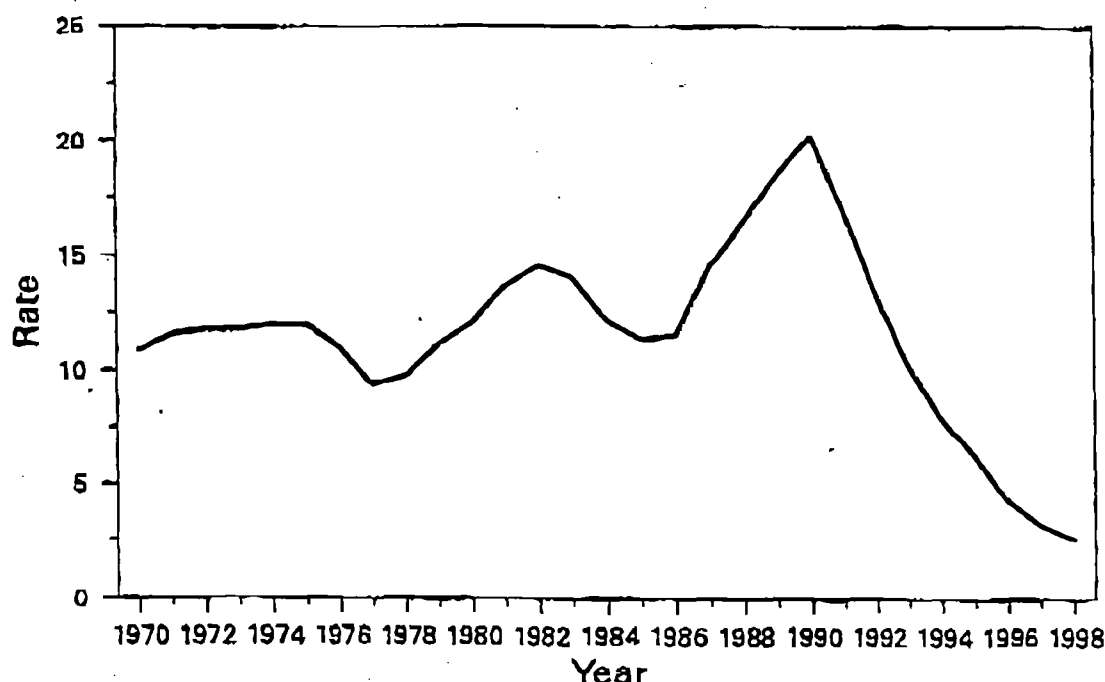
MORBIDITY AND MORTALITY WEEKLY REPORT

- 873 Primary and Secondary Syphilis — United States, 1998
- 878 Progress in Reducing Risky Infant Sleeping Positions — 13 States, 1996–1997
- 883 Update: Influenza Activity — Worldwide, May–September 1999
- 886 Reasons Reported by Medicare Beneficiaries for Not Receiving Influenza and Pneumococcal Vaccinations — United States, 1996
- 890 Update: West Nile-Like Viral Encephalitis — New York, 1999

Primary and Secondary Syphilis — United States, 1998

Rates of primary and secondary (P&S) syphilis have been declining in the United States since the last national epidemic in 1990 (Figure 1) (7). Syphilis causes substantial morbidity and mortality in the form of cardiac and neurologic disease, stillbirth and developmental disability from congenital syphilis, and by facilitating transmission of human immunodeficiency virus (2,3). Syphilis is both preventable and curable and has been successfully controlled in most developed countries (4). In the United States, declines in P&S syphilis have been followed by epidemics occurring approximately every 7–10 years. During 1960–1990, these cyclical epidemics resulted in

FIGURE 1. Rates* of primary and secondary syphilis, by year — United States, 1970–1998



*Per 100,000 population.

U.S. DEPARTMENT OF HEALTH & HUMAN SERVICES

Influenza and Pneumococcal Vaccinations — Continued

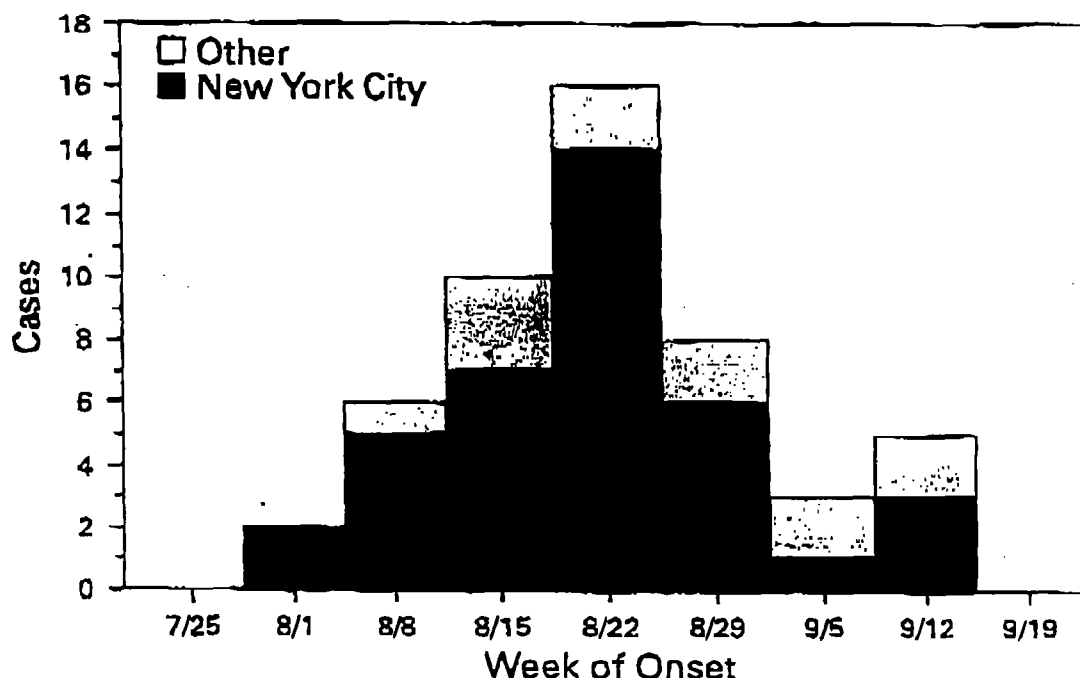
6. CDC. Vaccination levels among Hispanic and non-Hispanic whites aged ≥65 years—Los Angeles County, California, 1996. *MMWR* 1997;46:1165–8.
7. CDC. Adult immunization: knowledge, attitudes, and practices—DeKalb and Fulton counties, Georgia, 1988. *MMWR* 1988;37:657–61.
8. CDC. Influenza vaccination status of persons aged 65–79 years—Allegheny County, Pennsylvania, February–March 1997. *MMWR* 1998;47:1094–7.
9. MacDonald RM, Baken L, Nelson A, Nichol KL. Validation of self-report of influenza and pneumococcal vaccination status in elderly outpatients. *Am J Prev Med* 1999;16:173–7.
10. CDC. Vaccine-preventable diseases: improving vaccination coverage in children, adolescents, and adults. A report on recommendations of the Task Force on Community Preventive Services. *MMWR* 1999;48(no. RR-8).

Update: West Nile-Like Viral Encephalitis — New York, 1999

The outbreak of human arboviral encephalitis attributable to a mosquito-transmitted West Nile-like virus (WNLV) continues to wane in the Northeast (Figure 1). As of October 5, the number of laboratory-positive cases had increased to 50 (27 confirmed and 23 probable), including five deaths. The increase in cases is mainly a result of completed retesting with West Nile virus antigen of specimens previously tested with the related St. Louis encephalitis virus antigen and to intensive retrospective case finding in the ongoing epidemiologic investigations (1,2).

Of the 50 case-patients, none had onset of illness after September 17. Thirty-eight resided within boroughs of New York City (NYC): 26 from Queens, nine from the Bronx, two from Manhattan, and one from Brooklyn. An additional 12 cases were reported from the adjacent counties of Westchester (eight) and Nassau (four). In NYC, the earliest laboratory-positive case occurred in a patient on August 4, followed by

FIGURE 1. Seropositive cases of West Nile-like virus, by week of onset — New York, 1999



West Nile-Like Viral Encephalitis — Continued

11 cases in patients from Queens with onset dates ranging from August 5 to August 18.

The association of WNLV with deaths in crows and domestic and exotic birds was confirmed during September. As a result, CDC, state wildlife veterinarians, and an expanding group of federal agencies are using deaths in crows as sentinel events to define the current geographic distribution of mosquitoes and birds infected with WNLV (7). As of October 5, results from selected bird tissue samples tested indicate that WNLV has been identified from 41 avian tissue specimens collected in NYC; Nassau, Suffolk, Rockland, and Westchester counties in New York; Fairfield County, Connecticut; and Bergen, Union, Middlesex, and Essex counties in New Jersey. No human cases of encephalitis attributable to WNLV have been reported from either Connecticut or New Jersey. Pools of *Culex* mosquitoes collected in localized areas of Queens, Brooklyn, and the Bronx in mid-September and a pool of *Culex pipiens* collected from Nassau County in late September have been positive for WNLV by reverse transcriptase polymerase chain reaction testing. One pool of *Culex pipiens* and one pool of *Aedes vexans* mosquitoes collected from a single trap in Greenwich, Connecticut, on September 13 yielded isolates of WNLV.

Reported by: A Fine, MD, M Layton, MD, J Miller, MD, D Cimini, MPH, MC Vargaz, DVM, A Inglesby, MD, A Labowitz, K Bormschlegel, MPH, B Maldin, E Samoff, MPH, D Haddow, the New York City Outbreak Investigation Team, S Mullin, MSW, J Gadd, MPP, E Giebelhaus, MPP, L Mascuch, MSW, A Sher, M Foggin, BJ Mojica, N Cohen, MD, I Weisfuse, MD, R Bhalla, MD, E Lee, MD, D Malebranche, MD, G Sacajiu, MD, A Sharma, MD, M Eisenberg, A Ramon, MD, I Poshni, PhD, H Stirling, MPH, A Goldberg, New York City Dept of Health; J Hauer, MHS, Mayor's Office of Emergency Management, New York City; A Huang, MD, A Rosenberg, MD, P Yang-Lewis, MPH, HN Adel, MD, Westchester County Health Dept, New Rochelle; 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 Carter, MD, R Nelson, DVM, J Hadler, MD, State Epidemiologist, Connecticut Dept of 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 Halperin, DVM, D Roscoe, DVM, E Brasnitz, MD, State Epidemiologist, New Jersey Dept of Health and Senior Svcs; W Crans, PhD, Rutgers Univ, New Brunswick, New Jersey; US Geologic Survey, Animal Plant and Health Inspection Svc, US Dept of Agriculture; Div of Applied Public Health Training, Epidemiology Program Office; Infectious Disease Pathology Activity, Div of Viral and Rickettsial Diseases, and Arbovirus Diseases Br, Div of Vector-Borne Infectious Diseases, National Center for Infectious Diseases; and EIS officers, CDC.

Editorial Note: Human cases of encephalitis attributable to WNLV should continue to decline in areas where WNLV activity has been documented because of the application of adulticidal and larvicidal mosquito-control compounds; however, persons in these areas should continue to use personal protective measures, including reducing outdoor exposures at dusk and at night; wearing long-sleeved shirts and pants; and applying to skin and clothing DEET-containing mosquito repellants according to label directions (1). Shorter days and the onset of colder weather eventually will lead to major declines in vector mosquito populations and will reduce human risk for exposure.

Confirmation that these WNLVs are virulent in a wide range of domestic and exotic birds has led to the formation of a cooperative federal working group. This working group, in cooperation with state and local health departments, will attempt to define the extent to which WNLVs are distributed in mosquito and bird populations outside the Northeast.

West Nile-Like Viral Encephalitis — Continued

The appearance of WNLV in the Western Hemisphere will necessitate enhanced vigilance for this virus during the transmission seasons for the next several years. Enhanced human surveillance for West Nile-like encephalitis will be a fundamental part of determining geographic distribution. To assist states in augmenting surveillance, CDC has distributed surveillance guidelines to state epidemiologists and state health laboratory directors. The guidelines include early warning tools for surveillance of arbovirus activity in nature, such as mosquito trapping for virus isolation and avian serologic and viral surveillance (3).

References

1. CDC. Outbreak of West Nile-like viral encephalitis—New York, 1999. *MMWR* 1999;48:871-4.
2. CDC. Case definitions for infectious conditions under public health surveillance. *MMWR* 1997;46(no. RR-10):12-3.
3. CDC. Guidelines for arbovirus surveillance in the United States, 1993. Fort Collins, Colorado: US Department of Health and Human Services, CDC, 1994.

Notice to Readers

International Infection Control Week — October 17-23, 1999

Each year, approximately 2 million health-care-associated infections occur in the United States. As many as one third of these infections is preventable, but prevention requires vigilance on the part of the entire health-care team. International Infection Control Week (October 17-23), observed by health-care facilities around the world, is intended to heighten public awareness of and professional commitment to, infection control. During the fall and winter months, infection-control professionals worldwide emphasize efforts to vaccinate persons against diseases such as influenza and pneumonia while confronting antimicrobial resistance in pathogens and emerging pathogens in the health-care setting. The Association for Professionals In Infection Control and Epidemiology has created an Infection Control Week Resource Kit addressing issues such as needlestick injuries, vaccinations, food safety, Lyme disease, and sexually transmitted diseases. This free kit is available on the World-Wide Web at <http://www.apic.org>*. Information about health-care-associated diseases also is available on the website of CDC's Hospital Infections Program, National Center for Infectious Diseases, at <http://www.cdc.gov/ncidod/hip>.

*References to sites of non-CDC organizations on the World-Wide Web are provided as a service to *MMWR* readers and do not constitute or imply endorsement of these organizations or their programs by CDC or the U.S. Department of Health and Human Services. CDC is not responsible for the content of pages found at these sites.

Erratum: Vol. 48, No. 38

In the box, "National Child Health Month—October 1999," on page 857 in the second paragraph, the last three World-Wide Web sites contained errors. The correct web sites are <http://salud.unm.edu/asthma/chm/Childmo.htm>; <http://www.census.gov/population/www/estimates/ushpop.html>; and <http://www.hrsa.dhhs.gov/childhealth/outreach.htm>.

TO: Kris Balderston/Irma Martinez (456-2525)
Chris Jennings/Devorah Adler (456-5557)
Maria Echaveste/Marge Tarmey (456-1907)

FROM: Liz Summy
Deputy Chief of Staff, HHS
690-7431

RE: West Nile update

Pages: 2 (Including Cover)

WEST NILE-LIKE VIRUS OUTBREAK
New York City, New York State, New Jersey, and Connecticut Area
Prepared by the Centers for Disease Control and Prevention (CDC)
October 4, 1999

- As of today, 50 encephalitis patients, including 5 deaths, have been diagnosed with West Nile-like infection in New York City, and Westchester and Nassau counties in New York State. Re-testing of serum and cerebrospinal fluid of suspected encephalitis cases in the New York area for IgM antibodies using West Nile antigen has been completed.
- West Nile-like viruses have also been identified in 26 birds collected in New York City; Nassau, Rockland, Suffolk, and Westchester counties in New York; Fairfield, Greenwich, Stamford, and Westport counties in Connecticut; and Bergen, Essex, Middlesex, and Union counties in New Jersey. Preliminary results indicate that West Nile-like virus specific neutralizing antibodies are widespread in several bird species in New York City.
- Since early September, CDC has sent nine staff to the NYC area to assist in the investigation, including four epidemiologists currently in NYC, to conduct epidemiologic case follow up to determine etiology, dissemination, and possible risk factors for West Nile-like virus infection, and to collect avian serum samples and mosquitoes. More than 50 CDC staff (professional, technical, and administrative) at the CDC facility in Atlanta and the CDC facility in Fort Collins, Colorado, are working on the West Nile-like outbreak.
- New York City's anonymous serosurvey of 300 households in Queens began with survey teams' distributing pre-notification flyers to the residents in the households on October 1. Collection of blood specimens began on Saturday, October 2.
- CDC has contacted members of the Emerging Infections Network in the Mid-Atlantic and New England regions of the United States about the ongoing investigation and has advised them to consider the possibility of West-Nile like virus in patients with encephalitis.
- *A Morbidity and Mortality Weekly Report (MMWR)* was published on October 1, 1999 and can be viewed: <http://www.cdc.gov/epo/mmwr/preview/mmwrhtml/mm4838a1.htm>
Note: The number of confirmed West Nile-like Virus encephalitis cases and deaths have increased since the *MMWR* was published. An updated article is tentatively scheduled to be published in the *MMWR* on Friday, October 8.
- Information on the outbreak is available at: <http://www.cdc.gov/od/oc/media/archives.htm>.

TO: Kris Balderston/Irma Martinez (456-2525)
Chris Jennings/Devorah Adler (456-5557)
Maria Echaveste/Marge Tarmey (456-1907)

FROM: Liz Summy
Deputy Chief of Staff, HHS
690-7431

RE: West Nile-Like Virus

Pages: 12 (Including Cover)

WEST NILE-LIKE VIRUS OUTBREAK
New York City, New York State, and Connecticut Area
Prepared by the Centers for Disease Control and Prevention (CDC)
October 1, 1999

- As of today, 48 encephalitis patients, including 5 deaths, have been diagnosed with West Nile-like infection in New York City, and Westchester and Nassau counties in New York State. Re-testing of serum and cerebrospinal fluid of suspected encephalitis cases in the New York area is continuing using West Nile antigen.
- West Nile-like viruses have also been identified in 22 birds collected in New York City; Nassau, Suffolk, and Westchester counties in New York; and in Westport, Connecticut. Preliminary results indicate that West Nile-like virus specific neutralizing antibodies are widespread in several bird species in New York City.
- Since early September, CDC has sent nine staff to the NYC area to assist in the investigation, including five epidemiologists currently in NYC, to conduct epidemiologic case follow up to determine etiology, dissemination, and possible risk factors for West Nile-like virus infection, and to collect avian serum samples and mosquitoes. More than 50 CDC staff (professional, technical, and administrative) at the CDC facility in Atlanta and the CDC facility in Fort Collins, Colorado, are working on the West Nile-like outbreak.
- New York City's anonymous serosurvey of 300 households in Queens will begin with survey teams' distributing pre-notification flyers to the residents in the households today (October 1). Collection of blood specimens will begin on Saturday (October 2).
- A *Morbidity and Mortality Weekly Report (MMWR)* was published on October 1, 1999 and can be viewed: <http://www.cdc.gov/epo/mmwr/preview/mmwrhtml/mm4838a1.htm>
Note: The number of confirmed West Nile-like Virus encephalitis cases and deaths have increased since the *MMWR* was published. Information on the outbreak is available at: <http://www.cdc.gov/od/oc/media/archives.htm>

**10/1/99--2--Q/As West Nile Fever --DRAFT: FOR INTERNAL USE ONLY
NOT FOR RELEASE DRAFT TALKING POINTS**

- Federal, state, and local health officials continue to work closely together to investigate and control this outbreak of West Nile encephalitis in the New York area. All current control and prevention measures which were recommended before the diagnosis of West Nile are the same measures that should be taken for West Nile-like virus. Control and prevention measures are working well and reports of illness are dramatically dropping.
- West Nile-like virus typically will not cause severe illness in most people who become infected.
- We are in the early stage of an ongoing investigation and not all questions can be answered at this time and speculation will not necessarily be in the best interest of public health. The important questions needed to begin treatment and control and prevention measures have been answered, and control and prevention measures are being taken. Other important questions will take additional time and research to answer, all health officials are working diligently on the investigation.
- We live in a global village and we take every disease outbreak and every new or re-emerging disease seriously. While we cannot expect to totally prevent the migration of viruses from one part of the world to another, our best efforts should, and do, concentrate on the steps outlined in the U.S. Public Health Services's Emerging Infectious Disease Plan--strong surveillance for early detection, well-equipped labs and a cadre of public health officials trained and equipped to confront and control these viruses.
- Although reports of illness are dropping off dramatically and control measures are apparently working well, it's important that individuals continue to limit their exposure to mosquitoes.
- A good hard frost will eliminate mosquitoes for this season, but until then, health officials encourage the public to follow recommendations to limit time outside at dawn, dusk and early evening when mosquitoes are feeding. If you must be outside, cover your skin with long sleeves and long pants and spray the outside of your clothing with mosquito repellent.
- New York Health Department, with the assistance of CDC will be conducting a simple community-based voluntary and anonymous "sero-prevalence survey." It's a typical tool of all disease detectives. It helps the community answer the question: "How many people who become infected with West Nile actually become ill?" Understand, viruses like West Nile typically will not cause severe illness in most people who become infected from a mosquito bite. So healthy people may have been infected in the recent past and never became ill or only slightly ill. A sample of their blood will tell us who was infected and did not become ill versus those who were infected and became ill.

10/01/99--2-- Q/As West Nile Fever --DRAFT: FOR INTERNAL USE ONLY

NOT FOR RELEASE

TECHNICAL Q/As

Q. What is West Nile encephalitis?

A. "Encephalitis" means an inflammation of the brain and can be caused by viral and bacterial infections, including viruses transmitted by mosquitoes. West Nile encephalitis is an infection of the brain caused by West Nile virus, a flavivirus commonly found in Africa, West Asia, and the Middle East. It is closely related to St. Louis encephalitis virus found in the United States.

Q. How do people get West Nile encephalitis?

A. By the bite of a mosquito (primarily the *Culex* species) that is infected with West Nile virus.

Q. What is the basic transmission cycle?

A. Mosquitoes become infected by feeding on birds infected with the West Nile virus. Infected mosquitoes then transmit the West Nile virus to humans and animals when taking a bloodmeal.

Q. Can you get West Nile encephalitis from another person?

A. No. West Nile encephalitis is NOT transmitted from person-to-person. For example, you cannot get the virus that causes West Nile encephalitis from touching or kissing a person who has the disease, or from a health care worker who has treated someone with the disease.

Q. Can you get West Nile virus directly from birds?

A. There is no evidence that a person can get the virus from handling live or dead infected birds. However, avoid bare-handed contact when handling dead animals, including dead birds. Use gloves or double plastic bags to place the carcass in a garbage can.

(Changed this answer—different from website)

Q. Besides mosquitoes, can you get West Nile virus directly from other insects or ticks?

A. Infected mosquitoes are the primary vector for West Nile virus and the source of this outbreak. Ticks have been found infected with West Nile virus in Asia and Africa. Their role in the transmission and maintenance of the virus is uncertain. However, as it relates to this outbreak, this is not the season in which ticks feed. As a reminder, ticks do carry other disease-causing organism, such as Lyme, and it's important that people avoid contact with ticks whenever possible and to check for and promptly remove ticks found on your person.

Q. What are the symptoms of West Nile encephalitis?

A. Mild infections are common and include fever, headache, and body aches, often with skin rash and swollen lymph glands. More severe infection is marked by headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, occasional convulsions, paralysis and, rarely, death.

Q. What is the incubation period of West Nile encephalitis?

A. Usually 5 to 15 days.

Q. Where did the West Nile-like virus come from?

A. West Nile virus has been commonly found in humans and birds and other vertebrates in Africa, West Asia, and the Middle East, but has not previously been documented in the Western

Hemisphere. It is not known where the U.S. virus came from.

Q. How long has the West Nile-like virus been in the U.S.?

A. It is not known how long it has been in the U.S., but CDC scientists believe the virus has probably been in the eastern U.S. for several months, possibly longer.

Q. When will the current risk of infection end?

A. The risk in the New York City area is greatly reduced due to the effectiveness of mosquito control and public education programs. However, the risk of infection will not be completely over until mosquito activity ceases for the season, i.e., when freezing temperatures are experienced.

Q. What precautions need to be taken to prevent a recurrent outbreak next year?

A. Surveillance for infected mosquitoes and sentinel bird flocks for West Nile virus will greatly enhance state and local government's early detection symptoms.

Q. Will these precautions be taken?

A. That will be determined by the New York state department.

Q. What is the mortality rate of West Nile encephalitis?

A. Case-fatality rates range from 3% to 15% (higher in elderly than in younger age groups).

Q. How many cases of West Nile encephalitis occur in the U.S.?

A. No cases have previously been reported in the U.S. prior to September 1999 (New York City). No reliable estimates are available for the number of cases of West Nile encephalitis that occur internationally.

Q. Do birds naturally infected with West Nile virus die or become ill?

A. This has not been previously reported, but apparently has occurred in the New York City area epidemic.

Q. How is West Nile encephalitis treated?

A. There is no specific therapy. Intensive supportive therapy is indicated in more severe cases.

Q. Is the disease seasonal in its occurrence?

A. In temperate areas of the world, West Nile encephalitis cases occur primarily in the late summer or early fall. In the southern climates where temperatures are milder, West Nile encephalitis can occur year round.

Q. Who is at risk for getting West Nile encephalitis?

A. All residents of areas where active cases have been identified are at risk of getting West Nile encephalitis, but persons > 50 years of age have the highest risk.

Q. Is a woman's pregnancy at risk if she gets West Nile encephalitis?

A. There is no documented evidence that a pregnancy is at risk due to infection with West Nile virus.

Q. Is there a vaccine against West Nile encephalitis?

A. No.

Q. What can I do to reduce my risk of becoming infected with West Nile virus?

A.

•

Stay indoors at dawn, dusk, and in the early evening.

•

Wear long-sleeved shirts and long pants whenever you are outdoors.

•

Apply insect repellent sparingly to exposed skin. An effective repellent will contain 20% to 30% DEET (N,N-diethyl-meta-toluamide). DEET in high concentrations (greater than 30%) may cause side effects, particularly in children; avoid products containing more than 30% DEET.

• Repellents may irritate the eyes and mouth, so avoid applying repellent to the hands of children. Insect repellants should not be applied to very young children (< 3 years old).

• Spray clothing with repellents containing permethrin or DEET, as mosquitoes may bite through thin clothing.

• Whenever you use an insecticide or insect repellent, be sure to read and follow the manufacturer's

DIRECTIONS FOR USE, as printed on the product.

• Note: Vitamin B and "ultrasonic" devices are NOT effective in preventing mosquito bites.

DRAFT: INTERNAL QUESTION NOT FOR RELEASE OUTSIDE AGENCY

OUTBREAK ISSUES/Q/As

How could CDC have made such a huge mistake by telling patients they had SLE when they didn't?

Learning that West Nile fever virus rather than SLE caused the outbreak is an important development for people who study viruses. Scientists now know to include this virus when performing diagnostic tests of persons with encephalitis so they can identify the exact cause. From a public health and individual's perspective, the difference in diagnosis changes nothing. The diagnosis of West Nile does not change the treatment or control measures recommended by CDC.

Background:

After reports of encephalitis in New York City, CDC tested for antibodies to the common North American arboviruses and it was positive for St. Louis Encephalitis. The first test was for St. Louis encephalitis because it was a likely candidate as the cause of this encephalitis outbreak. A

complicating factor is the cross reactivity of West Nile and St. Louis encephalitis viruses in the first test CDC conducted. Further testing confirmed the West Nile-like virus. The important first step was to confirm in the laboratory that people were becoming ill from a mosquito-borne virus that causes encephalitis. At that point, control measures could begin.

This is the early stage of a ongoing disease outbreak investigation. In the early stages of any investigation, there are more questions than answers. CDC is sharing preliminary information and theories with involved health departments as quickly as it becomes available. CDC is continuing to investigate this outbreak and will continue to share information and theories as quickly as possible with involved area.

Why did CDC first say the cases were SLE?

The normal test panel of viruses against which serum and tissue samples from suspected encephalitis cases the United States are routinely tested for the viruses that are indigenous to the U.S., i.e., St. Louis, Eastern Equine, Western Equine, LaCrosse, and Powassan viruses. The serology on samples from initial human cases in this outbreak were reported as consistent with St. Louis encephalitis virus infection. Because the clinical and epidemiological aspects of these cases were also compatible with SLE virus infection, the diagnosis of SLE was naturally made.

Did CDC make a lab mistake?

Not at all. The usual procedure in an investigation of this type is to test for the most likely cause of disease. More specific follow-up tests then can be performed to confirm the diagnosis. In this instance follow up testing identified the West Nile virus, new to the Western Hemisphere. The serology on samples from initial human cases in this outbreak were consistent with St. Louis encephalitis virus infection. Because the clinical and epidemiological aspects of these cases were also compatible with SLE virus infection, the initial diagnosis of SLE was naturally made.

Is it possible that some of the SLE negatives will be positive for West Nile?

Yes, suspected SLE cases are being re-tested using West Nile antigen; the results are compatible with infection with West Nile-like virus. Moreover, West Nile-like virus has been identified in brain samples from suspected SLE cases who died.

Did CDC put the health of humans at risk by first incorrectly identifying this as SLE?

No. SLE and West Nile encephalitis are clinically and epidemiologically very similar. Therefore, the mosquito control and public health measures conducted in response to the suspected SLE epidemic were equally effective against West Nile-like virus.

What does this mean to bird migration in the south? Is CDC investigating this? If not, who does do this kind of investigation?

Birds began their southern migration about six weeks ago. It is possible that some birds infected with West Nile-like virus could have already flown south to states in the U.S. and to other countries. We have no reason to believe large numbers of infected birds are in this migration. It is uncertain whether the ecologic conditions in various parts of the U.S., including the northeast, will allow this virus to become established. CDC is working with the U.S. Geologic Society, U.S. Fish and Wildlife Service, National Wildlife Health Center, in Madison, Wis., state wildlife agencies and state and local health and vector control agencies to conduct surveillance of birds and mosquitoes that

may be infected with West Nile virus in the U.S.

Where did West Nile come from?

West Nile is an arbovirus (a virus borne by mosquitoes) that has, to date, been recognized in the Old Works to include Eastern Europe, Asia and Africa.

You refer to this as West Nile like, does this mean it may not be West Nile?

No, it means that it is a virus genetically related to West Nile, but because of genetic differences it may be a new subtype of the West Nile virus. Testing to confirm this continues.

Is this a new virus strain?

It could be a new subtype of West Nile, further testing is needed.

How could this virus have been introduced into the United States?

There are a number of ways that a virus can be introduced into a region, either by a mosquito, a human or a bird, infected with the virus, entering the United States.

Is West Nile more easily transmitted to humans than St. Louis Encephalitis?

There is no evidence that West Nile is more easily transmitted. In addition, West Nile has been known to cause a more mild disease.

Did West Nile kill the birds in the Bronx Zoo?

We have ruled out most other known causes of diseases in these birds.

Does West Nile usually kill infected birds?

No, typically West Nile does not kill birds where this virus is endemic. There is research that has shown crows to be more susceptible to this virus than other birds.

If this virus going to travel south and cause disease outbreaks in the south?

We have no evidence that this virus has traveled outside the New York area, and the mosquito season is almost over, even in the South. This is an ongoing investigation. CDC is working with wildlife experts to determine the scope of this viruses' introduction into the United States and the Western Hemisphere. We do not want to speculate on where this virus may have originated in the Western Hemisphere or where it may be headed. Of course, we know that this is the season for birds to migrate south. This is a factor in our surveillance efforts.

Is the spraying for mosquitoes going to kill the Monarch butterflies too?

The application timing and methods are designed to kill mosquitoes who are out feeding in the early evening. At that time butterflies and honey bees are not moving and should not be harmed by the spraying of insecticide directed at mosquitoes.

Should people be alarmed if they find dead birds in their area?

No, people cannot be infected with West Nile virus from birds or from people. Individuals can protect themselves from West Nile virus by avoiding exposure to mosquitoes: limit outdoor activities at dawn, dusk and in the evening. Individuals should wear long pants and long-sleeved shirts when outdoors and spray insecticide on the outside of their clothing before going outside.

What is the scope of this outbreak? Have you seen this virus in birds in other areas of the U.S. or Western Hemisphere.

The first recognition of West Nile came from birds from the New York area. CDC is concentrating its investigation to this geographic area. Other wildlife experts are conducting surveillance along the Atlantic coast of the U.S.

Q. What should I do if I find a dead bird in my yard?

Follow local advice on who to notify. There is no evidence that a person can get the virus from handling live or dead infected birds. However, avoid bare-handed contact when handling dead animals, including dead birds. Use gloves or double plastic bags to place the carcass in a garbage can.

ADDED Q/As 9/30/99

Q. What is this door-to-door blood draw about? Is CDC more worried about this virus than you're telling us?

Not at all. This is a common practice - a voluntary simple community-based "sero-prevalence survey." It's a typical tool of all disease detectives. It helps us answer the question: "How many people who become infected with West Nile actually become ill?" Understand, viruses like West Nile typically will not cause severe illness in most people who become infected from a mosquito bite. So healthy people may have been infected in the recent past and never became ill or only slightly ill. A sample of their blood will tell us who was infected and did not become ill versus those who were infected and became ill. Understanding how many people who are infected become sick is always an important question to answer during an outbreak.

Q. Isn't this unusual? I've never heard of CDC going door to door before to collect blood?

Public health professionals often apply this tool during outbreak investigations when we expect that most people who become infected won't become ill. Epidemiologist (disease detectives) use this tool often during waterborne and foodborne outbreaks. A couple of well known examples include the cryptosporidiosis outbreak in water in Milwaukee and the hanta virus investigation in the Southwest. Cryptosporidiosis is a parasitic infection causing profuse diarrhea. Hanta virus is an acute zoonotic viral disease, whose illness progresses rapidly to severe respiratory failure and cardiogenic shock. If we neglected to do these surveys, we would not be able to find out which people are most at risk for serious illness from disease-causing organisms.

Q. What about people's privacy? Could the federal government use this to check people's DNA or to do other research?

The local health department is in charge of this survey. CDC is supporting local public health professionals to help design the survey so the collective results help answer important public health questions. Everyone who participates will be fully informed about what is required by participating and how blood collected will be used. Everyone who participates must be a volunteer. This is an important survey for the community. This is an anonymous survey no personal identifying

information will be collected. Public health professionals rely on the goodwill of community members to investigate an outbreak this way and will work hard to maintain this mutual good faith.

Q. I've heard that CDC is testing samples from horses that died in New York--what are the results?

CDC is not testing any samples from horses. CDC would not test for West Nile in dead horses unless the pathology was consistent with encephalitis (if the horse's brain showed signs of encephalitis). We have no expectations of receiving samples at this time.

Q. Can West Nile infect and kill horses?

Like other encephalides, West Nile may infect a horse. However, horses cannot transmit the virus to humans.

Q. With all these birds migrating south, should CDC be alerting public health officials to start spraying against mosquitoes?

Although we know that this is the season birds migrate south, we have no reason to believe large number of infected birds are in this migration. Many states, have existing surveillance systems to detect viral encephalitis among mosquitoes. CDC and the U.S. Geological Society have sent reminders to arboviral experts around the nation to think of the possibility of West Nile during their surveillance efforts.

Q. I'm noticing a number of dead birds in my area and I'm hearing reports from other places about dead birds--how serious is this?

This is the bird migration season, and the arduous trip often increases the bird attrition rate along the migration path. Wildlife experts can evaluate if exceptional number of birds in the area are dying and then make a judgment about testing the birds for West Nile or other bird diseases. Birds will be dying from many normal causes this time of year and with careful surveillance and sampling for West Nile we will be able to determine the impact of this virus on birds here.

Q. Birds typically don't die from this virus--they are here--does this mean it may not be West Nile or a super strain of West Nile?

More than likely, this may indicate that these birds have never been exposed to West Nile, unlike birds in Asia and Africa, and so their immune systems are not as equipped to prevent illness. With more research we hope to answer the question, but this can not be answered in the first stages of this ongoing investigation.

Q. Does that mean people may be dying at an increased rate too?

We have no evidence, to date, that this West Nile-like virus is more virulent in humans. However, that's one of the reasons it's so important for public health professionals to conduct community-based sero-prevalence surveys--that's a way for us to scientifically answer that question. In terms

of human illness, this outbreak is consistent with other outbreaks, such as the 1996 outbreak of West Nile in Romania--the people most at risk for serious illness or death are the elderly and those who are immune compromised.

Q. Is CDC considering any quarantine measures to control this outbreak?

It's inappropriate to consider any quarantine measures at this time. After all, the disease is not transmitted from human to human. The disease is spread by mosquito bites--the proper control measures are already being taken: spraying for mosquitoes, alerting the public to individual measures to reduce their exposure to mosquitoes and increased disease surveillance among mosquitoes, birds and humans.

Q. Has CDC recommended spraying airplanes before taking off to limit the spread of this virus.

First, this would be an inappropriate measure to even consider at this time. Second, this level of concern is unwarranted--West Nile virus is known to cause more mild disease among humans than its genetic cousin St. Louis Encephalitis which has been present in the Western Hemisphere and been known to cause illness in many parts of the United States. Lastly, we live in a global village and, although we must take every disease outbreak and every new or re-emerging virus seriously, we cannot expect to totally prevent the migration of viruses from one part of the world to another. Our best efforts should concentrate on the steps outlined in Public Health Services's Emerging Infectious Disease Plan--strong surveillance for early detection, well-equipped labs and a cadre of public health officials trained and equipped to confront and control these viruses.

Q. Could this be bio-terrorism?

There is absolutely no evidence that this is anything but mother nature at work. An important research question is how and when this virus was introduced into the Western Hemisphere. Remember, we live in a global village but we take every disease outbreak and every new or re-emerging virus seriously, we cannot expect to totally prevent the migration of viruses from one part of the world to another. Our best efforts should concentrate on the steps outlined in the Public Health's Emerging Infectious Disease Plan--strong surveillance for early detection, well-equipped labs and a cadre of public health officials trained and equipped to confront and control these viruses. CDC will pursue questions about the introduction of this virus to the Western Hemisphere as a normal part of our emerging infection investigative measures.

Q. Can household pets become infected with West Nile? If infected, can they transmit the virus to humans?

A. No household pets have been identified with this virus in the Western Hemisphere. In Egypt several decades ago, the virus was isolated from at least one dog, there is no evidence that domestic pets are involved in the transmission cycle by infecting mosquitoes. If infected, there is no evidence that they can transmit the virus to humans.

Q. How is CDC monitoring bird migration?

A. CDC does not monitor bird migration. However, CDC will be working with local and state health departments to enhance surveillance for West Nile-like virus.

Q. How does CDC work with the U.S. Geological Survey in this outbreak? (*Detail requested for this answer.*)

A. CDC scientists are collaborating with experts from the U.S. Department of the Interior, U.S. Geological Survey (USGS) during this outbreak of West Nile-like virus. USGS scientists will initiate a study next week in New York and other areas, capturing live birds, taking blood samples to determine if they have West Nile virus antibody, and releasing them. The objective of the study is to map the distribution of West Nile virus both spatially and temporally. CDC will help the National Wildlife Health Center in Madison, Wisconsin develop laboratory testing capability for West Nile-like virus so they can test birds for infection.

TO: Kris Balderston/Irma Martinez (456-2525)
Chris Jennings/Devorah Adler (456-5557)
Maria Echaveste/Marge Tarmey (456-1907)

FROM: Liz Summy
Deputy Chief of Staff, HHS
690-7431

RE: West Nile encephalitis update 10/5

Pages: 11 (Including Cover)

- FL will be making a statement this afternoon that it is sending samples to the CDC Lab for testing. We were
(F. Collins)
just (at 4:15) notified of this.

WEST NILE-LIKE VIRUS OUTBREAK
New York City, New York State, Connecticut, and New Jersey
Prepared by the Centers for Disease Control and Prevention (CDC)
October 5, 1999

- As of October 5, no new human cases have been diagnosed with West Nile-like infection.
- West Nile-like viruses have been identified in 35 birds collected in Bronx, Brooklyn, and Queens in New York City; Nassau, Rockland, Suffolk, and Westchester counties in New York; Bergen, Essex, Middlesex, and Union counties in New Jersey; and in the cities of Fairfield, Greenwich, Stamford, and Westport, Connecticut.
- New York City's anonymous serosurvey of households in Queens is continuing.
- In addition to the Emerging Infections Network in the Mid-Atlantic and New England regions of the United States, CDC has contacted the Council of State and Territorial Epidemiologists and the Association of Public Health Laboratories about the ongoing investigation, advising them to consider the possibility of West-Nile like virus in patients with encephalitis.
- A *Morbidity and Mortality Weekly Report (MMWR)* was published on October 1, 1999 and can be viewed: <http://www.cdc.gov/epo/mmwr/preview/mmwrhtml/mm4838a1.htm>
Note: The number of confirmed West Nile-like Virus encephalitis cases and deaths have increased since that *MMWR* was published. An updated article is tentatively scheduled to be published in the *MMWR* on Friday, October 8.
- Information on the outbreak is available at: <http://www.cdc.gov/od/oc/media/archives.htm>.



Sero-prevalence Survey Outbreak Investigation Tool

October 1999

Contact: Media Relations (404) 639-3286

- An important question to answer during an outbreak is, "How many people who are infected become sick?" A "sero-prevalence survey" can help do that.
- A voluntary community-based "sero-prevalence survey" is a typical tool of all disease detectives. "*Sero*" refers to the taking of a sample of blood through a needle stick. *Prevalence* is the status of infection or disease in a population at a point in time--how many people are infected. A *survey* is a statistical sample of a population.
- A sero-prevalence survey helps answer the question: "How many people who become infected actually become ill?" In some disease outbreaks, healthy people may have been infected in the recent past and never became ill or only slightly ill. A sample of their blood will tell who was infected and did not become ill versus those who were infected and became ill.
- Public health professionals often apply this tool during outbreak investigations when they expect that most people who become infected won't become ill. If we neglected to do these surveys, we would not be able to find out which people are most at risk for serious illness from disease-causing organisms.
- Epidemiologists (disease detectives) use this tool often during other vector-borne, waterborne, and foodborne outbreaks in community settings.

West Nile-like Outbreak Investigation

- Viruses like West Nile typically will not cause severe illness in most people who become infected from a mosquito bite.
- The New York City health department is in charge of this survey. CDC is helping design the survey so the collective results help answer important public health questions. This is an important survey for the community.
- Everyone who participates will be fully informed about what is required if they participate and how blood collected will be used. Everyone who participates must be a volunteer. This is an anonymous survey; no personal identifying information will be collected. Results will be available in a few months only as an aggregate report.
- Public health professionals rely on the goodwill of community members to investigate an outbreak this way and will work hard to maintain this mutual good faith.



West Nile-like Virus Background

October 5, 1999

Contact: Media Relations (404) 639-3286

- CDC has confirmed West Nile-like virus as the cause of the human encephalitis outbreak among persons in New York.
- CDC has confirmed West Nile-like virus in birds in New York City, New York State, Connecticut and New Jersey. The virus has also been confirmed in mosquitoes in New York City and Connecticut.
- Federal, state, and local health officials continue to work closely together to investigate and control this outbreak of West Nile-like encephalitis in the New York area. All current control and prevention measures are the measures that should be taken for West Nile-like virus.
- Most mosquito bites people experience are a nuisance, but will not transmit the West Nile virus. Most people who become infected with West Nile from a mosquito bite will not become ill or seriously ill. Control and prevention measures are working well and reports of illness are dramatically dropping. However, it's important that individuals continue to limit their exposure to mosquitoes.
- A hard freeze will significantly reduce mosquito activity for this season, but until then, health officials encourage the public to follow recommendations to limit time outside at dawn, dusk and early evening when mosquitoes are feeding. If you must be outside, cover your skin with long sleeves and long pants and spray the outside of your clothing and exposed skin with mosquito repellent.
- New York City Health Department, with the assistance of CDC, is conducting a simple community-based voluntary and anonymous "sero-prevalence survey." It's a typical tool of all disease detectives. It helps the community answer the question: "How many people who became infected with West Nile-like virus actually became ill?"
- Since late August, New York City has been experiencing an outbreak of arboviral (mosquito-borne) encephalitis. Previously, diagnostic tests on serum from human cases in this outbreak were reported as St. Louis encephalitis virus infection. Both are genetically similar and cross reactivity occurs in the diagnostic tests for these infections. Further serologic tests confirmed West Nile-like virus infection in humans.
- CDC is working with the U.S. Geological Survey's National Wildlife Health Center, Madison, WI; the USDA, state wildlife agencies; and state and local health and vector control agencies to conduct surveillance of, animals, birds and mosquitoes that may be infected with West Nile-like virus in the United States.



General Information: West Nile Virus

October 1999

Q. What is West Nile encephalitis?

A. "Encephalitis" means an inflammation of the brain and can be caused by viral and bacterial infections, including viruses transmitted by mosquitoes. West Nile encephalitis is an infection of the brain caused by West Nile virus, a flavivirus commonly found in Africa, West Asia, and the Middle East. It is closely related to St. Louis encephalitis virus found in the United States.

Q. How do people get West Nile encephalitis?

A. By the bite of a mosquito (primarily the *Culex* species) that is infected with West Nile virus.

Q. What is the basic transmission cycle?

A. Mosquitoes become infected by feeding on birds infected with the West Nile virus. Infected mosquitoes then transmit the West Nile virus to humans and animals when taking a bloodmeal.

Q. Can you get West Nile encephalitis from another person?

A. No. West Nile encephalitis is NOT transmitted from person-to-person. For example, you cannot get the virus that causes West Nile encephalitis from touching or kissing a person who has the disease, or from a health care worker who has treated someone with the disease.

Q. Can you get West Nile virus directly from birds?

A. There is no evidence that a person can get the virus from handling live or dead infected birds. However, avoid bare-handed contact when handling dead animals, including dead birds. Use gloves or double plastic bags to place the carcass in a garbage can.

(Q. Besides mosquitoes, can you get West Nile virus directly from other insects or ticks?)

A. Infected mosquitoes are the primary vector for West Nile virus and the source of this outbreak. Ticks have been found infected with West Nile virus in Asia and Africa. Their role in the transmission and maintenance of the virus is uncertain. However, as it relates to the New York outbreak ticks have not been implicated as vectors of West Nile-like virus.

Q. What are the symptoms of West Nile encephalitis?

A. Mild infections are common and include fever, headache, and body aches, often with skin rash and swollen lymph glands. More severe infection is marked by headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, occasional convulsions, paralysis and, rarely, death.

Q. What is the incubation period of West Nile encephalitis?

A. Usually 5 to 15 days.

Q. Where did the West Nile-like virus come from?

A. West Nile virus has been commonly found in humans and birds and other vertebrates in Africa, West Asia, and the Middle East, but has not previously been documented in the Western

Hemisphere. It is not known where the U.S. virus came from.

Q. How long has the West Nile-like virus been in the U.S.?

A. It is not known how long it has been in the U.S., but CDC scientists believe the virus has probably been in the eastern U.S. for several months, possibly longer.

Q. When will the current risk of infection end?

A. The risk in the New York City area is greatly reduced due to the effectiveness of mosquito control and public education programs. However, the risk of infection will not be completely over until mosquito activity ceases for the season, i.e., when freezing temperatures are experienced.

Q. What precautions need to be taken to prevent a recurrent outbreak next year?

A. Surveillance for infected mosquitoes and sentinel bird flocks for West Nile virus will greatly enhance state and local government's early detection symptoms.

Q. What is the mortality rate of West Nile encephalitis?

A. Case-fatality rates range from 3% to 15% (higher in elderly than in younger age groups).

Q. How many cases of West Nile encephalitis occur in the U.S.?

A. No cases have previously been reported in the U.S. prior to September 1999 (New York City). No reliable estimates are available for the number of cases of West Nile encephalitis that occur internationally.

Q. Do birds naturally infected with West Nile virus die or become ill?

A. This has not been previously reported, but apparently has occurred in the New York City area epidemic.

Q. How is West Nile encephalitis treated?

A. There is no specific therapy. Intensive supportive therapy is indicated in more severe cases.

Q. Is the disease seasonal in its occurrence?

A. In temperate areas of the world, West Nile encephalitis cases occur primarily in the late summer or early fall. In the southern climates where temperatures are milder, West Nile encephalitis can occur year round.

Q. Who is at risk for getting West Nile encephalitis?

A. All residents of areas where active cases have been identified are at risk of getting West Nile encephalitis, but persons > 50 years of age have the highest risk.

Q. Is a woman's pregnancy at risk if she gets West Nile encephalitis?

A. There is no documented evidence that a pregnancy is at risk due to infection with West Nile virus.

Q. Is there a vaccine against West Nile encephalitis?

A. No.



Q. What can I do to reduce my risk of becoming infected with West Nile virus?

A.

Stay indoors at dawn, dusk, and in the early evening.

- Wear long-sleeved shirts and long pants whenever you are outdoors.

- Apply insect repellent sparingly to exposed skin. An effective repellent will contain 20% to 30% DEET (N,N-diethyl-meta-toluamide). DEET in high concentrations (greater than 30%) may cause side effects, particularly in children; avoid products containing more than 30% DEET.

- Repellents may irritate the eyes and mouth, so avoid applying repellent to the hands of children. Insect repellants should not be applied to very young children (< 3 years old).

- Spray clothing with repellents containing permethrin or DEET, as mosquitoes may bite through thin clothing.

- Whenever you use an insecticide or insect repellent, be sure to read and follow the manufacturer's

DIRECTIONS FOR USE, as printed on the product.

- Note: Vitamin B and "ultrasonic" devices are NOT effective in preventing mosquito bites.

Q. You refer to this as West Nile like, does this mean it may not be West Nile?

No, it means that it is a virus genetically related to West Nile, but because of genetic differences it may be a new subtype of the West Nile virus. Testing to confirm this continues.

Q. Is this a new virus strain?

It could be a new subtype of West Nile, further testing is needed.

Q. How could this virus have been introduced into the United States?

There are a number of ways that a virus can be introduced into a region, either by a mosquito, a human or a bird, infected with the virus, entering the United States.

Q. Is West Nile more easily transmitted to humans than St. Louis Encephalitis?

There is no evidence that West Nile is more easily transmitted than SLE virus. West Nile virus has the same bird hosts and mosquito vectors as SLE.

Scope of Outbreak and U.S. Surveillance for Mosquitoes and Birds

October 1999

Q. What is the scope of this outbreak? Have you seen this virus in birds in other areas of

the U.S. or Western Hemisphere.

The first recognition of West Nile-like virus came from birds from the New York area in September 1999. CDC is collaborating with the U.S. Geological Survey National Wildlife Health Center, Madison, WI, and state and local wildlife agencies, other wildlife experts and state and local health departments to conduct surveillance along the Atlantic coast of the United States for West Nile-like virus. To date, no birds or mosquitoes outside New York, Connecticut and New Jersey have been found to have West Nile-like virus infection.

Q. Do birds stop being infectious? How long are birds infectious?

A. After becoming infected, studies previously done with West Nile virus indicate that a bird can serve as a reservoir to feeding mosquitoes for about four to five days, after which the bird is no longer infectious.

Q. How does CDC work with the U.S. Geological Survey in this outbreak?

A. CDC scientists are collaborating with experts from the U.S. Department of the Interior, U.S. Geological Survey (USGS) during this outbreak of West Nile-like virus. USGS scientists will initiate a study next week in New York and other areas, capturing live birds, taking blood samples to determine if they have West Nile virus antibody, and releasing them. The objective of the study is to map the distribution of West Nile virus both spatially and temporally. CDC will help the National Wildlife Health Center in Madison, Wisconsin develop laboratory testing capability for West Nile-like virus so they can test birds for infection.

Q. In what species has West Nile virus been found?

A. Based on published literature, West Nile virus has been isolated repeatedly from humans, domestic animals (camel, horse, dog), wild birds (11 species), domestic birds (chicken, pigeon), and arthropods, including 23 mosquito species and four tick species. In addition, West Nile virus has on occasion been isolated from wildlife and rodents (grass mouse, fruit bat). In September 1999, the CDC laboratory in Ft. Collins, CO, isolated West Nile virus from wild birds native to the U.S. and from three exotic birds (flamingo, tragan, cormorant), during the investigation of the encephalitis outbreak in the NYC area.

Q. What is the system for arbovirus surveillance in the United States?

A. Approaches to arbovirus surveillance in the United States vary from state to state. Many states, especially those with long mosquito seasons, have excellent ongoing mosquito surveillance programs in place and regularly search for arboviruses among mosquitoes collected. CDC and other arboviral disease experts are available to offer technical assistance to states and communities concerned about diseases transmitted by mosquitoes, including West Nile-like virus.

The CDC Arbovirus Guidelines (1993) provide for standardization of surveillance for mosquito-borne viral encephalitis. The guidelines emphasize predictive, proactive, and efficient methods whenever possible. Surveillance is the organized monitoring of levels of virus activity, vector populations, infections in vertebrate hosts, human cases, weather, and other factors to detect or predict changes in the transmission dynamics of arboviruses. A sound surveillance program requires a thorough understanding of the biology, ecology and interactions of the vertebrate and mosquito hosts. Surveillance data are needed to estimate the risk to humans, domestic animals, and wildlife.

Q. What birds are natural reservoirs of West Nile virus in other parts of the world?

A. After becoming infected, a bird can serve as a reservoir to feeding mosquitoes for about four to five days, after which the bird is no longer infectious. Based on the published literature, West Nile virus has been isolated from the following bird species, Black Drongo (Nigeria), Kukrichane thrush (Nigeria), Squacco heron (Former Soviet Union), Rook (Former Soviet Union), European nuthatch (Former Soviet Union), Blackbird (Former Soviet Union), Pigeon (Egypt), Hooded crow (Egypt), Turtle dove (Israel), Warbler (South Africa and Cyprus), and Parrot (Madagascar). CDC is continuing to work with U.S. wildlife experts to determine the birds in the United States that may carry West Nile.

Q. What other animals may become infected with West Nile virus? Snakes etc.?

A. Based on published literature, West Nile virus has been repeatedly isolated repeatedly from humans, domestic animals (camel, horse, dog), wild birds (11 species), and domestic birds (chicken, pigeon). West Nile virus has not been reported to have been isolated from snakes, but has been isolated from frogs.

Q. Are people around the country at great risk for infectious encephalitis from West Nile-like virus? Are there prevention efforts that states should be taking now?

To date, the only U.S. cases of encephalitis from West Nile-like virus among humans were identified in New York City and New York State. Intense surveillance is ongoing around the nation. It's important to remember that mosquitoes transmit other viruses that can cause encephalitis. Therefore, people concerned about encephalitis should limit their exposure to mosquitoes. People can do that by staying indoors at dawn, dusk and during the evening. People, when they do go out, should wear long sleeves and long pants and spray mosquito repellent on their clothes. The best public health measures to prevent the transmission of arbovirus is active mosquito surveillance and systematic mosquito control measures. CDC is available to offer communities and states technical assistance in these efforts.

Q. With all these birds migrating south, should CDC be alerting public health officials to start spraying against mosquitoes?

Although we know that this is the season birds migrate south, we have no reason to believe large numbers of infected birds are in this migration. Many states have existing surveillance systems to detect viral encephalitis among mosquitoes. CDC and the U.S. Geological Survey have sent reminders to arboviral experts around the nation to think of the possibility of West Nile during their surveillance efforts. It is impossible, at this point in an ongoing investigation, to predict with certainty whether birds are or are not infected with West Nile-like virus and their final migration destination. However, it's important to remember that most birds who become infected and do not die from the disease are infectious for a limited period.

Q. I'm noticing a number of dead birds in my area and I'm hearing reports from other places about dead birds--how serious is this?

This is the bird migration season, and the arduous trip often increases the bird attrition rate along the migration path. Wildlife experts can evaluate if exceptional number of birds in the area are dying and then make a judgment about testing the birds for West Nile or other bird diseases. Birds will be dying from many normal causes this time of year and with careful surveillance and sampling for West Nile we will be able to determine the impact of this virus on birds here.

Q. Should most states begin mosquito control spraying now to stop West Nile virus from entering their state? What about states adjacent to New York?

CDC and other federal agencies have been working closely with public health and environmental experts in states adjacent to New York. CDC is accepting samples of dead birds and/or mosquitos to test for West Nile-like virus in these adjacent states. Priority is given to testing samples from locations nearest the outbreak. Results of this testing will be reported immediately to the state's public health department. CDC will offer guidance to states on their mosquito control measures as requested.

West Nile is only one of many arbovirus that mosquitos can transmit to humans. Good mosquito control programs were beneficial to public health efforts even before CDC reported the introduction of West Nile-like virus in the Western Hemisphere. Most states and local communities have mosquito surveillance and spraying programs appropriate for their environmental conditions. CDC can offer guidelines and technical assistance to these programs.

Q. How safe are the insecticides being used to spray against mosquitoes?

Public health and environmental experts are providing safety and health expertise to community mosquito control programs. Every effort is made to ensure that spraying is done in a way and at a time to eliminate the highest percentage of mosquitoes with limited spraying. These mosquito control measures have been in place and safely used for decades. The Environmental Protection Agency is working closely to educate the public about the need for and safety of these mosquito control measures.

Q. Are emergency federal funds available to help states and communities spray and monitor for mosquitoes and birds during this outbreak?

CDC, the USDA and the EPA are all working closely with states to support their mosquito control efforts. However, states must request federal emergency funding if they require it.



West Nile Virus and the Emerging Disease Plan Statement by the Director, NCID

October, 1999

National
Center for
Infectious Diseases

During CDC's outbreak investigation of arboviral (mosquito-borne) encephalitis in New York City, which began in late August, we reported the introduction of West Nile-like virus into the Western Hemisphere. One of the compelling questions in this investigation is, "How did this virus migrate to the Western Hemisphere, and the United States?" As interesting as this question may be, the answer may remain elusive--Mother Nature does not always reveal her secrets.

We live in a global village and we take every disease outbreak and every new or re-emerging disease very seriously. While we cannot expect to totally prevent the migration of viruses from one part of the world to another, our best efforts should, and do, concentrate on the steps outlined in the U.S. emerging infectious disease plan--strong surveillance for early detection and response, well-equipped labs and a cadre of public health officials trained and equipped to confront and control viruses.

Infectious diseases are a continuing menace to all people, regardless of age, gender, lifestyle, ethnic background, or socioeconomic status. They cause suffering and death, and impose an enormous financial burden on society. Although some diseases have been conquered by modern advances, such as antibiotics and vaccines, new ones are constantly emerging (such as AIDS, Lyme disease, and hantavirus pulmonary syndrome), while others reemerge in drug-resistant forms (such as malaria, tuberculosis, and bacterial pneumonias).

The emergence and re-emergence of diseases have been fueled by: worldwide population growth, behavior changes, international travel, worldwide transport of animals and food products, human encroachment on wilderness habitats and microbial evolution and their development of resistance to antibiotics and other antimicrobial drugs. Whatever the cause, the resurgence of diseases attributed to newly emerging microbes poses a continuing challenge.

Because we do not know what new diseases will arise, we must always be prepared for the unexpected. CDC's vision for the 21st century is of individuals, communities, and nations joined in a common effort to control today's emerging infectious diseases and to prevent those of tomorrow. To realize this vision, CDC scientists have designed a plan to respond to the emergence and resurgence of microbial threats in the new millennium — *Preventing Emerging Infectious Diseases: A Strategy for the 21st Century*.

James M. Hughes, M.D.
Director
National Center for Infectious Disease

<http://www.cdc.gov/ncidod>

West Nile-like Virus in the United States

- In mid-September, the Bronx Zoo submitted to the U.S. Department of Agriculture (USDA) Veterinary Diagnostic Laboratory in Iowa several carcasses of crows, flamingos, and an Asian pheasant that had died over the preceding weeks. The USDA laboratory isolated a Flavivirus from this specimens, which were then forwarded to the Centers for Disease Control and Prevention's (CDC) Division of Vectorborne Infectious Diseases in Fort Collins, Colorado. On September 23, laboratory data on these specimens suggested that the Flavivirus was a West Nile-like virus. Materials from dead crows in Westchester County, New York, and Connecticut have also been determined to contain the same virus, as have mosquito pools from Connecticut. Genetic sequencing of the virus shows an 8-10 percent difference from known West Nile-virus variants.
- West Nile virus is an arbovirus closely related to St. Louis encephalitis virus, but generally causes a milder disease in humans. Both viruses are Flaviviruses and are transmitted through the bite of a mosquito that becomes infected with the virus by feeding on an infected bird. Like St. Louis encephalitis, West Nile virus is not transmitted from person to person or from birds to persons. West Nile virus never before has been recognized in the United States or any other area of the Western Hemisphere.
- Brain tissue from fatal cases of encephalitis in New York City were submitted to CDC and to an investigator at the University of California, Irvine. Three specimens have been confirmed to contain West Nile-like virus similar to the one identified in the bird and mosquito specimens.
- Cerebrospinal fluid and serum submitted from suspected cases of encephalitis in the New York Metropolitan area are now being retested using West Nile virus specific assays. These samples were previously tested for St. Louis encephalitis and some specimens were positive. This testing is expected to continue over the next several days. For many cases, convalescent serum specimens will be required to determine case status. These specimens will have to be collected over the next several weeks, and additional testing will be undertaken.
- CDC is providing additional support to New York and surrounding areas. A total of eight CDC staff are on site, including epidemiologists, informaticians, and laboratorians. These personnel will assist State and local health officials in determining the extent of the outbreak, collecting diagnostic specimens, and performing additional risk-factor studies.
- Media interest in the outbreak continues to be strong. Interviews have been conducted with major newspapers, national television, and radio stations. CDC is planning to publish an update on the outbreak in CDC's October 1 *Morbidity and Mortality Weekly Report*.

TO: Kris Balderston/Irma Martinez (456-2525)
Chris Jennings/Devorah Adler (456-5557)
Maria Echaveste/Marge Tarmey (456-1907)

FROM: Liz Summy
Deputy Chief of Staff, HHS
690-7431

RE: West Nile Virus

Pages: 14 (including cover)

- Q&A's (please keep internal)
- MMWR (will be available after 4pm today - here's a preview)
- USGS press release from Wed.

**9/29/99 Q/As West Nile Fever --DRAFT: FOR INTERNAL USE ONLY
NOT FOR RELEASE**

Q. What is West Nile encephalitis?

A. "Encephalitis" means an inflammation of the brain and can be caused by viral and bacterial infections, including viruses transmitted by mosquitoes. West Nile encephalitis is an infection of the brain caused by West Nile virus, a flavivirus commonly found in Africa, West Asia, and the Middle East. It is closely related to St. Louis encephalitis virus found in the United States.

Q. How do people get West Nile encephalitis?

A. By the bite of a mosquito (primarily the *Culex* species) that is infected with West Nile virus.

Q. What is the basic transmission cycle?

A. Mosquitoes become infected by feeding on birds infected with the West Nile virus. Infected mosquitoes then transmit the West Nile virus to humans and animals when taking a bloodmeal.

Q. Can you get West Nile encephalitis from another person?

A. No. West Nile encephalitis is NOT transmitted from person-to-person. For example, you cannot get the virus that causes West Nile encephalitis from touching or kissing a person who has the disease, or from a health care worker who has treated someone with the disease.

Q. Can you get West Nile virus directly from birds?

A. There is no evidence that a person can get the virus from handling live or dead infected birds. However, avoid bare-handed contact when handling dead animals, including dead birds. Use gloves or double plastic bags to place the carcass in a garbage can.

Q. Besides mosquitoes, can you get West Nile virus directly from other insects or ticks?

A. Infected mosquitoes are the primary vector for West Nile virus. However, both hard and soft ticks have been found infected with West Nile virus in nature, but their role in the transmission and maintenance of the virus is uncertain. It may be possible for an infected tick to transmit the virus to birds or humans while taking a bloodmeal.

Q. What are the symptoms of West Nile encephalitis?

A. Mild infections are common and include fever, headache, and body aches, often with skin rash and swollen lymph glands. More severe infection is marked by headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, occasional convulsions, paralysis and, rarely, death.

Q. What is the incubation period of West Nile encephalitis?

A. Usually 5 to 15 days.

Q. Where did the West Nile-like virus come from?

A. West Nile virus has been commonly found in humans and birds and other vertebrates in Africa, West Asia, and the Middle East, but has not previously been documented in the Western Hemisphere. It is not known where the U.S. virus came from.

Q. How long has the West Nile-like virus been in the U.S.?

A. It is not known how long it has been in the U.S., but CDC scientists believe the virus has probably been in the eastern U.S. for several months, possibly longer.

Q. When will the current risk of infection end?

A. The risk in the New York City area is greatly reduced due to the effectiveness of mosquito control and public education programs. However, the risk of infection will not be completely over until mosquito activity ceases for the season, i.e., when freezing temperatures are experienced.

Q. What precautions need to be taken to prevent a recurrent outbreak next year?

A. Surveillance for infected mosquitoes and sentinel bird flocks for West Nile virus will greatly enhance state and local government's early detection symptoms.

Q. What is the mortality rate of West Nile encephalitis?

A. Case-fatality rates range from 3% to 15% (higher in elderly than in younger age groups).

Q. How many cases of West Nile encephalitis occur in the U.S.?

A. No cases have previously been reported in the U.S. prior to September 1999 (New York City). No reliable estimates are available for the number of cases of West Nile encephalitis that occur internationally.

Q. Do birds naturally infected with West Nile virus die or become ill?

A. This has not been previously reported, but apparently has occurred in the New York City area epidemic.

Q. How is West Nile encephalitis treated?

A. There is no specific therapy. Intensive supportive therapy is indicated in more severe cases.

Q. Is the disease seasonal in its occurrence?

A. In temperate areas of the world, West Nile encephalitis cases occur primarily in the late summer or early fall. In the southern climates where temperatures are milder, West Nile encephalitis can occur year round.

Q. Who is at risk for getting West Nile encephalitis?

A. All residents of areas where active cases have been identified are at risk of getting West Nile encephalitis, but persons > 50 years of age have the highest risk.

Q. Is a woman's pregnancy at risk if she gets West Nile encephalitis?

A. There is no documented evidence that a pregnancy is at risk due to infection with West Nile virus.

Q. Is there a vaccine against West Nile encephalitis?

A. No.

Q. What can I do to reduce my risk of becoming infected with West Nile virus?**A.**

- Stay indoors at dawn, dusk, and in the early evening.

- Wear long-sleeved shirts and long pants whenever you are outdoors.

- Apply insect repellent sparingly to exposed skin. An effective repellent will contain 20% to 30% DEET (N,N-diethyl-meta-toluamide). DEET in high concentrations (greater than 30%) may cause side effects, particularly in children; avoid products containing more than 30% DEET.

- Repellents may irritate the eyes and mouth, so avoid applying repellent to the hands of children. Insect repellants should not be applied to very young children (< 3 years old).

- Spray clothing with repellents containing permethrin or DEET, as mosquitoes may bite through thin clothing.

- Whenever you use an insecticide or insect repellent, be sure to read and follow the manufacturer's

DIRECTIONS FOR USE, as printed on the product.

- Note: Vitamin B and "ultrasonic" devices are NOT effective in preventing mosquito bites.

DRAFT: INTERNAL QUESTION NOT FOR RELEASE OUTSIDE AGENCY

How could CDC have made such a huge mistake by telling patients they had SLE when they didn't?

Learning that West Nile fever virus rather than SLE caused the outbreak is an important development for people who study viruses. Scientists now know to include this virus when performing diagnostic tests of persons with encephalitis so they can identify the exact cause. From a public health and individual's perspective, the difference in diagnosis changes nothing. The diagnosis of West Nile does not change the treatment or control measures recommended by CDC.

Background:

After reports of encephalitis in New York City, CDC tested for antibodies to the common North American arboviruses and it was positive for St. Louis Encephalitis. The first test was for St. Louis encephalitis because it was a likely candidate as the cause of this encephalitis outbreak. A complicating factor is the cross reactivity of West Nile and St. Louis encephalitis viruses in the first test CDC conducted. Further testing confirmed the West Nile-like virus. The important first step was to confirm in the laboratory that people were becoming ill from a mosquito-borne virus that causes encephalitis. At that point, control measures could begin.

This is the early stage of a ongoing disease outbreak investigation. In the early stages of any

investigation, there are more questions than answers. CDC is sharing preliminary information and theories with involved health departments as quickly as it becomes available. CDC is continuing to investigate this outbreak and will continue to share information and theories as quickly as possible with involved area.

Why did CDC first say the cases were SLE?

The normal test panel of viruses against which serum and tissue samples from suspected encephalitis cases the United States are routinely tested for the viruses that are indigenous to the U.S., i.e., St. Louis, Eastern Equine, Western Equine, LaCrosse, and Powassan viruses. The serology on samples from initial human cases in this outbreak were reported as consistent with St. Louis encephalitis virus infection. Because the clinical and epidemiological aspects of these cases were also compatible with SLE virus infection, the diagnosis of SLE was naturally made.

Did CDC make a lab mistake?

Not at all. The usual procedure in an investigation of this type is to test for the most likely cause of disease. More specific follow-up tests then can be performed to confirm the diagnosis. In this instance follow up testing identified the West Nile virus, new to the Western Hemisphere. The serology on samples from initial human cases in this outbreak were consistent with St. Louis encephalitis virus infection. Because the clinical and epidemiological aspects of these cases were also compatible with SLE virus infection, the initial diagnosis of SLE was naturally made.

Is it possible that some of the SLE negatives will be positive for West Nile?

Yes, suspected SLE cases are being re-tested using West Nile antigen; the results are compatible with infection with West Nile-like virus. Moreover, West Nile-like virus has been identified in brain samples from suspected SLE cases who died.

Did CDC put the health of humans at risk by first incorrectly identifying this as SLE?

No. SLE and West Nile encephalitis are clinically and epidemiologically very similar. Therefore, the mosquito control and public health measures conducted in response to the suspected SLE epidemic were equally effective against West Nile-like virus.

What does this mean to bird migration in the south? Is CDC investigating this? If not, who does do this kind of investigation?

Birds began their southern migration about six weeks ago. It is possible that some birds infected with West Nile-like virus could have already flown south to states in the U.S. and to other countries. It is uncertain whether the ecologic conditions in various parts of the U.S., including the northeast, will allow this virus to become established. CDC is working with the U.S. Geologic Society, U.S. Fish and Wildlife Service, National Wildlife Health Center, in Madison, Wis., state wildlife agencies and state and local health and vector control agencies to conduct surveillance of birds and mosquitoes that may be infected with West Nile virus in the U.S.

Where did West Nile come from?

West Nile is an arbovirus (a virus borne by mosquitoes) that has, to date, been recognized in the Old Works to include Eastern Europe, Asia and Africa.

You refer to this as West Nile like, does this mean it may not be West Nile?

No, it means that it is a virus genetically related to West Nile, but because of genetic differences it may be a new subtype of the West Nile virus. Testing to confirm this continues.

Is this a new virus strain?

It could be a new subtype of West Nile, further testing is needed.

How could this virus have been introduced into the United States?

There are a number of ways that a virus can be introduced into a region, either by a mosquito, a human or a bird, infected with the virus, entering the United States.

Is West Nile more easily transmitted to humans than St. Louis Encephalitis?

There is no evidence that West Nile is more easily transmitted. In addition, West Nile has been known to cause a more mild disease.

Did West Nile kill the birds in the Bronx Zoo?

We have ruled out most other known causes of diseases in these birds.

Does West Nile usually kill infected birds?

No, typically West Nile does not kill birds where this virus is endemic. There is research that has shown crows to be more susceptible to this virus than other birds.

If this virus going to travel south and cause disease outbreaks in the south?

This is an ongoing investigation. CDC is working with wildlife experts to determine the scope of this viruses' introduction into the United States and the Western Hemisphere. We do not want to speculate on where this virus may have originated in the Western Hemisphere or where it may be headed. Of course, we know that this is the season for birds to migrate south. This is a factor in our surveillance efforts.

Is the spraying for mosquitoes going to kill the Monarch butterflies too?

The application timing and methods are designed to kill mosquitoes who are out feeding in the early evening. At that time butterflies and honey bees are not moving and should not be harmed by the spraying of insecticide directed at mosquitoes.

Should people be alarmed if they find dead birds in their area?

No, people cannot be infected with West Nile virus from birds or from people. Individuals can protect themselves from West Nile virus by avoiding exposure to mosquitoes: limit outdoor activities at dawn, dusk and in the evening. Individuals should wear long pants and long-sleeved shirts when outdoors and spray insecticide on the outside of their clothing before going outside.

What is the scope of this outbreak? Have you seen this virus in birds in other areas of the U.S. or Western Hemisphere.

The first recognition of West Nile came from birds from the New York area. CDC is concentrating its investigation to this geographic area. Other wildlife experts are conducting surveillance along the Atlantic coast of the U.S.

Q. What should I do if I find a dead bird in my yard?

Follow local advice on who to notify. There is no evidence that a person can get the virus from handling live or dead infected birds. However, avoid bare-handed contact when handling dead animals, including dead birds. Use gloves or double plastic bags to place the carcass in a garbage can.



October 1, 1999 / Vol. 48 / No. 38

MMWRTM

MORBIDITY AND MORTALITY WEEKLY REPORT

- 845 Outbreak of West Nile-Like Viral Encephalitis — New York, 1999
- 849 Healthier Mothers and Babies
- 857 National Child Health Month — October 1999
- 858 Outbreak of Poliomyelitis — Iraq, 1999
- 859 National Adult Immunization Awareness Week — October 10–16, 1999
- 859 Notice to Readers

Outbreak of West Nile-Like Viral Encephalitis — New York, 1999

An outbreak of arboviral encephalitis was first recognized in New York City in late August and has since been identified in neighboring counties in New York state. Although initially attributed to St. Louis encephalitis (SLE) virus based on positive serologic findings in cerebrospinal fluid (CSF) and serum samples using a virus-specific IgM-capture enzyme-linked immunosorbent assay (ELISA), the cause of the outbreak has been confirmed as a West Nile-like virus based on the identification of virus in human, avian, and mosquito samples.

On August 23, 1999, an infectious disease physician from a hospital in northern Queens contacted the New York City Department of Health (NYCDOH) to report two patients with encephalitis. On investigation, NYCDOH initially identified a cluster of six patients with encephalitis, five of whom had profound muscle weakness (with axonal neuropathy by electromyogram and requiring respiratory support [n=four]). Testing of these initial cases by IgM-capture ELISA for antibodies to the common North American arboviruses was positive for SLE virus on September 3 at CDC. Eight of the earliest case-patients were residents of a 2-by-2-mile area in northern Queens. On the basis of these findings, aerial and ground applications of mosquito adulticides and larvicides were instituted in northern Queens and South Bronx on September 3.

To define the geographic extent of the outbreak, NYCDOH initiated active surveillance on August 30, and the Westchester County Department of Health and the Nassau County Department of Health initiated active surveillance on September 3. Surveillance is also ongoing in surrounding areas. A clinical case is defined as a presumptive diagnosis of viral encephalitis with or without muscle weakness or acute flaccid paralysis, Guillain-Barré syndrome, aseptic meningitis, or presence of the clinical syndrome characterizing the initial cluster of cases in a patient presenting after August 1.

Before and concurrent with this outbreak, local health officials observed increased fatalities among New York City birds, especially crows. During September 7–9, officials of the Bronx Zoo noted the deaths of a cormorant, two captive-bred Chilean flamingoes, and an Asian pheasant. Necropsies performed on these birds at the zoo revealed varying degrees of meningo-encephalitis and severe myocarditis. Tissue specimens from these birds and a crow with pathologic evidence of encephalitis from New York state were sent to the U.S. Department of Agriculture National Veterinary Services Laboratories (NVSL) in Ames, Iowa, on September 10 to be tested for com-

U.S. DEPARTMENT OF HEALTH & HUMAN SERVICES

848

MMWR

October 1, 1999

Viral Encephalitis — Continued

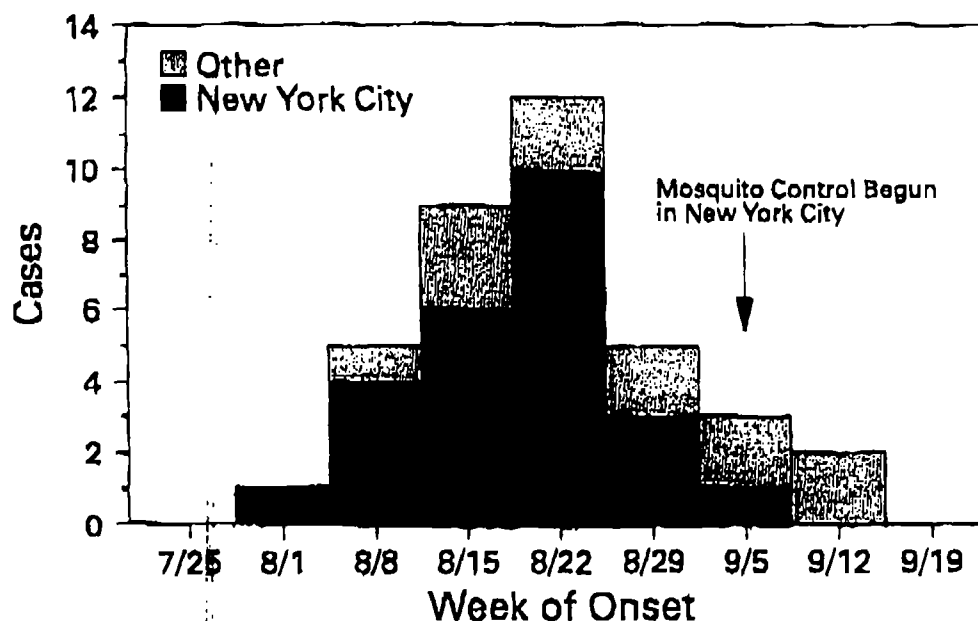
mon avian pathogens and the equine encephalitis viruses; all tests were negative. NVSL isolated viruses from the birds' tissues and forwarded them to CDC on September 20 for identification and characterization.

Testing at CDC on September 23 by polymerase chain reaction (PCR) and DNA sequencing of these isolates indicated that they were closely related to West Nile virus (WNV), which has never been isolated in the western hemisphere. In other tests at CDC, flavivirus antigen was detected in one of the autopsy specimens by immunohistochemistry, and a West Nile-like virus genomic sequence identical to that derived from the bird isolates was observed in a human brain specimen from an encephalitis case. Concurrently, specimens of brain tissue from three human encephalitis cases, forwarded by the New York State Department of Health to the University of California, Irvine, were reported as positive for West Nile-like virus sequence by genomic analysis. All serum/CSF specimens reactive to SLE by IgM ELISA were positive by WNV ELISA with higher positive/negative ratios than to SLE, and an additional 10 borderline and eight negative samples were positive for antibody to WNV.

As of September 28, a total of 17 confirmed and 20 probable human cases (1) and four deaths have been reported from New York City (25 cases) and the surrounding counties of Westchester (eight) and Nassau (four). The four deaths occurred among persons aged ≥68 years. One case-patient with onset in late August reported a history of travel to Africa completed in June 1998; none of the remaining case-patients had traveled during the incubation period to areas where WNV is known to be endemic. Two of the Westchester County case-patients had no reported travel history to New York City or other areas in which WNV previously had been detected.

Onset dates ranged from August 5 to September 16 (Figure 1), although no cases had onset in New York City after control measures were extended to the entire city on September 11. The median age of case-patients was 71 years (range: 15–87 years), with the most severe clinical cases and all fatalities occurring among older persons.

FIGURE 1. Seropositive cases of West Nile-like virus, by week of onset — New York, 1999



Viral Encephalitis — Continued

Vector control measures initiated in northern Queens and South Bronx on September 3 were followed by a city-wide pesticide application after laboratory confirmation of encephalitis in a Brooklyn resident with no travel history to Queens and confirmation of an additional two cases in South Bronx. According to the latest ongoing population estimates from a city-wide mosquito surveillance program, the host-seeking adult *Culex pipiens* mosquito population has been reduced substantially by the control operation. Following the confirmation of human cases in Westchester and Nassau counties and detection of virus in adult *Culex pipiens* and *Aedes vexans* mosquitoes and in a deceased bird from a nearby area in Connecticut, insecticide application has been initiated in these areas to reduce the mosquito population. Surveillance of wild birds and/or sentinel chickens was instituted to assess WNV distribution in the region.

Emergency telephone hotlines were established in New York City on September 3 and in Westchester County on September 21 to address public inquiries about the encephalitis outbreak and pesticide application. As of September 28, approximately 130,000 calls have been received by the New York City hotline and 12,000 by the WCDH hotline. Approximately 300,000 cans of DEET-based mosquito repellent were distributed citywide through local firehouses, and 750,000 public health leaflets were distributed with information about personal protection against mosquito bites. Recurring public messages were announced on radio, television, on the New York City and WCDH World-Wide Web sites, and in newspapers, urging personal protection against mosquito bites, including limiting outdoor activity during peak hours of mosquito activity, wearing long-sleeved shirts and long pants, using DEET-based insect repellents, and eliminating any potential mosquito breeding niches. Spraying schedules also were publicized with recommendations for persons to remain indoors while spraying occurred to reduce pesticide exposure. Mosquito surveillance will continue until the first frost in New York City; Westchester, Nassau, Rockland, and Suffolk counties; and Connecticut. Surveillance for new human WNV cases will be conducted until several weeks after the first frost, when mosquito activity is expected to subside.

Reported by: D Asnis, MD, R Conetta, MD, G Waldman, MD, A Teixeira, MD, Flushing Hospital, Queens; New York City acute care hospitals and microbiology laboratories; T McNamara, DVM, Wildlife Conservation Society; A Fine, MD, M Layton, MD, J Miller, MD, D Cimini, MPH, M Camilo Vargas, DVM, A Inglesby, MD, A Labowitz, K Bornschlegel, MPH, B Maldin, E Samoff, MPH, D Haddow, and the New York City Outbreak Investigation Team; S Mullin, MSW, J Gadd, MPP, E Giöbelhaus, MPP, L Masuch, MSW, A Sher, M Foggin, BJ Mojica, N Cohen, MD, I Weisfuse, MD, R Bhalla, MD, E Lee, MD, D Malebranche, MD, G Sacajiu, MD, A Sharma, MD, A Ramon, MD, I Poshni, PhD, H Stirling, MPH, A Goldberg, New York City Dept of Health; J Hauer, MHS, Mayor's Office of Emergency Management, New York City; A Huang, MD, A Rosenberg, MD, P Yang-Lewis, MPH, HN Adel, MD, Westchester County Health Dept; K Gaffney, MD, A Greenberg, MD, B Smith, M Sherman, Div of Environmental Health and Disease Control, Nassau County Dept of Health; W Stone, Dept of Environmental Conservation; A Novello, MD, D White, PhD, D Morse, MD, K Spitalny, MD, R Gallo, H Leib, S Wong, MD, L Grady, MD, P Smith, MD, State Epidemiologist, New York State Dept of Health, M Carter, MD, J Hadler, MD, Connecticut State Health Dept, WI Lipkin, MD, T Briesa, PhD, XY Jia, MD, Emerging Diseases Laboratory, Univ of California, Irvine, National Veterinary Svcs Laboratories, Animal and Plant Health Inspection Svc, US Dept of Agriculture, Ames, Iowa, State Br, Div of Applied Public Health Training, Epidemiology Program Office, Meningitis and Special Pathogens Br, Div of Viral and Rickettsial Diseases, and Arbovirus Diseases Br, Div of Vector Borne Infectious Diseases, National Center for Infectious Diseases; and EIS officers, CDC.

Editorial Note: WNV is a flavivirus belonging taxonomically to the Japanese encephalitis subgroup that includes the serologically closely related SLE virus, Kunjin virus,

Viral Encephalitis — Continued

Murray Valley encephalitis virus, and others. WNV was first isolated in the West Nile Province of Uganda in 1937 (2). The first recorded epidemics occurred in Israel during 1950–1954 and in 1957. Epidemics have been reported in Europe in the Rhone delta of France in 1962 and in Romania in 1996 (3–5). The largest recorded epidemic occurred in South Africa in 1974 (6). It is unclear whether the virus that caused this outbreak is a previously identified strain of WNV or a new variant.

The genomic sequences identified to date from a human brain, virus isolates from zoo birds, and viruses isolated from a dead crow and two mosquito pools from Connecticut appear identical. Based on preliminary serologic testing, this outbreak was originally believed to be caused by the SLE virus. SLE and West Nile viruses are antigenically related, and cross reactions are observed with some serologic tests. Results of PCR-based sequencing that identified WNV prompted more specific testing. The IgM-capture ELISA used in testing serum/CSF samples in this outbreak is rapid, sensitive, and quantitative. The limitations of some serologic assays emphasize the importance of isolating the flavivirus from entomologic, clinical, or veterinary material. The availability of virus isolates and genomic sequences from birds and human brain tissue permitted the discovery of this West Nile-like virus in North America. Although it is not known when and how a West Nile-like virus was introduced into North America, international travel of infected persons to New York or transport by imported infected birds may have played a role.

WNV can infect a wide range of vertebrates, but in humans it usually produces either asymptomatic infection or mild febrile disease. Within its normal geographic distribution of Africa, the Middle East, western Asia, and Europe, WNV has not been documented to cause epizootics in birds; crows with antibodies to WNV are common, suggesting that asymptomatic or mild infection usually occurs among crows in those regions. Similarly, substantial bird virulence of SLE virus has not been reported. Therefore, an epizootic producing high mortality in crows and other bird species is unusual for either WNV or SLE virus and may represent introduction to a native bird population or a new virulent strain. For both viruses, migratory birds may play an important role in the natural transmission cycles.

Like SLE virus, WNV is transmitted principally by *Culex* species mosquitoes, but also can be transmitted by *Aedes*, *Anopheles*, and other species. The predominance of urban *Culex* mosquitoes trapped during this outbreak suggests an important role for this species. Enhanced monitoring through surveillance for early detection of this virus outside of the affected area will be crucial to guide extension of control measures.

References

1. CDC. Case definitions for infectious conditions under public health surveillance. MMWR 1997;48(RR-10):12-3.
2. Smithburn KC, Hughes TP, Burke AW, Paul JH. A neurotropic virus isolated from the blood of a native of Uganda. Am J Trop Med Hyg 1940;20:471.
3. Klingberg MA, Jasinka-Klingberg W, Goldblum N. Certain aspects of the epidemiology and distribution of immunity of West Nile virus in Israel. In: Proceeding of the 6th International Congress of Tropical Medicine, 1959;5:132.
4. Panther R, Hannoun C, Beytout D, Mouchet J. Epidemiology of West Nile virus. In: Human illness: focus on Camargue (French). Vol 3. Ann Inst Pasteur 1988;115:435.
5. Tsai TF, Popovici F, Cernescu C, Campbell GL, Nedelcu NI. West Nile encephalitis epidemic in southeastern Romania. Lancet 1998;352:767-71.

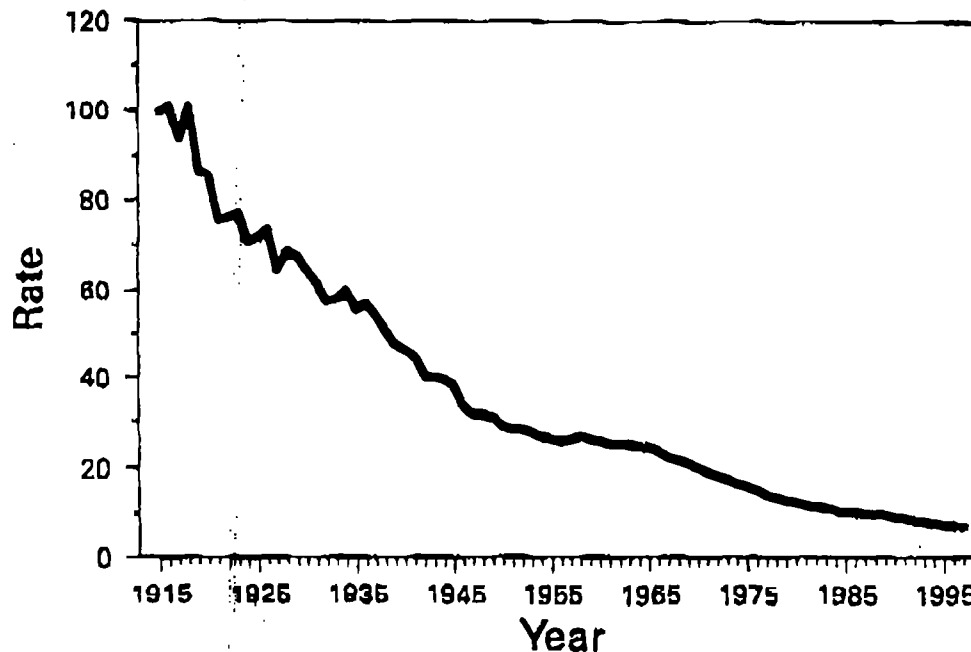
Viral Encephalitis — Continued

6. McIntosh BM, Jupp PG, Dos Santos I, Meenahan GM. Epidemics of West Nile and Sindbis viruses in South Africa with *Culex (Culex) univittatus* Theobald as vector. S Afr J Sci 1976;72:296.

*Achievements in Public Health, 1900–1999***Healthier Mothers and Babies**

At the beginning of the 20th century, for every 1000 live births, six to nine women in the United States died of pregnancy-related complications, and approximately 100 infants died before age 1 year (1,2). From 1915 through 1997, the infant mortality rate declined >90% to 7.2 per 1000 live births, and from 1900 through 1997, the maternal mortality rate declined almost 99% to <0.1 reported death per 1000 live births (7.7 deaths per 100,000 live births in 1997) (3) (Figures 1 and 2). Environmental interventions, improvements in nutrition, advances in clinical medicine, improvements in access to health care, improvements in surveillance and monitoring of disease, increases in education levels, and improvements in standards of living contributed to this remarkable decline (7). Despite these improvements in maternal and infant mortality rates, significant disparities by race and ethnicity persist. This report summarizes trends in reducing infant and maternal mortality in the United States, factors contributing to these trends, challenges in reducing infant and maternal mortality, and provides suggestions for public health action for the 21st century.

FIGURE 1. Infant mortality rate,* by year — United States, 1915–1997



*Per 1000 live births.



News Release

U.S. Department of the Interior
U.S. Geological Survey

Release

September 29, 1999

Contact:

Butch Kinerney

Address:

119 National Center
Reston, VA 20192

Email:

bkinerney@usgs.gov

Phone:

703-648-4732

Fax:

703-648-4466

USGS Biologists Tracking West Nile Virus in Birds

Wildlife biologists from the U.S. Geological Survey, in partnership with other federal, state and local agencies are studying the West Nile-like virus which has been blamed for the deaths of three people in New York City and the deaths of many birds in the city and surrounding areas.

On Wednesday, USGS wildlife biologists issued a Wildlife Health Alert to federal and state wildlife conservation agencies, parks, refuges and other wildlife agencies east of the Mississippi River to be on the lookout for dead crows and other birds which may indicate that the mosquito-borne virus has appeared.

USGS biologists, teaming with the scientists and managers from the U.S. Centers for Disease Control and Prevention (CDC) and health and environmental departments in the New York City, New York State, Connecticut and New Jersey, have been working to determine the extent of the problem in the Northeast.

Beginning next week, USGS field teams will be on the ground in New York and other areas capturing live birds, taking blood samples and releasing them. The samples will be sent to the USGS National Wildlife Health Center in Madison, Wisc. for testing in an effort to detect virus antibodies. USGS biologists will be analyzing samples from dead crows to determine if the virus is present.

"We're trying to map the distribution of this disease both spatially and temporally. And

we want to try to determine where it might be going," said Paul Slota, a USGS wildlife biologist who is leading the study. "We're watching areas particularly south of New York for crows which have died from diseases and then try to determine if the virus came into play."

Slota said that the wildlife alert is being sent to a broad area because crows, while not as migratory as other bird species, still travel many miles from home.

The CDC has made the link between the West Nile-like virus found in birds in New York City and the ongoing human encephalitis outbreak in the area. On Friday, CDC identified a West Nile-like virus in tissue sample from a New York City resident who recently died from encephalitis. Last week, CDC identified West Nile-like virus from birds that died in New York City and were submitted by the Bronx Zoo for testing. In addition, CDC confirmed that birds and mosquitoes in Connecticut also have been infected with West Nile-like virus.

West Nile virus is an arbovirus closely related to St. Louis encephalitis virus, but generally causes a milder disease in humans, according to information from the CDC. Both viruses are transmitted through the bite of a mosquito that becomes infected with the virus by feeding on an infected bird. Like St. Louis encephalitis, West Nile virus is not transmitted from person to person or from birds to persons. West Nile virus never before has been recognized in the United States or any other area of the Western Hemisphere.

For more information on the West Nile virus:

Centers for Disease Control and Prevention:

<http://www.cdc.gov/qd/oc/media/pressrel/r990924.htm>

<http://www.cdc.gov/ncidod/dvbid/arbor/arboinfo.htm>

U.S. Geological Survey National Wildlife Health Center:

<http://www.umesc.usgs.gov/nwhc/home.html>

As the nation's largest water, earth and biological science and civilian mapping agency the USGS works in cooperation with more than 2000 organizations across the country to provide reliable, impartial, scientific information to resource managers, planners, and other customers. This information is gathered in every state by USGS scientists to minimize the loss of life and property from natural disasters, contribute to sound economic and physical development of the nation's natural resources, and enhance the quality of life by monitoring water, biological, energy, and mineral resources.

--USGS--

In-depth information about USGS programs may be found on the USGS home page at <http://www.usgs.gov>. To receive the latest USGS news releases automatically by e-mail, send

a request to historoc@listserver.usgs.gov. Specify the listserver(s) of interest from the following names: water-pr; geologic-pr; geologic-hazards-pr; biological-pr; mapping-pr; products-pr; lecture-pr. In the body of the message write: subscribe (name of listserver) (your name). Example: water-pr joe smith.

DEPARTMENT OF HEALTH & HUMAN SERVICES

Chief of Staff

Washington, D.C. 20201

FACSIMILE

DATE:

9/28

TO:

~~Debra M. Eickelberry~~

FAX#:

456-2525

Devorah Adler

FROM: Elizabeth Summy
Deputy Chief of Staff

Phone: 202/690-7431 Fax: 202/401-5783

COMMENTS:

West Nile Virus update
from CDC

76
Pages [including this cover]

West Nile-like Virus in the United States
Prepared by Centers for Disease Control and Prevention (CDC)
Update - September 27, 1999

In mid-September, the Bronx Zoo submitted to the U.S. Department of Agriculture (USDA) Veterinary Diagnostic Laboratory in Iowa several carcasses of crows, flamingos, and an Asian pheasant that had died over the preceding weeks. The USDA laboratory isolated a Flavivirus from this specimens, which were then forwarded to the Centers for Disease Control and Prevention's (CDC) Division of Vectorborne Infectious Diseases in Fort Collins, Colorado. On September 23, laboratory data on these specimens suggested that the Flavivirus was a West Nile-like virus. Materials from dead crows in Westchester County, New York, and Connecticut have also been determined to contain the same virus, as have mosquito pools from Connecticut. Genetic sequencing of the virus shows an 8-10 percent difference from known West Nile-virus variants.

West Nile virus is an arbovirus closely related to St. Louis encephalitis virus, but generally causes a milder disease in humans. Both viruses are Flaviviruses and are transmitted through the bite of a mosquito that becomes infected with the virus by feeding on an infected bird. Like St. Louis encephalitis, West Nile virus is not transmitted from person to person or from birds to persons. West Nile virus never before has been recognized in the United States or any other area of the Western Hemisphere.

Brain tissue from fatal cases of encephalitis in New York City were submitted to CDC and to an investigator at the University of California, Irvine. Three specimens have been confirmed to contain West Nile-like virus similar to the one identified in the bird and mosquito specimens.

Cerebrospinal fluid and serum submitted from suspected cases of encephalitis in the New York Metropolitan area are now being retested using West Nile virus specific assays. These samples were previously tested for St. Louis encephalitis and some specimens were positive. This testing is expected to continue over the next several days. For many cases, convalescent serum specimens will be required to determine case status. These specimens will have to be collected over the next several weeks, and additional testing will be undertaken.

CDC is providing additional support to New York and surrounding areas. A total of eight CDC staff are on site, including epidemiologists, informaticians, and laboratorians. These personnel will assist State and local health officials in determining the extent of the outbreak, collecting diagnostic specimens, and performing additional risk-factor studies.

Media interest in the outbreak continues to be strong. Interviews have been conducted with major newspapers, national television, and radio stations. CDC is planning to publish an update on the outbreak in CDC's October 1 *Morbidity and Mortality Weekly Report*.



Background

West Nile-like Virus in the United States

September 24, 1998

Contact: CDC Media Relations 404 639-3286

CDC, in collaboration with the New York City and New York State departments of health, has isolated and identified a West Nile-like virus from birds that died in New York City and were submitted for testing by the Bronx Zoo.

West Nile virus is an arbovirus closely related to St. Louis encephalitis virus, but generally causes a milder disease in humans. Both viruses are transmitted through the bite of a mosquito that becomes infected with the virus by feeding on an infected bird. Like St. Louis encephalitis, West Nile virus is not transmitted from person to person or from birds to persons. West Nile virus never before has been recognized in the United States or any other area of the Western Hemisphere.

Since late August, New York City has been experiencing an outbreak of arboviral (mosquito-borne) encephalitis. Previously, diagnostic tests on serum from human cases in this outbreak were reported as consistent with St. Louis encephalitis virus infection. At present, the relationship between this isolation of West Nile-like virus from birds in New York City and the outbreak of encephalitis among persons in New York City remains uncertain and further laboratory testing is underway. The CDC is testing these and additional human specimens for the possibility of West Nile-like virus infection.

CDC and city and state health departments emphasize that current mosquito control efforts by individuals and communities are appropriate because the same mosquito species transmit both viruses. Individuals should continue to do the following to reduce their contact with mosquitoes:

- When outdoors, wear clothing that covers the skin such as long sleeve shirts and pants; spray clothing and exposed skin with insect repellent.
- Curb outside activity at dawn, dusk and during the evening.

Communities should continue to do the following:

- Raise public awareness about the outbreak, control measures, and personal protection.
- Continue current efforts of mosquito control.

08/28/99 TUE 12:01 FAX
09/28/99 TUE 10:25 FAX 202 4015783

CABINET AFFAIRS
CHIEF OF STAFF

004

T-320 P.03/03 Job-497

CDC further recommends that communities in the area should consider mosquito spraying if they have not yet done so.

www.cdc.gov



Centers for Disease Control and Prevention

[CDC Home](#) | [Search](#) | [Health Topics A-Z](#)

OFFICE OF COMMUNICATION

1600 Clifton Rd., MS D-25, Atlanta, GA 30333-Ph: 404-639-3286 FAX: 404-639-7384

MEDIA RELATIONS

[Media Home](#) | [Contact Us](#)

September 23, 1999
Contact: CDC, Media Relations
(404) 639-3286

CDC, in collaboration with the New York City and New York State departments of health, has isolated and identified a West Nile-like virus from birds that died in New York City and were submitted for testing by the Bronx Zoo.

West Nile virus is an arbovirus closely related to St. Louis encephalitis virus, but generally causes a milder disease in humans. Both viruses are transmitted through the bite of a mosquito that becomes infected with the virus by feeding on an infected bird. Like St. Louis encephalitis, West Nile virus is not transmitted from person to person or from birds to persons. West Nile virus never before has been recognized in the United States or any other area of the Western Hemisphere.

Since late August, New York City has been experiencing an outbreak of arboviral (mosquito-borne) encephalitis. Previously, diagnostic tests on serum from human cases in this outbreak were reported as consistent with St. Louis encephalitis virus infection. At present, the relationship between this isolation of West Nile-like virus from birds in New York City and the outbreak of encephalitis among persons in New York City remains uncertain and further laboratory testing is underway. The CDC is testing these and additional human specimens for the possibility of West Nile-like virus infection.

CDC and city and state health departments emphasize that current mosquito control efforts by individuals and communities are appropriate because the same mosquito species transmit both viruses. Individuals should continue to do the following to reduce their contact with mosquitoes:

- When outdoors, wear clothing that covers the skin such as long sleeve shirts and pants; spray clothing and exposed skin with insect repellent.
- Curb outside activity at dawn, dusk and during the evening.

Communities should continue to do the following:

- Raise public awareness about the outbreak, control measures, and personal protection.
- Continue current efforts of mosquito control.

09/28/99 TUE 10:28 FAX 202 4015783

September 24, 1999 <http://www.cdc.gov/od/oc/media/pressrel/r990924.htm>

CDC further recommends that communities in the area should consider mosquito spraying if they have not yet done so.

[Media Home](#) | [Contact Us](#)

[CDC Home](#) | [Search](#) | [Health Topics A-Z](#)

This page last reviewed Fri Sep 24 17:41:00 GMT-0400
(EDT) 1999

URL:

<http://www.cdc.gov/od/oc/media/pressrel/r990924.htm>

Centers for Disease Control and Prevention
Office of Communication



Office of the Director
Federal Emergency Management Agency

Washington, D.C. 20472

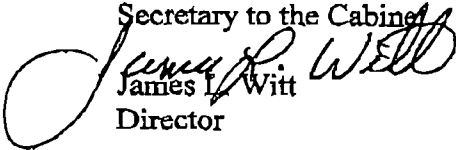
September 28, 1999

As of 7 a.m.

MEMORANDUM TO:

Thurgood Marshall, Jr.
Secretary to the Cabinet

FROM:


James L. Witt
Director

SUBJECT:

FEMA Operations

This is to inform you about current FEMA operations and monitoring activities.

Atlantic tropics

- Cloudiness and showers over portions of the western and southwestern Gulf of Mexico are associated with a tropical wave moving west-northwest. The wave will bring showers to the Gulf Coast from Louisiana west. There are no signs of tropical development with this wave at this time.
- A second wave is located over the east-central Caribbean Sea and is moving west. The wave is bringing thundershowers from the Leeward Islands to Hispaniola. There are no signs of tropical development with this wave.
- Throughout the basin, tropical storm development is not expected through Wednesday.

FEMA-1292-DR, North Carolina update

- Rain continues to fall in the Carolinas, adding to the already record rainfall the region has seen in September. Current precipitation, combined with planned releases at some reservoirs, may drive the Neuse River above flood stage at two locations in North Carolina but is not expected to create significant new flooding.
- Several flood and flash flood warnings are in effect in the state through today.
- All State search and rescue operations have now ceased and the teams have been released. There are still evacuation orders in effect for Craven and Edgecombe counties.
- The death toll in the state has now risen to 48, with six people still missing and presumed dead.
- Schools remain closed in Duplin, Edgecombe, Greene and Pitt counties. There are approximately 300 roads still closed by washouts or flooding.
- Individual Assistance (IA) Preliminary Damage Assessments (PDAs) are underway in the counties most heavily impacted by the flooding, Wayne, Pitt, Lenoir, Edgecombe and Pender. All IA PDAs are expected to be completed by the end of this week.

- So far, PDAs indicate the following: 1,461 homes destroyed, 2,071 with major damage, 6,652 with minor damage. There are currently 19 shelters open housing 1,590 people.
- There are 18 fixed and one mobile Disaster Recovery Centers in operation in affected areas.
- Manufactured home group site construction has begun in Pitt and Lenoir counties. Commercial sites for manufactured home units have been identified in 11 additional counties. So far, 57 families have been housed.
- Public Assistance applicant briefings have commenced.
- So far, almost 40,000 people have registered for disaster housing assistance and \$2,423,308 in housing assistance checks has been issued.

California wildfires

- The Canyon Fire in Shasta County, CA, that forced some evacuations Sunday and yesterday has been contained. The fire destroyed at least 37 homes and more than 40 other structures. Residents have been allowed to return to the area.
- Significant progress was made on another large fire in the state, the Big Bar Complex in Trinity National Forest. Another large fire, the Kirk Complex in Los Padres National Forest, continues to threaten structures and elude containment. There are more than 3,300 personnel and 27 helicopters fighting this blaze.

Seismic activity

- An earthquake measuring 4.7 on the Richter Scale occurred approximately 45 miles southeast of Dutch Harbor, AK, last evening. There were no reports of injuries or damage from the quake.

I will be certain to contact you should additional information about these incidents become available.

TO: Kris Balderston/Irma Martinez (456-2525)
Chris Jennings/Devorah Adler (456-5557)
Maria Echaveste/Marge Tarmey (456-1907)

FROM: Liz Summy
Deputy Chief of Staff, HHS
690-7431

RE: West Nile Virus

Pages: 14 (including cover)

- Q&A's (please keep internal)
- MMWR (will be available after 4pm
today - here's a preview)
- USGS press release from Wed.

Lowell
62734

**9/29/99 Q/As West Nile Fever --DRAFT: FOR INTERNAL USE ONLY
NOT FOR RELEASE**

Q. What is West Nile encephalitis?

A. "Encephalitis" means an inflammation of the brain and can be caused by viral and bacterial infections, including viruses transmitted by mosquitoes. West Nile encephalitis is an infection of the brain caused by West Nile virus, a flavivirus commonly found in Africa, West Asia, and the Middle East. It is closely related to St. Louis encephalitis virus found in the United States.

Q. How do people get West Nile encephalitis?

A. By the bite of a mosquito (primarily the *Culex* species) that is infected with West Nile virus.

Q. What is the basic transmission cycle?

A. Mosquitoes become infected by feeding on birds infected with the West Nile virus. Infected mosquitoes then transmit the West Nile virus to humans and animals when taking a bloodmeal.

Q. Can you get West Nile encephalitis from another person?

A. No. West Nile encephalitis is NOT transmitted from person-to-person. For example, you cannot get the virus that causes West Nile encephalitis from touching or kissing a person who has the disease, or from a health care worker who has treated someone with the disease.

Q. Can you get West Nile virus directly from birds?

A. There is no evidence that a person can get the virus from handling live or dead infected birds. However, avoid bare-handed contact when handling dead animals, including dead birds. Use gloves or double plastic bags to place the carcass in a garbage can.

Q. Besides mosquitoes, can you get West Nile virus directly from other insects or ticks?

A. Infected mosquitoes are the primary vector for West Nile virus. However, both hard and soft ticks have been found infected with West Nile virus in nature, but their role in the transmission and maintenance of the virus is uncertain. It may be possible for an infected tick to transmit the virus to birds or humans while taking a bloodmeal.

Q. What are the symptoms of West Nile encephalitis?

A. Mild infections are common and include fever, headache, and body aches, often with skin rash and swollen lymph glands. More severe infection is marked by headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, occasional convulsions, paralysis and, rarely, death.

Q. What is the incubation period of West Nile encephalitis?

A. Usually 5 to 15 days.

Q. Where did the West Nile-like virus come from?

A. West Nile virus has been commonly found in humans and birds and other vertebrates in Africa, West Asia, and the Middle East, but has not previously been documented in the Western Hemisphere. It is not known where the U.S. virus came from.

Q. How long has the West Nile-like virus been in the U.S.?

A. It is not known how long it has been in the U.S., but CDC scientists believe the virus has probably been in the eastern U.S. for several months, possibly longer.

Q. When will the current risk of infection end?

A. The risk in the New York City area is greatly reduced due to the effectiveness of mosquito control and public education programs. However, the risk of infection will not be completely over until mosquito activity ceases for the season, i.e., when freezing temperatures are experienced.

Q. What precautions need to be taken to prevent a recurrent outbreak next year?

A. Surveillance for infected mosquitoes and sentinel bird flocks for West Nile virus will greatly enhance state and local government's early detection symptoms.

Q. What is the mortality rate of West Nile encephalitis?

A. Case-fatality rates range from 3% to 15% (higher in elderly than in younger age groups).

Q. How many cases of West Nile encephalitis occur in the U.S.?

A. No cases have previously been reported in the U.S. prior to September 1999 (New York City). No reliable estimates are available for the number of cases of West Nile encephalitis that occur internationally.

Q. Do birds naturally infected with West Nile virus die or become ill?

A. This has not been previously reported, but apparently has occurred in the New York City area epidemic.

Q. How is West Nile encephalitis treated?

A. There is no specific therapy. Intensive supportive therapy is indicated in more severe cases.

Q. Is the disease seasonal in its occurrence?

A. In temperate areas of the world, West Nile encephalitis cases occur primarily in the late summer or early fall. In the southern climates where temperatures are milder, West Nile encephalitis can occur year round.

Q. Who is at risk for getting West Nile encephalitis?

A. All residents of areas where active cases have been identified are at risk of getting West Nile encephalitis, but persons > 50 years of age have the highest risk.

Q. Is a woman's pregnancy at risk if she gets West Nile encephalitis?

A. There is no documented evidence that a pregnancy is at risk due to infection with West Nile virus.

Q. Is there a vaccine against West Nile encephalitis?

A. No.

Q. What can I do to reduce my risk of becoming infected with West Nile virus?**A.**

Stay indoors at dawn, dusk, and in the early evening.

- Wear long-sleeved shirts and long pants whenever you are outdoors.

- Apply insect repellent sparingly to exposed skin. An effective repellent will contain 20% to 30% DEET (N,N-diethyl-meta-toluamide). DEET in high concentrations (greater than 30%) may cause side effects, particularly in children; avoid products containing more than 30% DEET.

- Repellents may irritate the eyes and mouth, so avoid applying repellent to the hands of children. Insect repellents should not be applied to very young children (< 3 years old).

- Spray clothing with repellents containing permethrin or DEET, as mosquitoes may bite through thin clothing.

- Whenever you use an insecticide or insect repellent, be sure to read and follow the manufacturer's

DIRECTIONS FOR USE, as printed on the product.

- Note: Vitamin B and "ultrasonic" devices are NOT effective in preventing mosquito bites.

DRAFT: INTERNAL QUESTION NOT FOR RELEASE OUTSIDE AGENCY

How could CDC have made such a huge mistake by telling patients they had SLE when they didn't?

Learning that West Nile fever virus rather than SLE caused the outbreak is an important development for people who study viruses. Scientists now know to include this virus when performing diagnostic tests of persons with encephalitis so they can identify the exact cause. From a public health and individual's perspective, the difference in diagnosis changes nothing. The diagnosis of West Nile does not change the treatment or control measures recommended by CDC.

Background:

After reports of encephalitis in New York City, CDC tested for antibodies to the common North American arboviruses and it was positive for St. Louis Encephalitis. The first test was for St. Louis encephalitis because it was a likely candidate as the cause of this encephalitis outbreak. A complicating factor is the cross reactivity of West Nile and St. Louis encephalitis viruses in the first test CDC conducted. Further testing confirmed the West Nile-like virus. The important first step was to confirm in the laboratory that people were becoming ill from a mosquito-borne virus that causes encephalitis. At that point, control measures could begin.

This is the early stage of a ongoing disease outbreak investigation. In the early stages of any

investigation, there are more questions than answers. CDC is sharing preliminary information and theories with involved health departments as quickly as it becomes available. CDC is continuing to investigate this outbreak and will continue to share information and theories as quickly as possible with involved area.

Why did CDC first say the cases were SLE?

The normal test panel of viruses against which serum and tissue samples from suspected encephalitis cases the United States are routinely tested for the viruses that are indigenous to the U.S., i.e., St. Louis, Eastern Equine, Western Equine, LaCrosse, and Powassan viruses. The serology on samples from initial human cases in this outbreak were reported as consistent with St. Louis encephalitis virus infection. Because the clinical and epidemiological aspects of these cases were also compatible with SLE virus infection, the diagnosis of SLE was naturally made.

Did CDC make a lab mistake?

Not at all. The usual procedure in an investigation of this type is to test for the most likely cause of disease. More specific follow-up tests then can be performed to confirm the diagnosis. In this instance follow up testing identified the West Nile virus, new to the Western Hemisphere. The serology on samples from initial human cases in this outbreak were consistent with St. Louis encephalitis virus infection. Because the clinical and epidemiological aspects of these cases were also compatible with SLE virus infection, the initial diagnosis of SLE was naturally made.

Is it possible that some of the SLE negatives will be positive for West Nile?

Yes, suspected SLE cases are being re-tested using West Nile antigen; the results are compatible with infection with West Nile-like virus. Moreover, West Nile-like virus has been identified in brain samples from suspected SLE cases who died.

Did CDC put the health of humans at risk by first incorrectly identifying this as SLE?

No. SLE and West Nile encephalitis are clinically and epidemiologically very similar. Therefore, the mosquito control and public health measures conducted in response to the suspected SLE epidemic were equally effective against West Nile-like virus.

What does this mean to bird migration in the south? Is CDC investigating this? If not, who does do this kind of investigation?

Birds began their southern migration about six weeks ago. It is possible that some birds infected with West Nile-like virus could have already flown south to states in the U.S. and to other countries. It is uncertain whether the ecologic conditions in various parts of the U.S., including the northeast, will allow this virus to become established. CDC is working with the U.S. Geologic Society, U.S. Fish and Wildlife Service, National Wildlife Health Center, in Madison, Wis., state wildlife agencies and state and local health and vector control agencies to conduct surveillance of birds and mosquitoes that may be infected with West Nile virus in the U.S.

Where did West Nile come from?

West Nile is an arbovirus (a virus borne by mosquitoes) that has, to date, been recognized in the Old Works to include Eastern Europe, Asia and Africa.

You refer to this as West Nile like, does this mean it may not be West Nile?

No, it means that it is a virus genetically related to West Nile, but because of genetic differences it may be a new subtype of the West Nile virus. Testing to confirm this continues.

Is this a new virus strain?

It could be a new subtype of West Nile, further testing is needed.

How could this virus have been introduced into the United States?

There are a number of ways that a virus can be introduced into a region, either by a mosquito, a human or a bird, infected with the virus, entering the United States.

Is West Nile more easily transmitted to humans than St. Louis Encephalitis?

There is no evidence that West Nile is more easily transmitted. In addition, West Nile has been known to cause a more mild disease.

Did West Nile kill the birds in the Bronx Zoo?

We have ruled out most other known causes of diseases in these birds.

Does West Nile usually kill infected birds?

No, typically West Nile does not kill birds where this virus is endemic. There is research that has shown crows to be more susceptible to this virus than other birds.

If this virus going to travel south and cause disease outbreaks in the south?

This is an ongoing investigation. CDC is working with wildlife experts to determine the scope of this viruses' introduction into the United States and the Western Hemisphere. We do not want to speculate on where this virus may have originated in the Western Hemisphere or where it may be headed. Of course, we know that this is the season for birds to migrate south. This is a factor in our surveillance efforts.

Is the spraying for mosquitoes going to kill the Monarch butterflies too?

The application timing and methods are designed to kill mosquitoes who are out feeding in the early evening. At that time butterflies and honey bees are not moving and should not be harmed by the spraying of insecticide directed at mosquitoes.

Should people be alarmed if they find dead birds in their area?

No, people cannot be infected with West Nile virus from birds or from people. Individuals can protect themselves from West Nile virus by avoiding exposure to mosquitoes: limit outdoor activities at dawn, dusk and in the evening. Individuals should wear long pants and long-sleeved shirts when outdoors and spray insecticide on the outside of their clothing before going outside.

What is the scope of this outbreak? Have you seen this virus in birds in other areas of the U.S. or Western Hemisphere.

The first recognition of West Nile came from birds from the New York area. CDC is concentrating its investigation to this geographic area. Other wildlife experts are conducting surveillance along the Atlantic coast of the U.S.

Q. What should I do if I find a dead bird in my yard?

Follow local advice on who to notify. There is no evidence that a person can get the virus from handling live or dead infected birds. However, avoid bare-handed contact when handling dead animals, including dead birds. Use gloves or double plastic bags to place the carcass in a garbage can.



October 1, 1999 / Vol. 48 / No. 38

MMWR™

MORBIDITY AND MORTALITY WEEKLY REPORT

- 845 Outbreak of West Nile-Like Viral Encephalitis — New York, 1999
- 849 Healthier Mothers and Babies
- 857 National Child Health Month — October 1999
- 858 Outbreak of Poliomyelitis — Iraq, 1999
- 859 National Adult Immunization Awareness Week — October 10–16, 1999
- 859 Notice to Readers

Outbreak of West Nile-Like Viral Encephalitis — New York, 1999

An outbreak of arboviral encephalitis was first recognized in New York City in late August and has since been identified in neighboring counties in New York state. Although initially attributed to St. Louis encephalitis (SLE) virus based on positive serologic findings in cerebrospinal fluid (CSF) and serum samples using a virus-specific IgM-capture enzyme-linked immunosorbent assay (ELISA), the cause of the outbreak has been confirmed as a West Nile-like virus based on the identification of virus in human, avian, and mosquito samples.

On August 23, 1999, an infectious disease physician from a hospital in northern Queens contacted the New York City Department of Health (NYCDOH) to report two patients with encephalitis. On investigation, NYCDOH initially identified a cluster of six patients with encephalitis, five of whom had profound muscle weakness (with axonal neuropathy by electromyogram and requiring respiratory support [n=four]). Testing of these initial cases by IgM-capture ELISA for antibodies to the common North American arboviruses was positive for SLE virus on September 3 at CDC. Eight of the earliest case-patients were residents of a 2-by-2-mile area in northern Queens. On the basis of these findings, aerial and ground applications of mosquito adulticides and larvicides were instituted in northern Queens and South Bronx on September 3.

To define the geographic extent of the outbreak, NYCDOH initiated active surveillance on August 30, and the Westchester County Department of Health and the Nassau County Department of Health initiated active surveillance on September 3. Surveillance is also ongoing in surrounding areas. A clinical case is defined as a presumptive diagnosis of viral encephalitis with or without muscle weakness or acute flaccid paralysis, Guillain-Barré syndrome, aseptic meningitis, or presence of the clinical syndrome characterizing the initial cluster of cases in a patient presenting after August 1.

Before and concurrent with this outbreak, local health officials observed increased fatalities among New York City birds, especially crows. During September 7–9, officials of the Bronx Zoo noted the deaths of a cormorant, two captive-bred Chilean flamingoes, and an Asian pheasant. Necropsies performed on these birds at the zoo revealed varying degrees of meningo-encephalitis and severe myocarditis. Tissue specimens from these birds and a crow with pathologic evidence of encephalitis from New York state were sent to the U.S. Department of Agriculture National Veterinary Services Laboratories (NVSL) in Ames, Iowa, on September 10 to be tested for com-

U.S. DEPARTMENT OF HEALTH & HUMAN SERVICES

848

MMWR

October 1, 1999

Viral Encephalitis — Continued

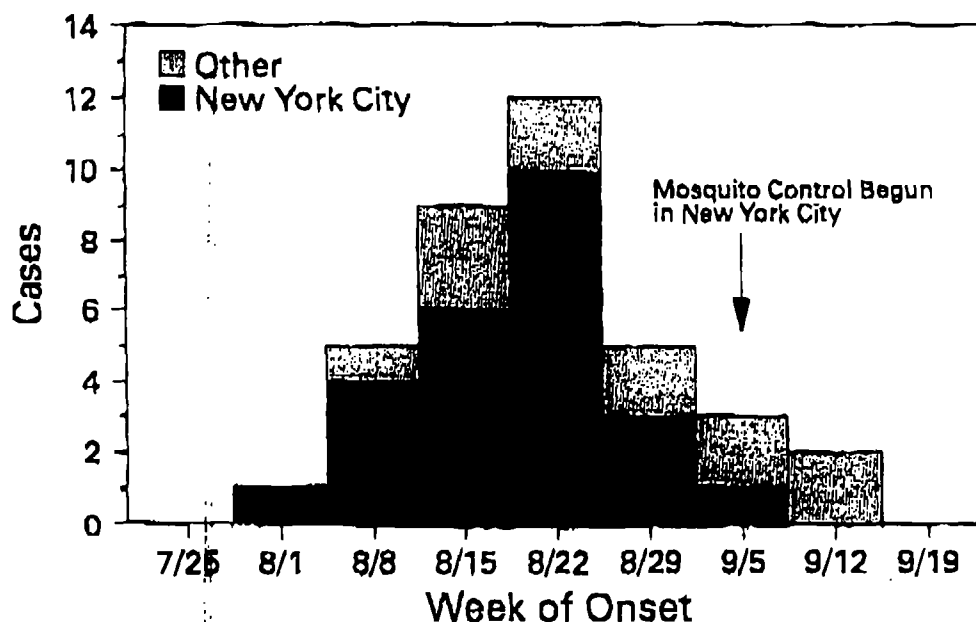
mon avian pathogens and the equine encephalitis viruses; all tests were negative. NVSL isolated viruses from the birds' tissues and forwarded them to CDC on September 20 for identification and characterization.

Testing at CDC on September 23 by polymerase chain reaction (PCR) and DNA sequencing of these isolates indicated that they were closely related to West Nile virus (WNV), which has never been isolated in the western hemisphere. In other tests at CDC, flavivirus antigen was detected in one of the autopsy specimens by immunohistochemistry, and a West Nile-like virus genomic sequence identical to that derived from the bird isolates was observed in a human brain specimen from an encephalitis case. Concurrently, specimens of brain tissue from three human encephalitis cases, forwarded by the New York State Department of Health to the University of California, Irvine, were reported as positive for West Nile-like virus sequence by genomic analysis. All serum/CSF specimens reactive to SLE by IgM ELISA were positive by WNV ELISA with higher positive/negative ratios than to SLE, and an additional 10 borderline and eight negative samples were positive for antibody to WNV.

As of September 28, a total of 17 confirmed and 20 probable human cases (7) and four deaths have been reported from New York City (25 cases) and the surrounding counties of Westchester (eight) and Nassau (four). The four deaths occurred among persons aged ≥68 years. One case-patient with onset in late August reported a history of travel to Africa completed in June 1999; none of the remaining case-patients had traveled during the incubation period to areas where WNV is known to be endemic. Two of the Westchester County case-patients had no reported travel history to New York City or other areas in which WNV previously had been detected.

Onset dates ranged from August 5 to September 16 (Figure 1), although no cases had onset in New York City after control measures were extended to the entire city on September 11. The median age of case-patients was 71 years (range: 15–87 years), with the most severe clinical cases and all fatalities occurring among older persons.

FIGURE 1. Seropositive cases of West Nile-like virus, by week of onset — New York, 1999



Viral Encephalitis — Continued

Vector control measures initiated in northern Queens and South Bronx on September 3 were followed by a city-wide pesticide application after laboratory confirmation of encephalitis in a Brooklyn resident with no travel history to Queens and confirmation of an additional two cases in South Bronx. According to the latest ongoing population estimates from a city-wide mosquito surveillance program, the host-seeking adult *Culex pipiens* mosquito population has been reduced substantially by the control operation. Following the confirmation of human cases in Westchester and Nassau counties and detection of virus in adult *Culex pipiens* and *Aedes vexans* mosquitoes and in a deceased bird from a nearby area in Connecticut, insecticide application has been initiated in these areas to reduce the mosquito population. Surveillance of wild birds and/or sentinel chickens was instituted to assess WNV distribution in the region.

Emergency telephone hotlines were established in New York City on September 3 and in Westchester County on September 21 to address public inquiries about the encephalitis outbreak and pesticide application. As of September 28, approximately 130,000 calls have been received by the New York City hotline and 12,000 by the WCDH hotline. Approximately 300,000 cans of DEET-based mosquito repellent were distributed citywide through local firehouses, and 750,000 public health leaflets were distributed with information about personal protection against mosquito bites. Recurring public messages were announced on radio, television, on the New York City and WCDH World-Wide Web sites, and in newspapers, urging personal protection against mosquito bites, including limiting outdoor activity during peak hours of mosquito activity, wearing long-sleeved shirts and long pants, using DEET-based insect repellents, and eliminating any potential mosquito breeding niches. Spraying schedules also were publicized with recommendations for persons to remain indoors while spraying occurred to reduce pesticide exposure. Mosquito surveillance will continue until the first frost in New York City; Westchester, Nassau, Rockland, and Suffolk counties; and Connecticut. Surveillance for new human WNV cases will be conducted until several weeks after the first frost, when mosquito activity is expected to subside.

Reported by: D Asnis, MD, R Conetta, MD, G Waldman, MD, A Teixeira, MD, Flushing Hospital, Queens; New York City acute care hospitals and microbiology laboratories; T McNamara, DVM, Wildlife Conservation Society; A Fine, MD, M Layton, MD, J Miller, MD, D Cimini, MPH, M Camilo Vargas, DVM; A Inglesby, MD, A Labowitz, K Bornschlegel, MPH, B Maldin, E Samoff, MPH, D Haddow, and the New York City Outbreak Investigation Team; S Mullin, MSW, J Gadd, MPP, E Giebelhaus, MPP, L Masuch, MSW, A Sher, M Foggin, BJ Mojica, N Cohen, MD, I Weisfuse, MD, R Bhalla, MD, E Lee, MD, D Malebranche, MD, G Sacajiu, MD, A Sharma, MD, A Ramon, MD, I Poshni, PhD, H Stirling, MPH, A Goldberg, New York City Dept of Health; J Hauer, MHS, Mayor's Office of Emergency Management, New York City; A Huang, MD, A Rosenberg, MD, P Yang-Lewis, MPH, HN Adel, MD, Westchester County Health Dept; K Gaffney, MD, A Greenberg, MD, B Smith, M Sherman, Div of Environmental Health and Disease Control, Nassau County Dept of Health; W Stone, Dept of Environmental Conservation; A Novello, MD, D White, PhD, D Morse, MD, K Spitalny, MD, R Gallo, H Leib, S Wong, MD, L Grady, MD, P Smith, MD, State Epidemiologist, New York State Dept of Health, M Carter, MD, J Hadler, MD, Connecticut State Health Dept, WI Lipkin, MD, T Briesa, PhD, XY Jia, MD, Emerging Diseases Laboratory, Univ of California, Irvine, National Veterinary Svcs Laboratories, Animal and Plant Health Inspection Svc, US Dept of Agriculture, Ames, Iowa, State Br, Div of Applied Public Health Training, Epidemiology Program Office, Meningitis and Special Pathogens Br, Div of Viral and Rickettsial Diseases, and Arbovirus Diseases Br, Div of Vector Borne Infectious Diseases, National Center for Infectious Diseases; and EIS officers, CDC.

Editorial Note: WNV is a flavivirus belonging taxonomically to the Japanese encephalitis subgroup that includes the serologically closely related SLE virus, Kunjin virus,

Viral Encephalitis — Continued

Murray Valley encephalitis virus, and others. WNV was first isolated in the West Nile Province of Uganda in 1937 (2). The first recorded epidemics occurred in Israel during 1950–1954 and in 1957. Epidemics have been reported in Europe in the Rhone delta of France in 1962 and in Romania in 1996 (3–5). The largest recorded epidemic occurred in South Africa in 1974 (6). It is unclear whether the virus that caused this outbreak is a previously identified strain of WNV or a new variant.

The genomic sequences identified to date from a human brain, virus isolates from zoo birds, and viruses isolated from a dead crow and two mosquito pools from Connecticut appear identical. Based on preliminary serologic testing, this outbreak was originally believed to be caused by the SLE virus. SLE and West Nile viruses are antigenically related, and cross reactions are observed with some serologic tests. Results of PCR-based sequencing that identified WNV prompted more specific testing. The IgM-capture ELISA used in testing serum/CSF samples in this outbreak is rapid, sensitive, and quantitative. The limitations of some serologic assays emphasize the importance of isolating the flavivirus from entomologic, clinical, or veterinary material. The availability of virus isolates and genomic sequences from birds and human brain tissue permitted the discovery of this West Nile-like virus in North America. Although it is not known when and how a West Nile-like virus was introduced into North America, international travel of infected persons to New York or transport by imported infected birds may have played a role.

WNV can infect a wide range of vertebrates, but in humans it usually produces either asymptomatic infection or mild febrile disease. Within its normal geographic distribution of Africa, the Middle East, western Asia, and Europe, WNV has not been documented to cause epizootics in birds; crows with antibodies to WNV are common, suggesting that asymptomatic or mild infection usually occurs among crows in those regions. Similarly, substantial bird virulence of SLE virus has not been reported. Therefore, an epizootic producing high mortality in crows and other bird species is unusual for either WNV or SLE virus and may represent introduction to a native bird population or a new virulent strain. For both viruses, migratory birds may play an important role in the natural transmission cycles.

Like SLE virus, WNV is transmitted principally by *Culex* species mosquitoes, but also can be transmitted by *Aedes*, *Anopheles*, and other species. The predominance of urban *Culex* mosquitoes trapped during this outbreak suggests an important role for this species. Enhanced monitoring through surveillance for early detection of this virus outside of the affected area will be crucial to guide extension of control measures.

References

1. CDC. Case definitions for infectious conditions under public health surveillance. MMWR 1997;46(RR-10):12-3.
2. Smithburn KC, Hughes TP, Burke AW, Paul JH. A neurotropic virus isolated from the blood of a native of Uganda. Am J Trop Med Hyg 1940;20:471.
3. Klingberg MA, Jasinka-Klingberg W, Goldblum N. Certain aspects of the epidemiology and distribution of immunity of West Nile virus in Israel. In: Proceeding of the 6th International Congress of Tropical Medicine, 1959;5:132.
4. Panther R, Hannoun C, Beytout D, Mouchet J. Epidemiology of West Nile virus. In: Human illness: focus on Camargue [French]. Vol 3. Ann Inst Pasteur 1988;115:435.
5. Tsai TF, Popovici F, Cernescu C, Campbell GL, Nedelcu NI. West Nile encephalitis epidemic in southeastern Romania. Lancet 1998;352:767-71.

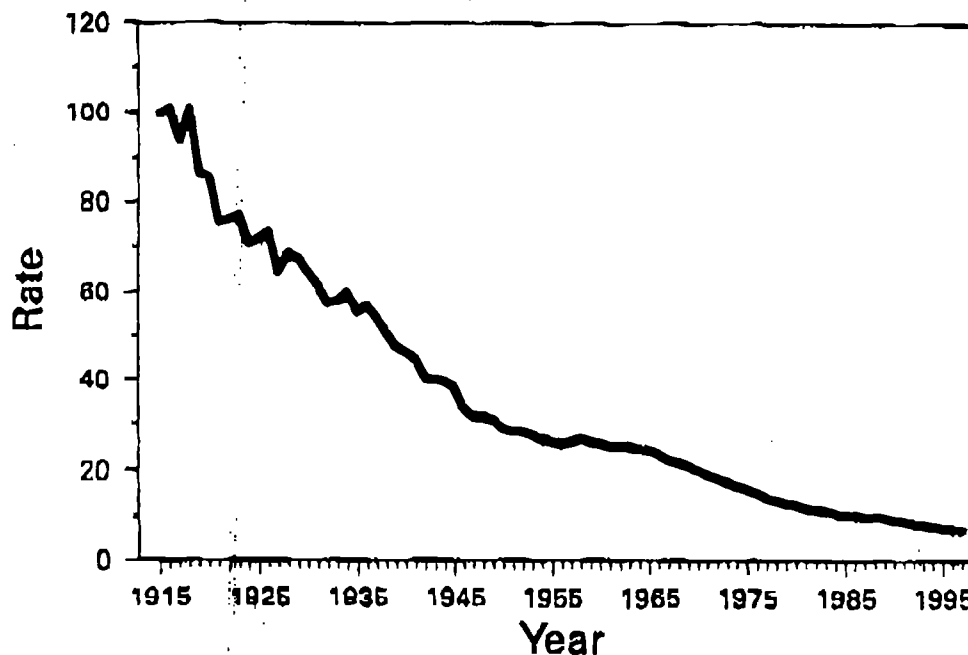
Viral Encephalitis — Continued

6. McIntosh BM, Jupp PG, Dos Santos I, Meenahan GM. Epidemics of West Nile and Sindbis viruses in South Africa with *Culex (Culex) univittatus* Theobald as vector. S Afr J Sci 1976;72:295.

*Achievements in Public Health, 1900–1999***Healthier Mothers and Babies**

At the beginning of the 20th century, for every 1000 live births, six to nine women in the United States died of pregnancy-related complications, and approximately 100 infants died before age 1 year (1,2). From 1915 through 1997, the infant mortality rate declined >90% to 7.2 per 1000 live births, and from 1900 through 1997, the maternal mortality rate declined almost 99% to <0.1 reported death per 1000 live births (7.7 deaths per 100,000 live births in 1997) (3) (Figures 1 and 2). Environmental interventions, improvements in nutrition, advances in clinical medicine, improvements in access to health care, improvements in surveillance and monitoring of disease, increases in education levels, and improvements in standards of living contributed to this remarkable decline (1). Despite these improvements in maternal and infant mortality rates, significant disparities by race and ethnicity persist. This report summarizes trends in reducing infant and maternal mortality in the United States, factors contributing to these trends, challenges in reducing infant and maternal mortality, and provides suggestions for public health action for the 21st century.

FIGURE 1. Infant mortality rate,* by year — United States, 1916–1997



*Per 1000 live births.



News Release

U.S. Department of the Interior
U.S. Geological Survey

Release

September 29, 1999

Contact:

Butch Kinerney

Address:

119 National Center
Reston, VA 20192

Email:

bkinerney@usgs.gov

Phone:

703-648-4732

Fax:

703-648-4466

USGS Biologists Tracking West Nile Virus in Birds

Wildlife biologists from the U.S. Geological Survey, in partnership with other federal, state and local agencies are studying the West Nile-like virus which has been blamed for the deaths of three people in New York City and the deaths of many birds in the city and surrounding areas.

On Wednesday, USGS wildlife biologists issued a Wildlife Health Alert to federal and state wildlife conservation agencies, parks, refuges and other wildlife agencies east of the Mississippi River to be on the lookout for dead crows and other birds which may indicate that the mosquito-borne virus has appeared.

USGS biologists, teaming with the scientists and managers from the U.S. Centers for Disease Control and Prevention (CDC) and health and environmental departments in the New York City, New York State, Connecticut and New Jersey, have been working to determine the extent of the problem in the Northeast.

Beginning next week, USGS field teams will be on the ground in New York and other areas capturing live birds, taking blood samples and releasing them. The samples will be sent to the USGS National Wildlife Health Center in Madison, Wisc. for testing in an effort to detect virus antibodies. USGS biologists will be analyzing samples from dead crows to determine if the virus is present.

"We're trying to map the distribution of this disease both spatially and temporally. And

we want to try to determine where it might be going," said Paul Slota, a USGS wildlife biologist who is leading the study. "We're watching areas particularly south of New York for crows which have died from diseases and then try to determine if the virus came into play."

Slota said that the wildlife alert is being sent to a broad area because crows, while not as migratory as other bird species, still travel many miles from home.

The CDC has made the link between the West Nile-like virus found in birds in New York City and the ongoing human encephalitis outbreak in the area. On Friday, CDC identified a West Nile-like virus in tissue sample from a New York City resident who recently died from encephalitis. Last week, CDC identified West Nile-like virus from birds that died in New York City and were submitted by the Bronx Zoo for testing. In addition, CDC confirmed that birds and mosquitoes in Connecticut also have been infected with West Nile-like virus.

West Nile virus is an arbovirus closely related to St. Louis encephalitis virus, but generally causes a milder disease in humans, according to information from the CDC. Both viruses are transmitted through the bite of a mosquito that becomes infected with the virus by feeding on an infected bird. Like St. Louis encephalitis, West Nile virus is not transmitted from person to person or from birds to persons. West Nile virus never before has been recognized in the United States or any other area of the Western Hemisphere.

For more information on the West Nile virus:

Centers for Disease Control and Prevention:

<http://www.cdc.gov/od/oc/media/pressre/r990924.htm>

<http://www.cdc.gov/ncidod/dvbid/arbor/arboinfo.htm>

U.S. Geological Survey National Wildlife Health Center:

<http://www.umesc.usgs.gov/nwhchome.html>

As the nation's largest water, earth and biological science and civilian mapping agency the USGS works in cooperation with more than 2000 organizations across the country to provide reliable, impartial, scientific information to resource managers, planners, and other customers. This information is gathered in every state by USGS scientists to minimize the loss of life and property from natural disasters, contribute to sound economic and physical development of the nation's natural resources, and enhance the quality of life by monitoring water, biological, energy, and mineral resources.

--USGS--

In-depth information about USGS programs may be found on the USGS home page at <http://www.usgs.gov>. To receive the latest USGS news releases automatically by e-mail, send

a request to listproc@listserver.unh.gov. Specify the listserver(s) of interest from the following names: water-pr; geologic-pr; geologic-hazards-pr; biological-pr; mapping-pr; products-pr; lecture-pr. In the body of the message write: subscribe (name of listserver) (your name). Example: water-pr joe smith.



DEPARTMENT OF HEALTH & HUMAN SERVICES

Chief of Staff

Washington, D.C. 20201

FACSIMILE

DATE: 9/29

TO: Kris Balderston/Irma M.

Chris Jennings/Deborah
Maria Echaveste/Marge

FAX#: _____

FROM: Elizabeth Summy
Deputy Chief of Staff

Phone: 202/690-7431 Fax: 202/401-5783

COMMENTS:

additional info. of interest re: West Nile
virus

1. CDC answers questions
2. Q & A's (internal)

5 Pages [including this cover]

CDC answers your questions about WEST NILE ENCEPHALITIS



Q. What is West Nile encephalitis?

A. "Encephalitis" means an inflammation of the brain and can be caused by head injury, bacterial infections, and, most commonly, viral infections, including viruses transmitted by mosquitoes. West Nile encephalitis is an infection of the brain caused by West Nile virus, a flavivirus commonly found in Africa and West Asia and closely related to St. Louis encephalitis virus found in the United States.

Q. How do people get West Nile encephalitis?

A. By the bite of a mosquito (primarily the *Culex* species) that is infected with West Nile virus.

Q. What is the basic transmission cycle?

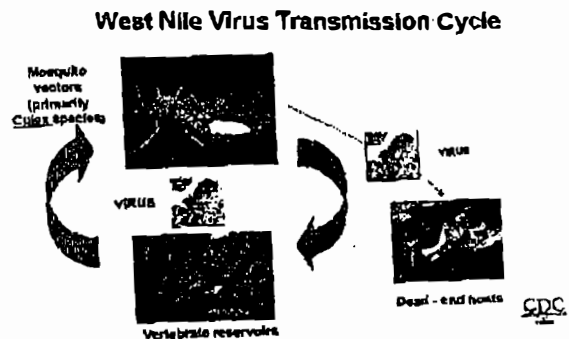
A. Mosquitoes become infected by feeding on birds infected with the West Nile virus. Infected mosquitoes then transmit the West Nile virus to humans and animals when taking a bloodmeal.

Q. Can you get West Nile encephalitis from another person?

A. No. West Nile encephalitis is NOT transmitted from person-to-person. For example, you cannot get the virus that causes West Nile encephalitis from touching or kissing a person who has the disease, or from a health care worker who has treated someone with the disease.

Q. Can you get West Nile encephalitis directly from birds or from insects other than mosquitoes?

A. No. Only infected mosquitoes can transmit West Nile virus.



Q. What are the symptoms of West Nile encephalitis?

A. Mild infections are common and include fever, headache, and body aches, often with skin rash and swollen lymph glands. More severe infection is marked by headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, occasional convulsions, and paralysis.

Q. What is the incubation period of West Nile encephalitis?

A. Usually 5 to 15 days.

Q. What can I do to reduce my risk of contracting West Nile encephalitis?

A.

- Stay indoors at dawn, dusk, and in the early evening.
- Wear long-sleeved shirts and long pants whenever you are outdoors.
- Apply insect repellent sparingly to exposed skin. An effective repellent will contain 20% to 30% DEET (N,N-diethyl-meta-toluamide). DEET in higher concentrations (greater than 30%) may cause side effects, particularly in children; avoid products containing more than 30% DEET.
- Repellents may irritate the eyes and mouth, so avoid applying repellent to the hands of children. Insect repellents should not be applied to very young children (< 2 years old).
- Spray clothing with repellents containing permethrin or DEET, as mosquitoes may bite through thin clothing.
- Whenever you use an insecticide or insect repellent, be sure to read and follow the manufacturer's DIRECTIONS FOR USE, as printed on the product.
- Note: Vitamin B and "ultrasonic" devices are NOT effective in preventing mosquito bites.

Q. What is the mortality rate of West Nile encephalitis?

A. Case-fatality rates range from 3% to 15% (especially in the elderly).

Q. How many cases of West Nile encephalitis occur in the U.S.?

A. No cases have previously been reported in the U.S. No reliable estimates are available for the number of cases of West Nile encephalitis that occur internationally.

Q. Do birds naturally infected with West Nile virus die or become ill?

A. This has not been previously reported.

Q. How is West Nile encephalitis treated?

A. There is no specific therapy. Intensive supportive therapy is indicated in more severe cases.

Q. Is the disease seasonal in its occurrence?

A. In temperate areas of the world, West Nile encephalitis cases occur primarily in the late summer or early fall. In the southern climates where temperatures are milder, West Nile encephalitis can occur year round.

Q. Who is at risk for getting West Nile encephalitis?

A. All residents of areas where active cases have been identified are at risk of getting West Nile encephalitis, but persons > 50 years of age have the highest risk.

Q. Historically, where has West Nile encephalitis occurred worldwide?

A. See map:

Q. Is there a vaccine against West Nile encephalitis?

A. No.

Q. Where can I get more information on mosquito-borne viral encephalitis?

A. Visit the CDC website

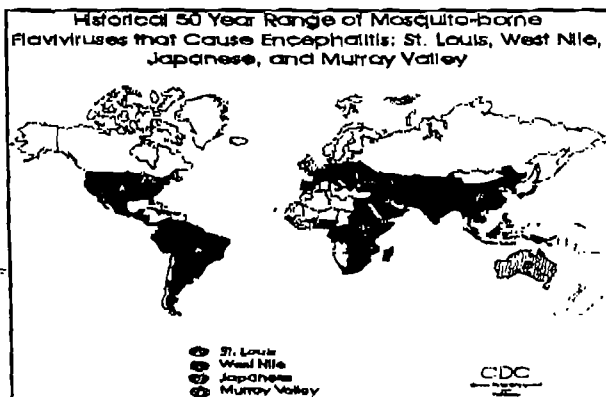
<http://www.cdc.gov/ncidod/dvbid/arbor/arboinfo.htm>

For further information, e-mail dvbid@cdc.gov, call 970-221-6400, or fax 970-221-6476.

Division of Vector-Borne Infectious Diseases,
National Center for Infectious Diseases,
Centers for Disease Control and Prevention
Revised September 1999

Top of this Page

DVBID Home Page



Q/As West Nile Fever --DRAFT: FOR INTERNAL USE ONLY NOT FOR RELEASE**1. Did CDC make a mistake in first diagnosing St. Louis Encephalitis in this New York outbreak?**

This is the early stage of a ongoing disease outbreak investigation. In the early stages of any investigation, there are more questions than answers. CDC is sharing preliminary information and theories with involved health departments as quickly as it becomes available. The first test was for St. Louis encephalitis because it was a likely candidate as the cause of this encephalitis outbreak. After all, West Nile virus had never before been reported in the Western Hemisphere. A complicating factor is the cross reactivity of West Nile and St. Louis encephalitis viruses in the first test CDC conducted. However, when CDC performed more specific tests, West Nile-like virus was confirmed. The important first step was to confirm in the laboratory that people were becoming ill from a mosquito-borne virus that causes encephalitis. At that point, control measures could begin. The diagnosis of West Nile did not change the treatment or control measures recommended by CDC. CDC is continuing to investigate this outbreak and will continue to share information and theories as quickly as possible with involved area.

2. Where did West Nile come from?

West Nile is an arbovirus (a virus borne by mosquitoes) that has, to date, been recognized in the Old Works to include Eastern Europe, Asia and Africa.

3. You refer to this as West Nile like, does this mean it may not be West Nile?

No, it means that it is a virus genetically related to West Nile, but because of genetic differences it may be a new subtype of the West Nile virus. Testing to confirm this continues.

4. Is this a new virus strain?

It could be a new subtype of West Nile, further testing is needed.

5. How could this virus have been introduced into the United States?

There are a number of ways that a virus can be introduced into a region, either by a mosquito, a human or a bird, infected with the virus, entering the United States.

6. Is West Nile more easily transmitted to humans than St. Louis Encephalitis?

There is no evidence that West Nile is more easily transmitted. In addition, West Nile has been known to cause a more mild disease.

7. Did West Nile kill the birds in the Bronx Zoo?

We have ruled out most other known causes of diseases in these birds, but we cannot say for certain at this time.

8. Does West Nile usually kill infected birds?

No, typically West Nile does not kill birds where this virus is endemic. There is research that has shown crows to be more susceptible to this virus than other birds.

9. If this virus going to travel south and cause disease outbreaks in the south?

This is an ongoing investigation. CDC is working with wildlife experts to determine the scope of this viruses' introduction into the United States and the Western Hemisphere. We do not want to speculate on where this virus may have originated in the Western Hemisphere or where it may be headed. Of course, we know that this is the season for birds to migrate south. This is a factor in our surveillance efforts.

10. Is the spraying for mosquitoes going to kill the Monarch butterflies too?

The application timing and methods are designed to kill mosquitoes who are out feeding in the early evening. At that time butterflies and honey bees are not moving and should not be harmed by the spraying of insecticide directed at mosquitoes.

11. Should people be alarmed if they find dead birds in their area?

No, people cannot be infected with West Nile virus from birds or from people. Individuals can protect themselves from West Nile virus by avoiding exposure to mosquitoes: limit outdoor activities at dawn, dusk and in the evening. Individuals should wear long pants and long-sleeved shirts when outdoors and spray insecticide on the outside of their clothing before going outside.