Outbreak of Acute Respiratory Febrile Illness Among College Students—Acapulco, Mexico, March 2001

ON MARCH 30, 2001, CDC WAS NOTIFIED by Pennsylvania Department of Health (PDH) of an acute respiratory febrile illness in 44 students from two colleges who traveled to Acapulco, Mexico, for spring break vacation during March 3-18. Within 7-14 days of their return from Acapulco, 21 students presented to health-care providers with illness characterized by fever, chills, dry cough, chest pain, and headache. Two students were hospitalized. On the basis of clinical symptoms and chest radiographs that revealed bilateral, nodular infiltrates, acute pulmonary histoplasmosis was the suspected illness. While in Acapulco, most of the students stayed at the Calinda Beach Hotel and participated in group activities at other recreational locations.

All state health departments and selected travel agencies were notified to identify additional students who traveled to Acapulco during March and became ill. As of April 9, 37 colleges in 18 states1 and the District of Columbia have reported 221 students who returned to the United States from Acapulco with an acute respiratory febrile illness. Ten students in six states were hospitalized.

A case is defined as an acute respiratory febrile illness characterized by fever for at least 3 days and one or more of the following symptoms: cough, shortness of breath, chest pain, or headache in a student who visited Acapulco during March 2001. Preliminary laboratory test results suggest histoplasmosis, an infection caused by Histoplasma capsulatum, a fungus that is present in soil in areas where the disease is endemic, and is acquired through inhalation. Gomori methenamine-silver stain of transbronchial and thoracic lymph node biopsy specimens from a hospitalized student revealed the presence of yeasts consistent with H. capsulatum. In addition, of specimens from 27 students in three states serologically tested for histoplasmosis using immunodiffusion and complement fixation tests, five were positive.1 However, convalescent-phase serum specimens will be needed for confirmation. Testing continues for other possible causes (e.g., Mycoplasma, Legionella, and Chlamydia).

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CDC Editorial Note: CDC recommends that students who have traveled to Acapulco since March 1 seek medical care if they develop symptoms of fever and/or cough, shortness of breath, chest pain, or headache. Most cases of acute histoplasmosis in immunocompetent persons will not require treatment; however, persons with severe histoplasmosis can be treated with 200 mg of itraconazole, an antifungal medication, once daily for 6-12 weeks.2 Physicians should notify state health departments of acute respiratory febrile illness among returning college students and other persons.

On April 3, PDH alerted other health departments of the outbreak through EPI-X (the Epidemic Information Exchange); on April 6, CDC issued a travelers’ advisory at http://webdev.cdc.gov/travel/other/res-mexico-apr2001.htm. Information on histoplasmosis is available at http://www.cdc.gov/ncidod/dbyd/diseaseinfo. The Mexico Ministry of Health and CDC are conducting an investigation of the outbreak. Additional information is available from CDC, telephone (888) 688-2732. CDC’s Mycotic Diseases Branch (MDB) is interested in receiving reports through state and local health departments of travelers to Acapulco since March who have become ill. MDB will test serum and lung tissue specimens for histoplasmosis received through state and local health departments.

REFERENCES
2 available
*Arizona, Connecticut, Delaware, Illinois, Indiana, Maryland, Massachusetts, Michigan, Missouri, New Jersey, New York, North Carolina, North Dakota, Ohio, Pennsylvania, Rhode Island, Texas, and Wisconsin.

Occupational and Take-Home Lead Poisoning Associated With Restoring Chemically Stripped Furniture—California, 1998

THE OCCUPATIONAL LEAD POISONING PREVENTION PROGRAM (OLPPP) OF THE CALIFORNIA DEPARTMENT OF HEALTH SERVICES AND A COUNTY HEALTH DEPARTMENT INVESTIGATED CASES OF LEAD POISONING IN SIX FURNITURE WORKERS AND THEIR FAMILIES IN 1998. THE INVESTIGATION, INITIATED AFTER A BLOOD TEST OF A WORKER’S CHILD REVEALED AN ELATED BLOOD LEAD LEVEL (BLL), FOUND THAT LEAD REMAINING IN PREVIOUSLY PAINTED OR COATED STRIPPED WOOD WAS CARRIED FROM THE WORKPLACE ON CLOTHES AND SHOES AND WAS THE SOURCE OF THE CHILD’S LEAD EXPOSURE AND SUBSEQUENT POISONING. EMPLOYERS IN INDUSTRIES IN WHICH WORKERS RESTORE OR BUILD USING STRIPPED WOOD SHOULD ASSESS LEAD EXPOSURE AND, WHEN NECESSARY, SHOULD ESTABLISH A COMPREHENSIVE LEAD SAFETY PROGRAM.

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During a routine medical examination, the 18-month-old child of a worker received a BLL test at his mother’s request. The result, 26 µg/dL, met the CDC-recommended criterion for a lead poisoning case requiring clinical management (i.e., BLLs ≥20 µg/dL).\(^1\) A county public health nurse conducted a home visit and arranged blood testing of other family members. Laboratory tests revealed that the father, who worked for a company that refinshed antique furniture, had a BLL of 46 µg/dL and his 4-month-old daughter a BLL of 24 µg/dL.

The nurse contacted OLPPP, the state program that provides follow-up for occupational lead poisoning cases. An OLPPP industrial hygienist interviewed the employer who described the process for repairing and restoring wood furniture. Before arriving at the shop, the furniture was chemically stripped of all paint or coatings and was believed to be free of lead. Four carpenters made necessary repairs using power tools such as saws and planers. In an adjacent outdoor courtyard, two refinshers smoothed the wood using manual and power sanders, washed the furniture, and applied wax. Workers routinely ate and drank in work areas, wore no protective equipment, and returned home in work clothes and shoes.

OLPPP instructed the employer to provide BLL and zinc protoporphyrin testing for the six workers and encouraged testing through the county of six family members who might have been affected by lead toxicity. All six workers had elevated BLLs: the two refinshers had BLLs of 29 and 54 µg/dL, and the four carpenters had BLLs of 46, 46, 47, and 56 µg/dL. The Occupational Safety and Health Administration lead regulation requires employees with BLLs ≥40 µg/dL to receive a medical examination, additional laboratory testing, and follow-up.\(^2\) Five of the six family members, aged 7-12 years, did not have elevated BLLs; however, a 7-month-old infant, whose father’s BLL was >40 µg/dL, had a BLL of 16 µg/dL; it was 15 µg/dL on retesting 30 days later.

OLPPP recommended that the employer establish a comprehensive lead safety program that included exposure monitoring, good hygiene practices, medical examinations, protective clothing, respiratory protection, safe dust clean-up methods, and training. The employer arranged personal exposure monitoring and surface wipe sampling for lead and implemented workplace improvements, including a respiratory protection program; use of HEPA vacuum-attached power sanders; use of a high-efficiency toxic dust HEPA vacuum; daily clean uniforms; separate storage lockers, changing area with showers, and lunch room; warning signs; safety training addressing take-home lead; and a lead medical surveillance program. Workers’ BLLs declined after these steps were taken, and the average BLL decreased 15 µg/dL in approximately 3 months.

The nurse advised the affected families on cleaning residences and vehicles. At the residence of the index case, a wipe sample taken on a carpet where the worker played with his children showed a lead surface concentration of 30 µg/ft\(^2\). After steam cleaning the carpet, the level was 14 µg/ft\(^2\). This lead level on interior floors is below 40 µg/ft\(^2\), the threshold level the Environmental Protection Agency has determined to be harmful.\(^3\) In addition to the take-home lead contamination, the investigation identified deteriorated lead paint, which the landlord remediated. When the 4-month-old infant’s BLL remained elevated several months later, more thorough testing of painted surfaces was performed, and the landlord was required to remediate additional lead painted surfaces. The infant’s BLL then decreased steadily.

REFERENCES

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Human West Nile Virus Surveillance—Connecticut, New Jersey, and New York, 2000

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WEST NILE VIRUS (WNV), A MOSQUITO-BORNE ARBOVIRUS IDENTIFIED IN NEW YORK IN 1999, HAS BECOME ENZOOTIC IN THE
northeastern United States, affecting humans, birds, horses, and other mammals. Although no human WNV infection was identified in Connecticut or New Jersey in 1999, 62 persons with WNV illness, including seven deaths, were detected in New York City (NYC) and nearby New York counties.1 In 2000, these jurisdictions implemented active surveillance (AS) and enhanced passive surveillance (EPS)2 to detect human illness; 21 persons were identified with acute WNV infection (14 in New York, six in New Jersey, and one in Connecticut), including two deaths (one each in New York and New Jersey).2 This report summarizes the human WNV surveillance systems in Connecticut, New Jersey, New York, and NYC and recommends EPS for hospitalized patients with encephalitis of unknown etiology for the continental United States.

Connecticut
The Connecticut Department of Public Health (CTDPH) implemented EPS statewide during April 1–October 31, and AS in two southwestern counties during July 1–October 31. Surveillance criteria included all hospitalized patients with encephalitis, meningitis, or Guillain-Barre syndrome (GBS) with fever; in August, criteria were expanded to include hospitalized aseptic meningitis patients aged ≥18 years. EPS consisted of monthly mailings to physicians and all acute-care hospitals to solicit reports of patients meeting surveillance criteria. In counties participating in AS, infection-control practitioners (ICPs) were asked to review emergency department and hospital admissions, surveyed physicians, and provided weekly fax reports of patients meeting surveillance criteria. ICPs and physicians were contacted weekly for follow-up on all reported patients. Serum and CSF specimens from patients who met the surveillance criteria were tested for WNV-reactive IgM and IgG by ELISA at the state’s Public Health and Environmental Laboratory.

Of 55 patients tested, 18 (33%) had encephalitis, 15 (27%) had meningitis, 19 (35%) had aseptic meningitis, and three (6%) had GBS. Six patients had laboratory evidence of WNV infection; five (83%) were identified through EPS and one (17%) through AS.

New Jersey
The New Jersey Department of Health and Senior Services implemented EPS statewide during June 1–November 30, and AS in six counties near NYC during July 15–October 31. Surveillance criteria included all patients hospitalized for viral encephalitis, meningoencephalitis, or GBS and patients aged ≥17 years with aseptic meningitis. For EPS, public health staff distributed WNV fact sheets, surveillance criteria, and reporting instructions to healthcare providers. For AS, ICPs in six counties reviewed emergency department and hospital admissions, surveyed physicians, and provided weekly fax reports of patients meeting surveillance criteria. ICPs and physicians were contacted weekly for follow-up on all reported patients. Serum and CSF specimens from patients who met the surveillance criteria were tested for WNV-reactive IgM and IgG by ELISA at the state’s Public Health and Environmental Laboratory.

Of 512 patients tested, 205 (40%) had encephalitis or meningoencephalitis, 236 (46%) aseptic meningitis, 22 (4%) GBS, 41 (8%) other diagnoses, and eight (2%) unknown diagnoses; 56 (11%) did not meet surveillance criteria but were tested at their physicians’ request. Fourteen NYC residents had WNV infection diagnosed; 11 (79%) infections were detected at AS hospitals and three (21%) at hospitals where only EPS was conducted. Two patients with WNV infection reported by physicians were identified simultaneously through ALS.

New York State (excluding NYC)
During May 1–October 31, the New York State Department of Health (NYSDOH) and local units conducted EPS statewide and AS in counties with WNV activity in humans, birds, mosquitoes, or horses in 1999 or 2000; in April, NYSDOH implemented commercial laboratory surveillance. Surveillance criteria included all patients with viral encephalitis or meningoencephalitis and patients aged ≥2 years with aseptic meningitis. EPS included distributing alerts that encouraged physician reporting and specimen submission instructions to all local health staff provided surveillance criteria and laboratory testing information to healthcare providers through medical rounds, biweekly alerts, and a special issue of the NYCDOH’s medical bulletin. EPS was conducted at 18 sentinel sites; infectious disease and critical-care specialists and neurologists and chief medical residents were contacted biweekly for reports of patients meeting surveillance criteria. Twelve sites participated in ALS; hospital microbiology laboratories submitted CSF specimen results with parameters suggesting viral etiology for testing on a weekly basis. AS and ALS sites were selected initially on the basis of 1999 WNV activity; additional sites were added during the season as increasing WNV activity in birds and mosquitoes was detected in Staten Island and south Brooklyn. All serum and CSF specimens were tested for WNV-reactive IgM by ELISA at the NYC Public Health Laboratory.

Of 312 patients tested, 205 (40%) had encephalitis or meningoencephalitis, 236 (46%) aseptic meningitis, 22 (4%) GBS, 41 (8%) other diagnoses, and eight (2%) unknown diagnoses; 56 (11%) did not meet surveillance criteria but were tested at their physicians’ request. Fourteen NYC residents had WNV infection diagnosed; 11 (79%) infections were detected at AS hospitals and three (21%) at hospitals where only EPS was conducted. Two patients with WNV infection reported by physicians were identified simultaneously through ALS.

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units. Suggested activities for local health units conducting AS included weekly contact with medical staff at sentinel acute-care hospitals about patients meeting surveillance criteria. Commercial laboratories licensed by NYSDOH to perform arbovirus testing participated in surveillance by reporting patients who tested positive for antibodies to arboviral panels. Serum and CSF specimens from reported patients were tested for WNV infection at the New York Wadsworth Laboratory; testing included WNV-reactive IgM and IgG by ELISA, polymerase chain reaction, and plaque-reduction neutralization.

Of 589 patients tested, 230 (39%) had encephalitis or meningoencephalitis, 191 (32%) had aseptic meningitis, 89 (15%) did not meet surveillance criteria, and 79 (13%) were missing data to determine clinical status. Tested patients were not categorized by surveillance method. Commercial laboratory surveillance identified four patients who had flavivirus antibodies; investigation by local health units for travel and vaccination history and additional WNV testing indicated that none had a current or nontravel-related flavivirus infection. No human WNV infection was identified in New York outside of NYC.

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**CDC Editorial Note:** In 2000, public health jurisdictions used active and passive surveillance approaches based on staff and laboratory resources and degree of WNV activity identified by bird, mosquito, and mammalian surveillance. AS fostered ongoing communication between health departments and health-care providers but had variable yield. Eleven of 14 WNV-confirmed patients from NYC but only one of six in New Jersey were identified at AS hospitals. AS could have identified a higher proportion of WNV illnesses in NYC because the location of AS coincided with the epicenter of the outbreak (Staten Island). In comparison with AS, EPS was less labor intensive for health-care providers and health department staff, and intense public awareness of WNV in the northeast United States may have improved EPS effectiveness, resulting in increased reporting. However, EPS did not provide direct education about WNV to health-care providers, and in the absence of media and public interest, EPS may have missed reports of suspect illnesses. To plan future surveillance strategies, jurisdictions should evaluate the costs and yields of active and passive WNV surveillance efforts in upcoming transmission seasons.

All jurisdictions focused surveillance on severe WNV manifestations. Serologic studies suggest that approximately one in 150 infected persons develop neurologic disease requiring hospitalization.2,3 By monitoring patients with severe disease, the number of infected persons can be estimated; however, jurisdictions with few nonhospitalized human WNV infections may not be identified. Surveillance among patients with mild and nonspecific symptoms (e.g., fever and headache) probably would exhaust laboratory and staff resources.

Most states did not conduct WNV testing on pediatric patients with meningitis in summer months because they most likely represented enteroviral infections.4 In addition, most 1999 human infections may not be identified. Surveillance among patients with mild and nonspecific symptoms was increased by general alerts to key health-care personnel (e.g., primary-care providers, infectious disease physicians, and hospital infection-control personnel).

ELISA antibody. Appropriately timed acute and convalescent serum samples should be tested for a four-fold or greater rise in WNV-specific neutralizing antibody. With the availability of commercial laboratory testing for WNV, jurisdictions are encouraged to identify patients with commercial laboratory reports indicative of recent WNV infection and to verify these results by viral-specific neutralizing antibody testing. Monitoring of milder illnesses (e.g., aseptic meningitis or GBS) depends on jurisdictions’ resources and should be a lower priority. AS should be considered in areas with known WNV activity on the basis of bird and mosquito surveillance data. Jurisdictions in the northeastern, central, and western United States should begin human surveillance by June 2001 or earlier if other surveillance activities, such as avian mortality surveillance, demonstrate WNV activity. WNV could circulate throughout the year in some areas, especially the Gulf States; therefore, human surveillance should be considered year round in southern states. Because the ELISA and hemagglutination-inhibition test can be cross-reactive between WNV, St. Louis encephalitis, yellow fever, dengue, and Powassan viruses, patients who test positive for antibodies to these viruses should be tested for specific neutralizing antibody.

**REFERENCES**

1. CDC. Update: surveillance for West Nile virus in overwintering mosquitoes—New York, 2000. MMWR 2000;49:178-9.
2. CDC. Serosurveys for West Nile virus infection—New York and Connecticut counties, 2000. MMWR 2001;50:37-9.
3. Tsai TF, Popovic F, Cernescu C, et al. West Nile encephalitis epidemic in southeastern Romania. Lancet 1998;352:767-71.
4. Tunkel AR, Scheld WM. Acute meningitis. In: Mandell GL, Bennett JE, Dolin R, eds. Principles and practice of infectious diseases. Philadelphia, Pennsylvania: Churchill Livingstone, 2000:960-1.
5. CDC. Revised guidelines for surveillance, prevention, and control of West Nile virus infection—United States, 2001. Available at http://www.cdc.gov/ncidod/dvbid/westnile/resources/wnv-guidelines-apr-2001.pdf. Accessed April 2001.

*AS=Health department-initiated contact with health-care providers to solicit reports; EPS=passive surveillance (i.e., health-care provider-initiated reports) enhanced by general alerts to key health-care personnel (e.g., primary-care providers, infectious disease physicians, and hospital infection-control personnel).