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WEST NILE VIRUS UPDATE 2002 - USA (34)
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In these updates:
[1] Human, fatal (Texas, south)
[2] Plasma quarantined
[3] Human, first fatality (Florida)
[4] & [5] Intrauterine transmission (New York, Syracuse)
[6] USDA-APHIS report (1 Jan to Sun 15 Dec 2002)
[7] MMWR-ArboNet (Provisional surveillance summary, Jan to Nov 2002)

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[1]
Date: Fri 6 Dec 2002
From: A-Lan Banks <A-Lan.Banks@derwent.co.uk>
Source: San Antonio Express News, Fri 6 Dec 2002 [edited]
<http://news.mysanantonio.com/story.cfm?xla=saen&xlb=180&xlc=886938>


First West Nile Virus-associated Death in South Texas
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The death of a Nueces County man in October 2002 was the first in South
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Texas to be linked to West Nile virus, health officials said on Thu 5 Dec 2002. At the time, state health officials believed the man, who was in his 80s, had St. Louis encephalitis, [caused by] a virus that has similar symptoms, said Jim Schuermann, an epidemiologist with the Texas Department of Health. The Centers for Disease Control and Prevention did further testing and confirmed West Nile virus infection to Corpus Christi officials on Thu 5 Dec 2002.

Texas has confirmed 181 human cases of West Nile virus infection this year, which included 10 deaths, Schuermann said. A total of 35 Texas counties have confirmed human cases, most of which have been in and around Harris County, Schuermann said. The Corpus Christi death was the second human case in Nueces County, Assistant City Manager Jorge G. Cruz-Aedo said. He said the man was admitted to a hospital with symptoms that were mistaken for St. Louis encephalitis, but he also had suffered from diabetes and cancer.

In an effort to mitigate the spread of the virus this summer, city workers sprayed for adult insects and larvae for up to 14 hours a day in July and August 2002. Nationwide, 3775 human cases of West Nile have been confirmed; 218 have died, according to the CDC. Schuermann said people exposed to the virus would likely develop a resistance to it. "We think it's lifetime immunity," he said.

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[2]
Date: Thu 12 Dec 2002
From: ProMED-mail <promed@promedmail.org>
Source: Las Vegas Sun, Associated Press report, Thu 12 Dec 2002 [edited]
<http://www.lasvegassun.com/sunbin/stories/thrive/2002/dec/12/121206654.html>

30 000 Pints of Plasma Quarantined

Blood banks are quarantining all plasma frozen during the West Nile virus epidemic -- an estimated 30 000 pints -- to reduce further the low risk of spreading the disease through blood products. West Nile virus is spread mostly by infected mosquitoes, but federal health officials discovered in September 2002 that it also occasionally is spread through donated blood or organs. Of the more than 3800 West Nile cases this year, about 13 are believed to have been caused by a blood transfusion. Most donated blood -- the red blood cells and platelets -- is used right away. The government had

tried to limit the West Nile virus risk by warning blood banks earlier this fall not to accept donations from people with West Nile fever-like symptoms.

But plasma, the liquid part of blood, is routinely frozen and thus can be used up to a year later. It's needed mostly by people with advanced liver disease and to treat serious trauma. So large hospitals in states that were hard hit by the West Nile fever epidemic may face temporary tight supplies, as blood banks race to replace quarantined plasma with plasma donated in West Nile virus-free states or after the epidemic ended.

The American Association of Blood Banks and the nation's 2 major blood suppliers -- the American Red Cross and America's Blood Centers -- announced the move on Thu 12 Dec 2002. Included in the quarantine are frozen blood products that were collected anywhere from a week before each state's first case of West Nile virus, through a week after the last case. That means that how much frozen plasma is quarantined will differ greatly from state to state, depending on how many West Nile cases each had.

Will there be serious shortages? "Nobody really knows," said Dr. Steven Kleinman of the AABB, who said next week will be the crucial period. But he said if hospitals have emergencies to treat and only quarantined plasma on the shelf, they should use it -- but try to use bags dated near the beginning or end of their region's West Nile outbreak, when the risk of donations by sick people would have been lower.

During the holidays, blood banks always need more donations, particularly of red blood cells, which make up most lifesaving transfusions. But officials are hopeful of replacing the quarantined plasma fairly quickly. The quarantined amount makes up only about 15 percent of the Red Cross' frozen inventory, said medical officer Dr. Peter Page. "The problem is worst today. It'll only get better in coming weeks," as shipments of pre-West Nile frozen bags go out and new blood donations come in, he said.

The quarantine was a voluntary decision by the blood industry, but the Food and Drug Administration, which regulates blood safety, called it a logical move considering hospital freezers still harbored plasma that might contain some West Nile virus. Yet the quarantine couldn't have come earlier, because until winter ended the epidemic in the South, there was no way to replace the supply, noted FDA blood chief Dr. Jay Epstein.

[By: Lauran Neergaard]

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[3]
Date: Fri 13 Dec 2002
From: A-Lan Banks <A-Lan.Banks@derwent.co.uk>
Source: Gainesville Sun (Florida), Thu 12 Dec 2002 [edited]
<http://gainesvillesun.com/apps/pbcs.dll/article?Site=GS&Date=20021213&Category=LOCAL&ArtNo=212130355&Ref=AR&Profile=1007>

First West Nile Virus Human Fatality in Florida

The first person to die in Florida after contracting West Nile virus was a 74-year-old Marion County man who died on Sun 9 Dec 2002, the Health Department announced on Thu 12 Dec 2002. The man, a retired Scout executive for the Boy Scouts of America, was aged 74, of Ocala.

County Health Department Director Dr. Nate Grossman said the West Nile patient died from complications of encephalitis, or swelling of the brain, at a local hospital. He had been hospitalized for about 4 weeks. Grosman said he encourages residents to keep up their guard against mosquito bites. "The advice remains the same -- keep following the personal protective measures," he said. "Although the weather has gotten cool, it hasn't gotten cold enough to kill the mosquitoes. The chances of being bit by a mosquito are less, but not zero."

This was the third human case of West Nile virus infection in Marion County and the state's 27th this year, said Rob Hayes, Department of Health spokesman. Marion County has been under medical alert for West Nile virus since 13 Aug 2002. Statewide, 39 counties are under the medical alert.

In the United States so far this year, 225 people have died from the virus, according to the Centers for Disease Control and Prevention. It has also affected animals. Terry McElroy of the Florida Department of Agriculture and Consumer Services said 476 Florida horses tested positive for the virus this year and 25 have died.

[Byline: Lashonda Stinson]

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[4]

Date: Thu 19 Dec 2002
From: A-Lan Banks <A-Lan.Banks@derwent.co.uk>
Source: ABC News on line, Thu 19 Dec 2002 [edited]
<http://abcnews.go.com/wire/US/ap20021219_340.html>

Intrauterine Transmission of West Nile Virus

A month-old baby with West Nile virus [contracted infection] before she was born in the country's first documented intrauterine transmission of the disease, according to a report. The case surprised health officials who had believed the disease could not be passed from pregnant mothers to their unborn children, the Post-Standard of Syracuse reported on Thu 19 Dec 2002.

The 20-year-old mother, a resident of this central New York city, was admitted to a hospital on 29 Aug 2002 with fever, headaches, blurred vision and other symptoms that weren't attributed to West Nile virus infection. She was released a week later, but diagnosed [West Nile virus-positive] when she was readmitted on 24 Sep 2002, the paper reported. The woman gave birth at full-term in November 2002, and tests on her daughter's spinal fluid and umbilical cord blood showed West Nile infection, said Dr. Lloyd Novick, Onondaga County health commissioner. The baby has a number of health complications, he told the paper. The baby's life is not in danger, but the virus or its complications may have caused problems affecting the infant's central nervous system, according to county health officials.

According to the U.S. Centers for Disease Control and Prevention's Web site as of Wed 18 Dec 2002, there was no evidence that West Nile virus can be transmitted during pregnancy or birth. The CDC has documented 6 cases of West Nile virus infection in pregnant women. None of the women or children died. A case of West Nile virus infection in a Michigan infant was attributed to breast-feeding from the mother, who was infected with the virus through a blood transfusion shortly after giving birth, according to the CDC.

"We're not recommending screening of pregnant mothers," said Novick, whose department reported the Syracuse case to the CDC. "But since this is the first time this has happened, people have to be clinically aware of the possibility in the future."

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[5]
Date: Thu 19 Dec 2002
From: ProMED-mail <promed@promedmail.org>
Source: Morbidity and Mortality Weekly Report, 51(50); 1135-1136, 2002 [edited]
<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5150a3.htm>

Intrauterine West Nile Virus Infection; New York, 2002

West Nile virus (WNV), a mosquito-borne flavivirus and human neuropathogen, is epidemic in the United States (1). In 2002, newly recognized mechanisms of person-to-person WNV transmission were described, including possible transmission from mother to infant through breast milk (2,3). WNV has not been previously associated with intrauterine infection or adverse birth outcomes. This report describes a case of transplacental WNV transmission. Pregnant women should take precautions to reduce their risk for WNV or other arboviral infection and should undergo diagnostic testing when clinically appropriate.

On 29 Aug 2002, a previously healthy woman aged 20 years in the estimated 27th week of pregnancy was admitted to a New York hospital with a 2-day history of fever, severe headache, blurred vision, abdominal and back pain, and vomiting. On examination, she had a fever of 102.7 F (39.3 C); the fetal heart rate was elevated. A computerized tomographic scan of the patient's head, a fetal sonogram, and routine analyses of blood and amniocentesis fluid were normal. A urine culture grew _Proteus mirabilis_ and _Escherichia coli_. Intravenous antibiotics were administered. The fever had resolved 4 days after admission, and the patient had pain and weakness of the legs. Neurologic examination indicated symmetric weakness of the legs and hyporeflexia of the legs and arms. No cranial nerve abnormalities were noted. Electromyelography (EMG) was not completed. On 14 Sep 2002, despite persistent lower extremity paresis, she left the hospital against medical advice. On 16 Sep 2002, the patient was readmitted following a fall. She was afebrile, but physical examination revealed weakness in both legs. Fetal monitoring results were normal. Serum was positive for IgG antibodies to rubella virus and herpes simplex virus (HSV), and laboratory tests showed no evidence of syphilis or infection with human immunodeficiency virus (HIV). Serum also was positive for flavivirus IgM and IgG by immunofluorescence assay. Additional serum and CSF specimens were obtained during the week ending 12 Oct 2002. Serum was positive for WNV-specific IgM antibodies. CSF analysis indicated

lymphocytic pleocytosis (11 white blood cells/mm3, 87 percent lymphocytes, 8 percent monocytes, and 5 percent neutrophils), elevated protein (63 mg/dL), and the presence of WNV-specific IgM antibodies. Polymerase chain reaction (PCR) tests of CSF for WNV, enterovirus (EV), and HSV were negative. EMG studies indicated widespread involvement of the lower motor neurons or their proximal axons, with the legs affected more severely than the arms. A diagnosis of meningoencephalitis was made.

Approximately 5 weeks later, the patient delivered a live infant (estimated gestational age: 38 weeks). Serum obtained from the mother at the time of birth was positive for WNV-specific IgM and neutralizing antibodies. The infant's birth weight and general clinical examination were normal. An ophthalmologic examination revealed bilateral chorioretinitis, and MRI of the brain indicated severe cerebral abnormalities, including severe bilateral white-matter loss in the temporal and occipital lobes and cystic change in one temporal lobe consistent with focal cerebral destruction. Cord blood and infant heel-stick blood samples were positive for WNV-specific IgM and neutralizing antibodies. CSF was WNV-specific IgM antibody-positive but was contaminated with red blood cells. The presence of WNV-specific IgM antibody in the infant's serum and CSF confirmed intrauterine infection with WNV. Serum was cytomegalovirus (CMV) IgM antibody-negative but IgG-positive, and serologic tests were negative for lymphocytic choriomeningitis virus infection and toxoplasmosis. PCR tests of CSF for WNV, EV, and HSV were negative. Urine CMV culture was negative. Gross and histopathologic examinations of the placenta, umbilical cord, and amniotic membranes were normal. The placenta was WNV PCR-positive at one of 2 reference laboratories. The umbilical cord tissue was WNV-positive and equivocal by PCR, respectively, at the same 2 laboratories. Viral cultures of umbilical cord tissue were negative; viral cultures of CSF and placenta are pending.

(Reported by: Q Nguyen, MD, C Morrow, MD, L Novick, MD, Onondaga County Health Dept; C Cambareri, MSN, B Olson, MD, R Aubry, MD, J Snedeker, MD, Univ Hospital at Syracuse, Syracuse; M Anand, C Huang, PhD, D Morse, MD, B Rosen, PhD, B Wallace, MD, S Wong, PhD, P Smith, MD, State Epidemiologist, New York State Dept of Health. D O'Leary, DVM, A Marfin, MD, G Campbell, MD, R Lanciotti, PhD, Div of Vector-Borne Infectious Diseases, National Center for Infectious Diseases, CDC.)

MMWR Editorial Note:

On the basis of the presence of WNV-specific IgM in the mother and infant, this is the first report of transplacental transmission of WNV in humans. Intrauterine infections with Japanese encephalitis virus and dengue virus, 2 mosquito-borne flaviviruses closely related to WNV, have been associated with spontaneous abortion and severe dengue fever in the infant, respectively (4 to 7). Although the single case reported here demonstrates intrauterine WNV infection in an infant who had evidence of congenital abnormalities, it does not prove a causal relation between such an infection and these abnormalities.

Pregnant women should take precautions to reduce their risk for WNV and other arboviral infections by avoiding mosquitoes and by using protective clothing and repellents containing N,N-diethyl-m-toluamide (DEET) per manufacturers' directions. When WNV transmission is occurring in an area, pregnant women who have an illness that is clinically consistent with acute WNV infection should undergo appropriate diagnostic testing. Screening of asymptomatic pregnant women or newborns for evidence of WNV infection is not recommended because no specific treatment for this infection is available, and because WNV IgM antibody might persist for more than a year, tests of a single serum sample cannot accurately determine the timing of infection (8). CDC has initiated a voluntary registry to monitor birth outcomes among WNV-infected women. In the event of an adverse birth outcome, maternal and fetal or newborn samples should be submitted to a state public health laboratory or CDC for testing.

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[6]
Date: Tue 17 Dec 2002 2002
From: ProMED-mail <promed@promedmail.org>
Source: United States Department of Agriculture, Animal and Plant Inspection Service, Update on the Current Status of West Nile Virus, as of Sun 15 Dec 2002 [edited]
<http://www.aphis.usda.gov/lpa/issues/wnv/wnvstats.html>

Equine Cases of West Nile Virus Illness in 2002:: 1 Jan to Sun 15 Dec 20

The total number of equine cases of illness caused by West Nile virus (WNV) confirmed at the USDA's National Veterinary Services Laboratories (NVSL) or reported by state officials so far this year is 14 515. That is an increase of 157 cases from the total reported 14 days ago.

The cases are from 40 states: Alabama (88), Arkansas (148), Colorado (378), Connecticut (3), Delaware (8), Florida (474), Georgia (149), Idaho (1), Illinois (1,084), Indiana (688), Iowa (1039), Kansas (675), Kentucky (513), Louisiana (362), Maryland (17), Massachusetts (2), Michigan (342), Minnesota (969), Mississippi (269), Missouri (914), Montana (134), Nebraska (1099), New Jersey (47), New Mexico (61), New York (36), North Carolina (26), North Dakota (569), Ohio (644), Oklahoma (954), Pennsylvania (97), South Carolina (14), South Dakota (672), Tennessee (141), Texas (1577), Vermont (5), Virginia (45), Washington (2), West Virginia (3), Wisconsin (156), and Wyoming (96).

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[7]
Date: Thu 19 Dec 2002

From: ProMED-mail <promed@promedmail.org>
Source: Morbidity and Mortality Weekly Report, 51(50); 1129-1133, 2002 [edited]
<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5150a1.htm>

Provisional Surveillance Summary of the West Nile Virus Epidemic; United States, Jan to Nov 2002

This report presents provisional summary surveillance data about West Nile virus (WNV) activity that were reported to CDC during the period 1 Jan to 30 Nov 2002, through the ArboNET surveillance network. In 2002, the reported numbers of human and animal infections increased, and the geographic range of WNV activity expanded substantially. These data underscore the need for intensive surveillance to detect and quantify WNV activity in areas where humans are at risk, public education to teach persons how to prevent mosquito bites, and sustained and integrated mosquito-control activities.

ArboNET is a web-based surveillance data network comprising 54 state and local public health departments and CDC. Specimens from ill humans and animals, dead birds, captive sentinel animals (mostly chickens), wild-caught birds, and mosquitoes were collected by state and local public health departments and other cooperating state and federal agencies and tested for WNV or WNV-specific antibody. Test results, the county and date of specimen collection or illness onset, and other data were entered into state and local public health department databases. Animal data were forwarded regularly to ArboNET through a secure data network; human cases were reported to CDC by telephone or facsimile only.

In 2002, WNV activity was reported from 2289 counties in 44 states and the District of Columbia (DC) compared with 359 counties in 27 states and DC in 2001 (1), and WNV virus was detected for the first time in 1929 U.S. counties and 16 states. In 2002, a total of 3389 human cases of WNV disease were reported, compared with 149 during 1999 to 2001, and large numbers of WNV-infected birds, equines, and mosquitoes also were reported.

Human Surveillance:

In 2002, of the 3389 reported cases of human WNV-associated illness, 2354 (69 percent) persons had West Nile meningoencephalitis (WNME), 704 (21 percent) had West Nile fever (WNF), and 331 (10 percent) had an unspecified

illness. Human cases were reported from 619 counties in 37 states and DC; 5 states (Illinois [774 cases], Michigan [475], Ohio [409], Louisiana [319], and Indiana [202]) accounted for 2179 (64 percent) cases. 4 of these 5 states (Illinois [492], Michigan [437], Ohio [277], and Louisiana [202]) together with Texas [164] accounted for 1572 (67 percent) reported WNME cases. Illness onset dates ranged from 10 Jun to 4 Nov 2002, and the epidemic peak of WNME cases occurred during the week ending 24 Aug 2002. Illness onset dates ranged from 10 Jun to 4 Nov 2002 in southern states and from 10 Jul to 28 Oct 2002 in northern states [see below for definitions of northern and southern states]. The epidemic peak of WNME cases occurred one week earlier in southern states (88 cases during the week ending 17 Aug 2002) than in northern states (317 cases during the week ending 24 aug 2002). For all reported human cases, the median age of infected persons was 55 years (range: 1 month to 99 years); for persons with WNME, the median age was 59 years (range: 1 month to 99 years); and for persons with WNF, the median age was 48 years (range: 1 to 93 years). Of the 2354 persons with WNME, 199 (9 percent) died; 2 (0.3 percent) of 704 persons with WNF died; both were age >80 years. The median age of the 201 decedents was 78 years (range: 24 to 99 years).

Animal Surveillance:

Of 2289 counties reporting WNV activity, 1719 (75 percent) counties in 42 states and DC reported 14 122 dead WNV-infected birds (7719 crows, 4948 blue jays, and 1455 birds of 92 other species). Infected birds were collected from 10 Jan to 7 Nov 2002, and the peak number of infected birds occurred during the week ending 10 Aug 2002. Of 10 036 tested dead crows, 7719 (77 percent) were WNV-positive compared with 6403 (40 percent) of 16 132 birds from other species.

In 2002, a total of 9144 (99.9 percent) of 9157 reported nonhuman mammal cases occurred in equines, and 13 occurred in other species (dogs [3], squirrels [8], and unspecified species [2]). Cases were reported from 1374 counties in 38 states, with illness onset dates ranging from 3 Jan to 8 Nov 2002. 6 states (Illinois [1116 cases], Texas [1050], Minnesota [945], Indiana [704], Kansas [675], and South Dakota [653]) accounted for 56 percent of reported nonhuman mammal cases.

A limited number of counties and states tested mosquitoes (639 counties in 37 states and DC), wild-caught birds (65 counties in 8 states), and sentinel chickens (92 counties in 8 states) as part of WNV surveillance. In

2002, approximately 1.3 million mosquitoes of 88 species were tested. WNV was detected in 4943 pools (representing 26 species) from 315 counties in 28 states and DC. _Culex_ mosquitoes (_Cx. pipiens_, _Cx. restuans_, _Cx. salinarius_, _Cx. quinquefasciatus_, and _Cx. tarsalis_) accounted for 2717 (55 percent) WNV-positive pools. WNV was reported for the first time in 7 mosquito species (_Aedes aegypti_, _Anopheles walkeri_, _Cx. erraticus_, _Cx. tarsalis_, _Cx. territans_, _Culiseta inornata_, and _Psorophora ciliata_). Since 1999, a total of 36 WNV-infected mosquito species have been reported to ArboNET. In 2002, a total of 144 seropositive wild-caught birds were reported from 25 counties in 4 states (Indiana, Kansas, Louisiana, and Ohio), and 366 sero-converting captive sentinel birds were reported from 47 counties in 7 states (Florida, Iowa, Nebraska, New York, North Carolina, Pennsylvania, and Texas).

First Indicators of WNV Activity;

Among 2289 counties reporting WNV activity in 2002, the first indicator of activity was a WNV-infected dead bird in 1420 (62 percent) counties, an equine case in 660 (29 percent) counties, a human case in 84 (4 percent) counties, a sero-converting sentinel bird in 18 (0.8 percent) counties, an infected mosquito pool in 77 (3 percent) counties, and a seropositive wild-caught bird in 6 (0.2 percent) counties. In 24 counties, WNV activity was first detected on the same date by at least 2 surveillance mechanisms. In 531 (86 percent) of 619 counties reporting human cases, the first human illness onset was preceded by reports of a dead WNV-infected bird, infected equine, sero-converting sentinel chicken, or infected mosquito pool by a median of 33 days (range: 1 to 252 days). Of the 2289 counties with WNV activity, 1670 (73 percent) counties detected enzootic WNV activity but no human infections.

(Reported by: CC Chow, MD, SP Montgomery, DVM, DR O'Leary, DVM, RS Nasci, PhD, GL Campbell, MD, AM Kipp, JA Lehman, K Olson, P Collins, AA Marfin, MD, Div of Vector-Borne Infectious Diseases, National Center for Infectious Diseases, CDC.)

MMWR Editorial Note:

The 2002 WNV epidemic in the United States was the largest arboviral meningoencephalitis epidemic documented in the western hemisphere and the largest reported WNME epidemic. Epizootic and epidemic activity was most intense in the central United States, especially the Great Lakes region,

and extended to the west coast. One human case reported in a Los Angeles County, California, resident with no known travel history (and with no other WNV activity found statewide) and a report of a WNV-infected horse in Island County, Washington, indicate the complete transcontinental movement of WNV within 3 years. In 2002, Canadian health authorities also documented WNV activity in 5 provinces (Manitoba, Nova Scotia, Ontario, Quebec, and Saskatchewan) (2). The 2002 WNV epidemic included the first documented cases of person-to-person WNV transmission through organ transplantation, blood and blood product transfusion, and possibly breast-feeding (3,4). Also in 2002, intrauterine infection was reported (5), and a poliomyelitis-like syndrome was first recognized in the United States among some WNME patients with acute flaccid paralysis (AFP) (6).

Nationally, the epidemic peak of human WNV-associated illness during 2002 occurred in late August; human cases in southern states preceded those in northern states by approximately 1 month. In 2002, human cases also were reported from the New York City metropolitan area for the fourth consecutive year. This prolonged and continued widespread transmission to humans, including in areas of previous epidemic activity, underscores the importance of maintaining human surveillance programs from early June through November and the need to consider WNV disease in the differential diagnosis of encephalitis, meningitis, AFP, and nonspecific febrile illness before and after the late summer months in which arboviral outbreaks traditionally occur.

The 2002 WNV epidemic is similar to the 1975 St. Louis encephalitis (SLE) epidemic, which produced approximately 2100 reported human illnesses and 170 fatalities (case-fatality ratio: 8 percent), primarily in the Mississippi and Ohio River basins (7). WNV and SLE virus are closely related; both are transmitted primarily by _Culex_ mosquitoes and amplified in birds. However, SLE virus is not an avian or equine pathogen.

In 2002, the proportion of human cases reported with WNF was greater than in previous years. This change probably reflects increased testing and diagnosis of WNV infection in persons with milder illness. WNF patients tend to be younger than patients with WNME (8). The somewhat lower median age among persons with WNME reported in 2002 compared with those reported during 1999 to 2001 (59 years versus 66 years) could reflect the incorrect classification of some WNF cases as WNME cases. The median age among persons with fatal WNME reported in 2002 was similar to that in previous years. Although older persons are at higher risk for WNME and death,

persons of any age might develop severe neurologic disease.

Bird- and horse-based surveillance are important tools for monitoring the geographic spread of WNV and for signaling WNV activity in an area before the recognition of human illnesses. The number of counties reporting WNV-infected dead birds in 2002 was 5 times greater than that in 2001, and the number of reported WNV-infected dead birds doubled (1). In 2002, crows, blue jays, and other members of the family _Corvidae_ accounted for 90 percent of WNV-infected birds, and crows had the highest rate of WNV infection. State and local health department surveillance programs should continue to emphasize the collection and testing of dead corvids. Because non-corvid bird species were the first indicator of WNV activity in 144 (6 percent) counties, surveillance programs should include these species when possible.

From 2001 to 2002, equine cases reported to ArboNET increased 12-fold, and equine transmission occurred over a longer season and in 9 new states (1). In 2002, the geographic and temporal distribution of equine cases closely paralleled the human epidemic in the midwestern and north-central states, suggesting that horses, although unlikely to contribute to the transmission cycle for WNV (9), might be useful indicators of increased human risk in those areas.

The 3 _Culex_ species that produced the most WNV-positive pools during 2002, _Cx. pipiens_, _Cx. quinquefasciatus_, and _Cx. restuans_, are among the most important WNV epizootic or epidemic vectors in the United States. During 1999 to 2002, an additional 33 mosquito species also were found infected with WNV. These include _Cx. nigripalpus_, the principal epidemic vector of SLE in Florida, and _Cx. tarsalis_, an important vector of SLE and western equine encephalitis in the western states. Although other species (e.g., _Ochlerotatus triseriatus_, _Ae. albopictus_, _Ae. aegypti_) might contribute to human WNV transmission, control of _Culex_ mosquitoes continues to be the most important strategy to reduce the risk for WNV transmission to humans.

The ArboNET data summarized in this report probably underestimate the actual geographic distribution and intensity of WNV virus transmission in the United States for at least 3 reasons. First, although dead bird surveillance is important in monitoring WNV activity, only 27 percent of reported dead birds in 2002 were submitted for testing, compared with 50 percent in 2001. Many state and local health departments were overwhelmed

by the large numbers of samples submitted for WNV testing and discontinued dead bird testing during the transmission season. Second, because data provided by the 54 ArboNET coordinators are derived primarily from local health unit surveillance efforts, which vary according to local capacity and priorities, some animal and human surveillance data might not yet be reported and confirmed. Finally, states might vary in their interpretation of and adherence to the national surveillance case definition of arboviral encephalitis/meningitis, and no standard national case definition for WNF exists.

The epidemic of 2002 underscores the continued need for intensive ecologic surveillance to detect early-season WNV activity. To decrease the risk for human WNV infection, the coordinated and phased public health response to detection of WNV activity in an area should include intensified mosquito-control activities that reduce the avian-mosquito amplification cycle. Prevention activities should continue to include 1) public education programs urging residential source reduction and personal protective measures to reduce mosquito exposure; 2) development of long-term, community-level, integrated mosquito surveillance and control programs (10); and 3) high-priority emphasis on the control of Culex mosquitoes, especially in urban and suburban areas.

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Definitions of regions:
East South Central region: Alabama, Kentucky, Mississippi, and Tennessee; South Atlantic region: Delaware, the District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, and West Virginia; West South Central region: Arkansas, Louisiana, Oklahoma, and Texas; and Pacific region: California; East North Central region: Illinois, Indiana, Michigan, Ohio, and Wisconsin; Mid-Atlantic region: New Jersey, New York, and Pennsylvania; Mountain region: Colorado, Montana, and Wyoming; New England region: Connecticut, Massachusetts, and Rhode Island; West North Central region: Iowa, Kansas, Minnesota, Missouri, Nebraska, and South Dakota.

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[see also:
West Nile virus - USA 2001: final report 20020613.4491
West Nile virus, predicted spread in 2002 - USA 20020109.3206
West Nile virus update 2002 - USA (01) 20020506.4109
West Nile virus update 2002 - USA (17) 20020823.5124
West Nile virus update 2002 - USA (18): human 20020901.5212
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West Nile virus surveillance - USA 20010129.0207
West Nile virus surveillance 2001 - USA (34) 20011130.2914]
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