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Varicella-Related Deaths Among Adults — United States, 1997

During January–April 1997, state health departments reported three fatal cases of varicella (chickenpox) to CDC. All three cases occurred in young adult women who were unvaccinated and susceptible to varicella and who were infected by exposure to unvaccinated preschool-aged children with typical cases of varicella. This report summarizes these three cases, which indicate that preventable varicella-related deaths continue to occur in the United States. In addition, the report re-emphasizes the recommended strategies for preventing varicella.

Case 1

On January 19, 1997, a 23-year-old woman in good health had onset of a classic varicella rash. In early January, her 2- and 5-year-old unvaccinated children had had varicella. On January 22, she had onset of shortness of breath and hemoptysis. When she was admitted to a local hospital on January 23, a chest radiograph indicated diffuse alveolar density consistent with varicella pneumonia, and treatment was initiated with oxygen and intravenous acyclovir. Her condition worsened, and she required intubation several hours after admission. Because of increasing respiratory distress, she was transferred to a referral hospital where treatment continued with oxygen, antibiotics, and intravenous acyclovir. On January 31, her rash became hemorrhagic, and she developed disseminated intravascular coagulation (DIC) and renal failure, followed by progression to multiple system failure; she died on February 2. Varicella zoster virus was cultured from skin lesions and from a tracheal aspirate.

Case 2

On March 11, 1997, a 25-year-old woman in good health had onset of a classic varicella rash, fever, and headache. Her 4-year-old unvaccinated child had had onset of a varicella rash on February 23. On March 12, the woman had onset of cough, and on March 13, shortness of breath. On March 14, she sought care at a local emergency department (ED) because of increasing respiratory difficulty and confusion. Chest radiograph indicated bilateral infiltrates consistent with varicella pneumonia, and arterial blood gases indicated hypoxemia. Varicella encephalitis and pneumonia were diagnosed; she was admitted to the hospital, and treatment was initiated with oxygen and intravenous acyclovir. Four hours after admission, her respiratory difficulty increased, and she required intubation. On March 15, a computerized tomography of the brain revealed severe, diffuse cerebral edema, and she developed renal failure and coma. On March 16, she was transferred to a referral hospital for renal dialysis; an electroencephalogram indicated absence of electrical brain activity, and repeat chest radiographs indicated diffuse infiltrates. She died on March 17.

Case 3

On April 3, 1997, a 32-year-old woman with Crohn's disease sought medical evaluation at a local ED because of onset of abdominal and back pain. On March 7, therapy was initiated with 40 mg prednisone daily for an exacerbation of her Crohn's disease. By April 3, her steroid therapy had been tapered to 20 mg prednisone daily. On physical examination, she had mild, generalized abdominal tenderness with no specific signs or abdominal guarding. She was afebrile, and a white blood cell (WBC) count was normal. A benign abdominal syndrome was presumptively diagnosed, and she was discharged.

Her symptoms persisted, and on April 4, she sought medical evaluation at the office of her health-care provider. Findings on physical examination were unchanged. Although an abdominal radiograph, abdominal and pelvic ultrasounds, and a WBC count were normal, because of her underlying medical condition, she was referred for surgical consultation. On April 5, the abdominal pain persisted, and she returned to the ED for evaluation. A WBC count was 15,000/mm^3 (normal: 3200–9800/mm^3), and she was admitted to the hospital. Diagnoses of colitis and ileitis with possible perforation and intraabdominal abscess were considered, and treatment was initiated with broad-spectrum antibiotics. On physical examination, a maculopapular, vesicular rash with crusted lesions was observed on her trunk, head, and neck. Varicella was presumptively diagnosed, and she was placed in isolation. The patient reported that she had had onset of a mild macular, nonpruritic rash on her back on April 3 and that she had been exposed on March 12 and 13 to her 4-year-old unvaccinated niece with varicella. On April 6, the vesicles became hemorrhagic, and she began bleeding from intravenous sites. She rapidly developed hypotension and DIC, and died from shock the same day. On autopsy, evidence of viral inclusion bodies in multiple organs was consistent with varicella, and varicella was determined to be the cause of death.

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Editorial Note: The three cases described in this report indicate that, despite the licensure of varicella vaccine in 1995 (*1*) and availability of antiviral therapies since the early 1980s, varicella-related deaths continue to occur in the United States. Varicella national mortality data for 1990–1994 indicate that, although <5% of varicella cases occur among adults aged >20 years, 55% of varicella-related deaths occur among persons in this age group (CDC, unpublished data, 1997). During the prevaccine era in the United States, approximately 4 million varicella cases were reported annually, including 4000–9000 hospitalizations and 100 deaths.

Varicella vaccine has been available since March 1995 and is approved for use in healthy susceptible persons aged ≥12 months (*1*). All children should be routinely vaccinated at age 12–18 months, and all susceptible children aged 19 months–13 years should be vaccinated by their 13th birthday (*1–3*). For persons aged

≥13 years, the priority group for vaccination includes those who are susceptible and who are close contacts of persons at high risk for serious complications (e.g., health-care workers and family contacts of immunocompromised persons); however, all susceptible adults may be vaccinated (*1,3,4*). Because varicella vaccine is an attenuated live virus preparation, it is contraindicated for immunocompromised persons, including those receiving immunosuppressive medications (e.g., systemic steroids >2 mg/kg bodyweight per day or a total of 20 mg prednisone per day).* Therefore, the most effective method to protect immunocompromised persons is to ensure that their potential susceptible contacts have been vaccinated (*1*).

Based on data obtained from three U.S. sites participating in active surveillance for varicella (West Philadelphia, Pennsylvania; Travis County, Texas; and Antelope Valley, Los Angeles County, California), 0–20% of 2-year-olds received varicella vaccine during 1995–1996 (CDC, unpublished data). Potential barriers to achieving high coverage levels with this vaccine include the perception that varicella is mild and vaccination is not warranted, concerns about long-lasting immunity and effectiveness of the vaccine, stringent vaccine storage and handling requirements, vaccine availability and cost, inadequate insurance coverage (*5*), and the inherent lag-time in fully incorporating a new vaccine into existing vaccination programs. A recent survey of Connecticut physicians' knowledge, attitudes, and practices regarding recommendations from the Advisory Committee on Immunization Practices (ACIP) and the American Academy of Pediatrics (AAP) for universal varicella vaccination of infants suggested similar barriers to vaccine use; in addition, physicians who disagreed with the ACIP and AAP recommendations were less likely to use the vaccine than those who agreed with the recommendations (Connecticut Department of Public Health, unpublished data, 1996). Public health agencies can address perceived barriers by educating health-care providers and the general public about the following: complications associated with varicella, especially in adults; the availability of a vaccine highly effective against severe disease (*1*); evidence indicating long-lasting vaccine-induced immunity (*6,7*); and the importance of early antiviral treatment for adults and others with cases of varicella who are at high risk for complications of disease. Beginning in 1997, inclusion of reporting of varicella vaccine coverage in version 3.0 of the Health Plan Employer Data and Information Set (HEDIS) also should assist in accelerating implementation of varicella vaccination in managed-care organizations.

At least three recommended strategies can assist in preventing varicella-related deaths among adults. First, antiviral therapies should be used more optimally. Varicella zoster immune globulin (VZIG) is recommended for postexposure prophylaxis in susceptible persons at greater risk for serious complications from varicella, such as immunocompromised persons (e.g., persons with human immunodeficiency virus infection/acquired immunodeficiency syndrome, malignancies, or receiving steroid therapy). Although VZIG is effective in reducing the severity of varicella when administered up to 96 hours after exposure, the agent should be administered as soon as possible after exposure (*1*). If varicella develops, infected persons may benefit from effective therapies that reduce disease severity and complications (e.g., acyclovir [*8*]). For maximum benefit, such therapy should be initiated within 24 hours of rash

*The exception is children with leukemia in remission who may be administered the vaccine under a strict protocol. A clinical trial is under way testing the safety and efficacy of the vaccine in asymptomatic children with human immunodeficiency virus infection/acquired immunodeficiency syndrome.

Varicella — Continued

onset or as soon thereafter as possible. Second, susceptible adults should be vaccinated with varicella vaccine. Approximately 95% of U.S. adults have acquired natural immunity to varicella (*9*); therefore, only a small proportion of adults need to be vaccinated. Because only approximately 10%–30% of adults with negative or uncertain histories for varicella are actually susceptible (*1*), serologic testing followed by vaccination of identified susceptible persons may be more cost effective for adults than administration of two doses of vaccine to adults with negative or uncertain histories for varicella. Two of the decedents in this report were eligible for varicella vaccination. Third, susceptible children should receive routine vaccination for varicella. Although both ACIP and AAP recommend routine or universal varicella vaccination by age 12–18 months, both permit vaccination of susceptible children at any age (*1–2*). All three deaths in this report may have been prevented by vaccinating the preschool-aged family members to whom the decedents had been exposed.

A comprehensive assessment of the impact of varicella vaccination on varicella-related morbidity and mortality will require establishing surveillance systems to monitor incidence, hospitalizations, and deaths from varicella. Consequently, state public health agencies are encouraged to initiate ongoing surveillance; investigate all varicella-related deaths; and consider establishing reporting systems for varicella cases in schools, day care centers, health-care provider offices, or hospitals.

References

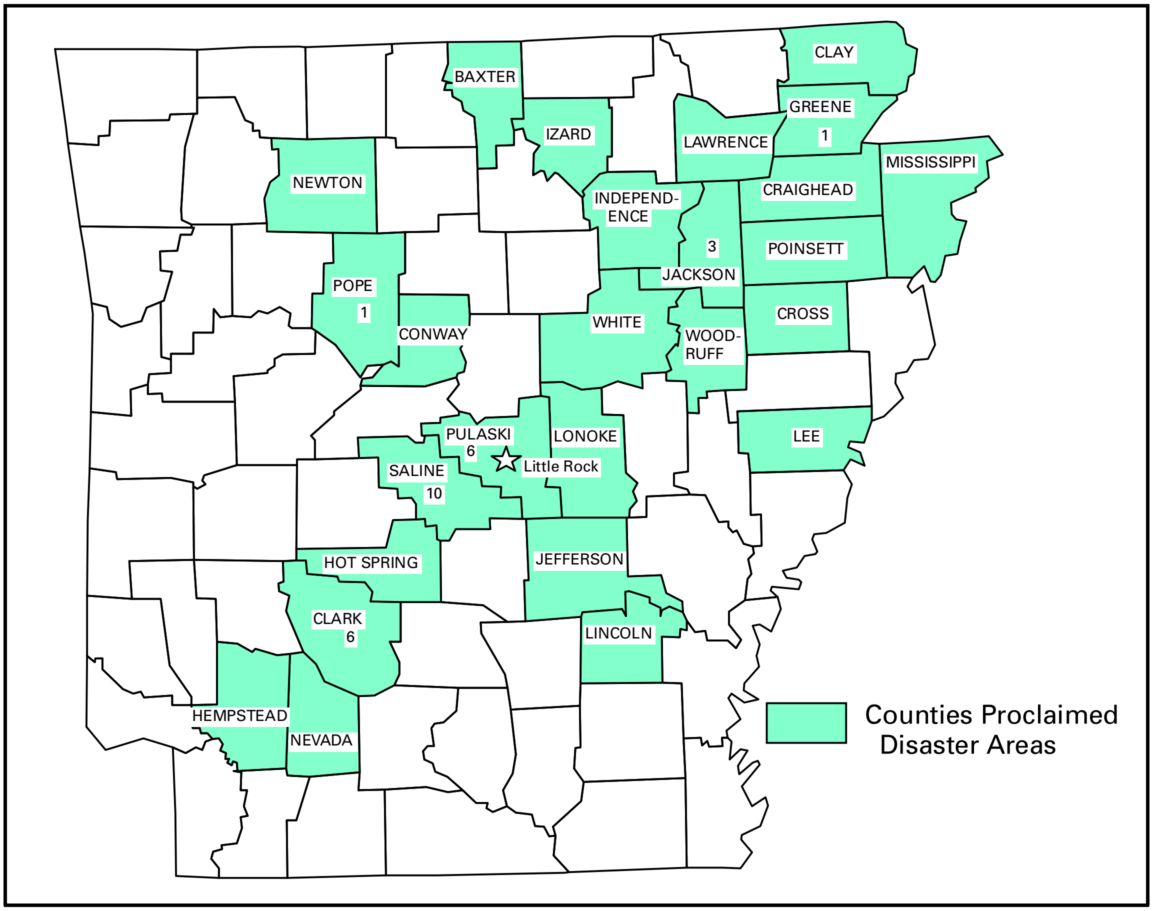
1. CDC. Prevention of varicella: recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 1996;45(no. RR-11).
2. Committee on Infectious Diseases, American Academy of Pediatrics. Recommendations for the use of live attenuated varicella vaccine. Pediatrics 1995;95:791–6.
3. American Academy of Family Physicians. Summary of policy recommendations for periodic health examination. Kansas City, Missouri: American Academy of Family Physicians, November 1996.
4. Gardner P, Eickhoff T, Poland GA, et al. Adult immunizations. Ann Intern Med 1996;124:35–40.
5. Chew D, Hofmann J, O'Donnell C, Finelli L. Physician attitudes and practices regarding varicella vaccine in New Jersey [Abstract]. In: Program and abstracts of the 36th Interscience Conference on Antimicrobial Agents and Chemotherapy. Washington, DC: American Society for Microbiology, 1996:278.
6. Asano Y, Suga S, Yoshikawa T, et al. Experience and reason: twenty-year follow-up of protective immunity of the Oka strain live varicella vaccine. Pediatrics 1994;94(4 Pt 1):524–6.
7. Kuter BJ, Weibel RE, Guess HA, et al. Oka/Merck varicella vaccine in healthy children: final report of a 2-year efficacy study and 7-year follow-up studies. Vaccine 1991;9:643–7.
8. Wallace MR, Bowler WA, Murray NB, Brodine SK, Oldfield EL III. Treatment of adult varicella with oral acyclovir: a randomized, placebo-controlled trial. Ann Intern Med 1992;117:358–63.
9. Van Loon F, Markowitx L, McQuillan G, et al. Varicella seroprevalence in US population [Abstract]. In: Program and abstracts of the 33rd Interscience Conference on Antimicrobial Agents and Chemotherapy. Washington, DC: American Society for Microbiology, 1993:359.

Tornado-Associated Fatalities — Arkansas, 1997

On March 1, 1997, approximately nine tornadoes originating from two separate thunderstorms swept across Arkansas, from Hempstead County in the southwest to Clay County in the northeast (approximately 260 miles) (Figure 1). The tornadoes caused 26 deaths and an estimated $115 million in property damage, reflecting

Tornado-Associated Fatalities — Continued

FIGURE 1. Number of tornado-related deaths, by county — Arkansas, 1997



damage to residences, nonresidential buildings, bridges, and roads and agriculture and timber losses. The strongest tornadoes touched down southwest of Little Rock in Clark, Saline, and Pulaski counties; the estimated widths of the tornado paths ranged from ½ to 1 mile, and wind speeds were >200 miles per hour (National Weather Service [NWS], unpublished data, 1997). This report summarizes circumstances of the tornado-associated fatalities from information collected by the American Red Cross (ARC); 14 of the 26 fatalities occurred among persons who were in mobile homes.

ARC collected data about fatalities associated with the tornadoes by contacting area hospitals and medical examiner's and coroner's offices in affected counties. Fatalities were verified by death certificates obtained from the Arkansas Department of Vital Statistics. A total of 26 fatalities resulted from injuries sustained during the tornadoes; one additional death resulted from electrocution during storm-related clean-up activities in Pulaski County. Twenty-two deaths occurred in the three most heavily affected counties (Clark, Saline, and Pulaski) (Figure 1). Decedents' ages ranged from 14 to 79 years (median: 48 years) (Table 1), and 14 were male. When tornadoes touched down, 14 of those who died were in mobile homes; four, in single-family dwellings; three, in nonresidential buildings; three, in motor vehicles; and two, outdoors. Most deaths resulted from multiple injuries; head injuries were specifically listed in 14 deaths. Twenty-two persons died at the scene of injury; three

Tornado-Associated Fatalities — Continued

TABLE 1. Tornado-related deaths, by time and county of death and decedent's age, sex, location when injured, and nature of injury — Arkansas, 1997

Time/County	Age	Sex	Location when injured	Nature of injury
Impact				
Clark	14	F	Mobile home	Trauma impact
Clark	14	F	Mobile home	Trauma impact
Clark	45	F	Mobile home	Trauma impact
Clark	42	M	Mobile home	Trauma impact
Clark	39	F	Office building	Trauma impact
Clark	45	M	Motor vehicle	Motor-vehicle crash
Saline	23	F	Mobile home	Multiple head and internal injuries
Saline	35	F	Mobile home	Multiple head and internal injuries
Saline	52	F	Mobile home	Multiple head and internal injuries
Saline	55	F	Mobile home	Multiple head and internal injuries
Saline	15	M	Mobile home	Multiple head and internal injuries
Saline	49	M	Mobile home	Multiple head and internal injuries
Saline	55	M	Mobile home	Multiple head and internal injuries
Saline	72	M	Mobile home	Tornado, not otherwise specified
Saline	61	F	Single-family home	Multiple head and internal injuries
Saline	64	M	Single-family home	Multiple head and internal injuries
Pulaski*	40	F	Mobile home	Closed head injury; multiple trauma
Pulaski	62	M	Single-family home	Multiple blunt force head trauma
Pulaski	69	M	Single-family home	Multiple blunt force head trauma
Pulaski	61	M	Store	Tornado, not otherwise specified
Pulaski*	74	F	Motor vehicle	Multiple blunt force trauma
Jackson*	79	M	Mobile home	Tornado, not otherwise specified
Jackson	29	F	Outdoors, ditch	Multiple head and internal injuries
Jackson	21	M	Outdoors	Tornado, not otherwise specified
Greene*†	47	M	Building	Massive head injury
Pope	57	M	Motor vehicle	Cardiopulmonary arrest; massive thoracic trauma
Clean-up				
Pulaski†	35	M	Outdoors	Electrocution

* Died at or while being transported to a hospital.
† Death occurred the day after the tornado.

Source: American Red Cross-CDC Health Impact Surveillance System for Disasters.

died at or while being transported to a hospital; and one died in a hospital the following day.

ARC reported 400 nonfatal injuries that were treated at area emergency departments. Of these, 296 (74%) persons were treated and released, and 104 (26%) required hospitalization.

Interviews with family or neighbors of 10 (71%) decedents revealed that the mobile homes in which these deaths occurred (both in parks and stand-alone mobile homes) lacked access to underground storm shelters. Reports from local public health officials indicated that the remaining four mobile homes in which deaths occurred also probably did not have storm shelters (family or neighbor contacts for these decedents could not be located).

On the day of the tornadoes, the NWS issued storm warnings to 55 Arkansas counties, including tornado warnings in 33 counties. Lead time between warning issuance and tornado touchdown was 15 minutes for most affected counties. Lead times for all counties in which death or injury occurred ranged from 18 to 32 minutes (NWS, unpublished data, 1997). Warning systems varied by county but generally consisted of warning sirens supplemented by television and/or radio bulletins. CDC and the

Tornado-Associated Fatalities — Continued

Arkansas Department of Health are conducting a survey to evaluate public awareness and response to the tornado warnings during this disaster.

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Editorial Note: In the United States, tornadoes cause an average of 51 deaths and approximately 1000 injuries each year (*1*). Occupancy of a mobile home is an important risk factor for tornado-related deaths and injuries (*2–4*), and the presence of on-site storm shelters in mobile-home parks is effective in reducing tornado-related injury and death (*4*).

During the storm in Arkansas on March 1, more than half of the fatalities occurred among persons in mobile homes, and persons in these structures did not have access to storm shelters. To reduce injury and death from tornadoes, strategies and efforts are needed to provide residents of mobile homes with access to underground shelters. Other needs include evaluation of public-education campaigns and shelter-seeking behaviors; during a storm in Alabama in 1994, only 31% of persons who heard a tornado warning sought shelter (*5*). Public health departments should assist with efforts to improve public awareness of safety measures that will reduce injury and death during a tornado. For example, local public health clinics are a setting for distributing educational brochures that outline tornado safety guidelines (see box). Public awareness or education campaigns should specifically target residents of mobile homes.

References

1. Lillibridge SR. Tornadoes. In: Noji E, ed. The public health consequences of disasters. New York, New York: Oxford University Press 1997:228–44.
2. Glass RI, Craven RB, Bregman DJ, et al. Injuries from the Wichita Falls tornado: implications for prevention. Science 1980;207:734–8.
3. Eidson M, Lybarger JA, Parsons JE, MacCormack JN, Freeman JI. Risk factors for tornado injuries. Int J Epidmiol 1990;19:1051–6.
4. CDC. Tornado disaster—Kansas, 1991. MMWR 1992;41:181–3.
5. Liu S, Quenemoen LE, Malilay J, Noji E, Sinks T, Mendlein J. Assessment of a severe-weather warning system and disaster preparedness, Calhoun County, Alabama, 1994. Am J Public Health 1996;86:87–9.

Recommendations for Persons in Areas Under a Tornado Warning

- Move from homes and buildings to basements or underground shelters.
- If underground shelters are unavailable, move to interior rooms or hallways on the lowest floor and get under a piece of sturdy furniture.
- Leave vehicles and lie flat in nearby ditches or depressions.
- Leave mobile homes and move to underground shelters. If underground shelters are unavailable, lie flat in nearby ditches or depressions.

Source: National Weather Service and CDC (*6,7*).

Tornado-Associated Fatalities — Continued

6. Office of Meteorology, National Weather Service, National Oceanic and Atmospheric Administration. Tornado safety. Washington, DC: National Oceanic and Atmospheric Administration, National Weather Service, 1996; publication no. 1996-413-872.
7. National Center for Environmental Health. Tornado: a guide for your personal health and safety. Atlanta, Georgia: US Department of Health and Human Services, Public Health Service, CDC, 1997 (in press).

Sustained Transmission of Nosocomial Legionnaires Disease — Arizona and Ohio

In 1996, two hospitals reported sustained transmission of nosocomial Legionnaires disease (LD). The hot water distribution systems in each hospital were implicated as the sources of infection. This report summarizes investigations in these two hospitals by hospital personnel, state and local health officials, and CDC and efforts to control transmission.

Arizona, 1987–1996

In 1996, eight cases of nosocomial LD were diagnosed among cardiac and bone marrow transplant patients at hospital X. Possible nosocomial LD was first reported at hospital X in 1979, but no source had been identified. Intensified surveillance for nosocomial LD was initiated after the first three case-patients were identified in 1996.

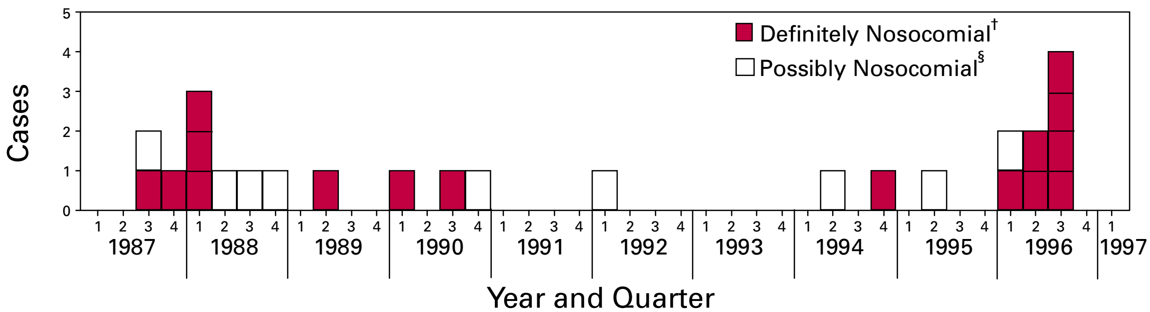
A case of definite nosocomial LD in a hospital X patient was defined as respiratory illness with a new infiltrate on chest roentgenogram occurring after ≥10 days of continuous hospitalization for a nonpneumonia illness and laboratory confirmation of legionellae infection by at least one of the following: 1) isolation of legionellae from tissue or respiratory secretions, 2) detection of *Legionella pneumophila* serogroup 1 (Lp-1) antigens in urine by radioimmunoassay or enzyme immunoassay, or 3) a fourfold rise in *Legionella* serogroup-specific antibody titer to ≥128 between acute- and convalescent-phase serum specimens. Possible nosocomial LD was defined as onset of respiratory symptoms of LD after 2–9 days of continuous hospitalization (the incubation period for LD is usually 2–10 days).

Through intensified surveillance and examination of infection-control and microbiology laboratory records, 25 cases of LD linked to hospitalization during 1987–1996 were identified; 16 were definite cases, and nine were possible cases (Figure 1). All were diagnosed by culture. The median age of case-patients was 56 years (range: 17–81 years); 13 (52%) were male. Most case-patients had received either heart or heart/lung transplants (11 [44%]) or bone marrow transplants (seven [28%]). Seven (28%) other patients were either immunocompromised (four) or had some form of chronic illness (three). Twelve (48%) patients died during their hospitalization; eight of these patients had LD identified on autopsy. During January–September 1996, cases of nosocomial LD occurred among eight (6%) of the 134 cardiac and bone marrow transplant patients.

Based on a case-control study that matched the 25 case-patients with 49 controls (only one appropriate control was available for one case-patient) by age, date of admission to hospital X, and underlying medical condition, no single risk factor for acquisition of disease was identified. However, information about exposure to showers, other aerosol sources, or ingested water for some patients was unavailable.

Nosocomial Legionnaires Disease — Continued

FIGURE 1. Number of cases of nosocomial Legionnaires disease (LD) at hospital X, by date of onset — Arizona, 1987–1997*



*n=25.

†Respiratory illness with a new infiltrate on chest roentgenogram occurring after ≥10 days of continuous hospitalization for a nonpneumonia illness and laboratory confirmation of legionellae infection by at least one of the following: 1) isolation of legionellae from tissue or respiratory secretions, 2) detection of *Legionella pneumophila* serogroup 1 (Lp-1) antigens in urine by radioimmunoassay or enzyme immunoassay, or 3) a fourfold rise in *Legionella* serogroup-specific antibody titer to ≥128 between acute- and convalescent-phase serum specimens.

§Onset of symptoms of LD after 2–9 days of continuous hospitalization.

During August 1996, Lp-6, Lp-11, *L. anisa*, and a *Legionella*-like organism designated D-1620 were cultured from the hot water distribution system, and Lp-1, Lp-4, Lp-6, and Lp-11 were cultured from swabs and water samples from water softeners. Water obtained from the wellhead of a private well that supplied some areas of the hospital contained Lp-1. Lp-6 was cultured from samples obtained from taps and showers in patients' rooms and a carpet-cleaning unit used on the transplant ward. Air sampling within patient showers identified Lp-6 in respirable (1–5-micron) droplets. Seven patient isolates from 1996 were serogrouped. Of these, one was a serogroup 10; the remaining six were Lp-6, and five of these six were identical to Lp-6 environmental isolates from water softeners, showers, and shower aerosols by pulsed-field gel electrophoresis.

Thermal decontamination of the hot water distribution system had been conducted in July 1996, but legionellae were later isolated from the potable water; three cases occurred after thermal decontamination. In response, the hot water distribution system was hyperchlorinated, and the water temperature at the taps was maintained at 120 F (49 C); however, following these measures, Lp-6 was again cultured from the potable water. As a result, additional measures that were implemented included installing chlorine injection devices, removing areas of low flow ("deadlegs") in the potable water plumbing, disconnecting the water softeners, and repeating the hyperchlorination procedures. No new cases of nosocomial LD have been identified at hospital X since September 1996. Although cultures of potable water samples from the distribution system of a unit where transplant patients were not present were positive for *L. bozemanni* in December 1996, subsequent samples from other areas have been negative.

Nosocomial Legionnaires Disease — Continued

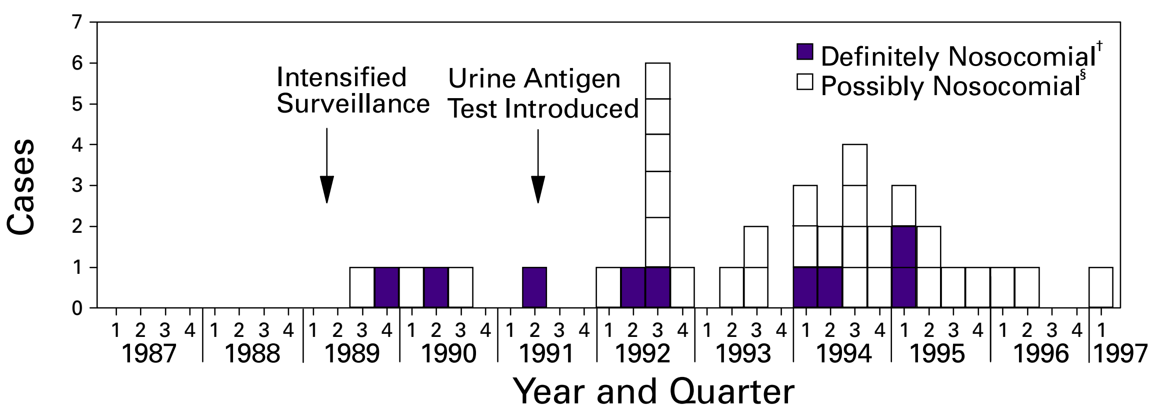
Ohio, 1989–1997

During January–June 1996, nosocomial LD occurred in two patients at hospital Y. Nosocomial LD transmission had occurred at hospital Y in 1977; however, an epidemiologic investigation had not identified the source of transmission. Beginning in 1989, as part of surveillance for nosocomial LD, urine samples from all patients with nosocomial pneumonia were tested for Lp-1 antigen.

Cases of nosocomial LD were defined as in the investigation in Arizona. Examination of infection-control and microbiology laboratory records from 1989 through 1996 identified nine patients with definite nosocomial LD and 29 patients with possible nosocomial LD (Figure 2). The median age for these 38 patients was 65 years (range: 36–85 years); 21 (55%) patients were male. Fifteen (39%) had at least one underlying chronic medical illness, and another 13 (34%) were immunocompromised by disease or immunosuppressive medication. Six (16%) were inpatients on the psychiatric ward. Eleven (29%) died during their hospitalization.

A case-control study was conducted to assess potential risk factors for infection, matching 36 case-patients (no charts were available for two patients) and 72 controls by age, date of discharge from hospital Y, and underlying condition. Information about exposure to showers, pneumatic nebulizers, other aerosol sources, or ingested water was incomplete for some case-patients and for some controls. However, case-patients were more likely than controls to have had documented exposure to common aerosol-producing devices (showers and/or medication nebulizers) during the 2 weeks before onset (matched odds ratio [MOR]=2.9; 95% confidence interval [CI]=1.2–74.0). Medical (nonpsychiatric) case-patients were more likely than controls to have received at least one medication by nebulizer during the 2 weeks before onset (MOR=3.2; 95% CI=1.1–10.6); however, only 40% of medical case-patients had received nebulized medication. Review of respiratory therapy practices indicated that nebulizer

FIGURE 2. Number of cases of nosocomial Legionnaires disease (LD) at hospital Y, by date of onset — Ohio, 1987–1997*



*n=39.

†Respiratory illness with a new infiltrate on chest roentgenogram occurring after ≥10 days of continuous hospitalization for a nonpneumonia illness and laboratory confirmation of legionellae infection by at least one of the following: 1) isolation of legionellae from tissue or respiratory secretions, 2) detection of *Legionella pneumophila* serogroup 1 (Lp-1) antigens in urine by radioimmunoassay or enzyme immunoassay, or 3) a fourfold rise in *Legionella* serogroup specific antibody titer to ≥128 between acute- and convalescent-phase serum specimens.

§Onset of symptoms of LD after 2–9 days of continuous hospitalization.

Nosocomial Legionnaires Disease — Continued

equipment was sometimes rinsed with tap water between doses to reduce clogging. An increased risk for nosocomial LD also was associated with hospitalization in only one of the three inpatient medical/surgical buildings (building 1) (MOR=5.0; 95% CI=1.5–22.5) and within the psychiatric facility (MOR=undefined; 95% CI=3.1–infinity). However, all three medical/surgical inpatient buildings and the inpatient psychiatric facility were implicated as sites of transmission.

Lp-1 was isolated from samples obtained from multiple sites in the hot water distribution system during 1994–1996, and the percentage of outflow sites testing positive was consistently highest in building 1 and the psychiatric building. All Lp-1 isolated from potable hot water samples in 1994–1996, as well as Lp-1 isolated from potable water in 1984 and from a hospital Y patient with nosocomial LD in 1985, were identical to the three clinical isolates from 1992, 1994, and 1995 by monoclonal antibody and arbitrarily-primed polymerase chain reaction subtyping. Although *L. pneumophila* was recovered from cooling tower reservoir water collected from two hospital facilities, these isolates were serogroups other than Lp-1.

Periodic culturing of the hot water distribution system at hospital Y since 1994 had been used to guide decontamination efforts. Thermal (heating to 160 F [71 C] at the tap for 5 minutes) and chlorine (maintaining a chlorine level of 1–2 mg/L at the tap for at least 5 minutes) decontamination had been only temporarily effective in reducing the number of sites positive for Lp-1. A copper-silver ionization system installed in 1995 neither reduced the number of positive samples nor terminated transmission. Interventions recommended at the conclusion of this investigation in June 1996 included discontinuing the use of tap water to rinse medical nebulizer equipment, repeating the hyperchlorination procedure as needed in response to positive potable water cultures, increasing the hot water temperature at the point-of-use to at least 120 F (49 C), and identifying deadlegs in the potable water plumbing.

Following these interventions, no new cases of nosocomial transmission were identified until February 28, 1997, when a case of possible nosocomial LD occurred in a patient in a critical-care unit. Lp-1 isolates from a sample of the patient's lung tissue and from the potable water supply in his room were identical to all previous isolates by monoclonal antibody subtyping. Hospital personnel discovered a previously undocumented cross-connection between the hot-water tank from an adjacent outpatient-care building and the critical-care unit. This tank was cleaned, and the supply system hyperchlorinated. No new cases have been identified at hospital Y since March 1997.

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Editorial Note: The findings in these and other recent investigations (*1*) indicate the capacity for legionellae to colonize hospital plumbing systems for long periods and, in the absence of effective preventive measures, to represent an ongoing risk for infection. Colonization rates are higher in large hospitals with older, large hot-water tanks in which water is held at lower temperatures (*2*). Hospital X served a large bone marrow and organ transplant patient population, and nosocomial legionellae transmission resulted in substantial morbidity and mortality during at least a 17-year period in this group of immunocompromised patients. Standard respiratory disease infection-control measures (high efficiency particulate air filtered positive-pressure rooms, patient use of surgical masks while out of the room, and use of sterile water in respiratory therapy equipment) were insufficient to prevent transmission within hospital X. At hospital Y, long-term interruption of transmission had not been achieved since recognition of legionellae transmission in 1977, despite use of a variety of strategies including hyperchlorination, thermal disinfection, and metal ionization. In addition, incomplete plumbing system records resulted in delayed treatment of appropriate potable water systems.

Nosocomially acquired LD accounts for a substantial proportion of all reported cases of this disease: during 1980–1989, of 3524 cases reported to CDC, 23% were nosocomial, and mortality was 40%, compared with a mortality of 20% in community-acquired disease (*3*). Numerous outbreaks of nosocomial LD have been reported since the etiologic agent of LD was first identified in 1977 (*4*). When a case of nosocomial LD is recognized, additional cases often will be identified (*5*). Therefore, identification of one patient with definite nosocomial LD or two persons with possible nosocomial LD within 6 months should prompt an epidemiologic investigation. Heightened prospective surveillance for additional cases and a retrospective review of serologic, microbiologic, and postmortem data to identify previously unrecognized cases also should be instituted (*4*).

Diagnosis of nosocomial LD requires heightened clinical suspicion and special laboratory techniques. For disease caused by Lp-1, urinary antigen detection is a rapid and highly specific diagnostic test (*6*). Infection with non-serogroup 1 *L. pneumophila* and other legionellae requires culture, paired serum antibody titers, or direct fluorescent antibody testing for diagnosis. The decision to initiate an environmental investigation should consider both the type of patient population exposed and the level of risk for nosocomial transmission. Routine culturing of potable hospital water has been advocated (*7*) even in the absence of identified LD transmission; however, additional data are needed to define the relation between water culture results and risk for disease.

Legionellae are found in natural and man-made aquatic environments, but growth to high concentrations occurs most often at water temperatures of 77 F–108 F (25 C–42 C). Concern about the risk for scalding injuries has prompted some jurisdictions to regulate temperatures in hospital hot water systems at levels conducive to legionellae growth. Additions and alterations to hospital plumbing systems in response to changing hospital facility needs may create areas of stagnation and sediment buildup, factors also shown to enhance legionellae colonization (*8,9*). These stagnant areas may be resistant to chlorination, thermal disinfection, and ionization.

Respiratory therapy equipment should be rinsed only with sterile (not distilled) water. When water distribution systems are suspected as the source of nosocomial LD, patient exposure to potable water aerosols and ingestion of potable water should be minimized. Standard decontamination procedures for potable hot water systems include thermal disinfection and hyperchlorination. Because eradication of legionellae from water distribution systems generally is not possible, a maintenance program to minimize regrowth of legionellae should also be implemented. Raising the water temperature to 120 F–125 F (49 C–52 C) at the fixture (although higher temperatures may increase the risk of scalding) and infusion of chlorine to maintain consistent levels of 1–2 mg/L have been employed to achieve long-term decontamination in many

Nosocomial Legionnaires Disease — Continued

hospitals. Although metal ionization systems may be effective, whether they offer an advantage over conventional methods is unclear; in hospital Y, nosocomial transmission persisted after installation of an ionization system. Detailed guidelines on the prevention of nosocomial LD, including decontamination procedures for contaminated potable water and cooling systems, have been published (*4*) and are available electronically on the World-Wide Web at http://www.cdc.gov/ncidod/diseases/hip/pneumonia/pneu_mmw.htm.

References

1. Lepine L, Jernigan D, Wyatt B, et al. Use of urinary antigen testing to detect an outbreak of nosocomial Legionnaires' disease (Abstract J58). In: Abstracts of the 35th Interscience Conference on Antimicrobial Agents and Chemotherapy. Washington, DC: American Society for Microbiology, 1995:267.
2. Alary M, Joly JR. Factors contributing to the contamination of hospital water distribution systems by legionellae. J Infect Dis 1992;165:565–9.
3. Marston BJ, Lipman HB, Breiman RF. Surveillance for Legionnaires' disease: risk factors for morbidity and mortality. Arch Intern Med 1994;154:2417–22.
4. CDC. Guidelines for prevention of nosocomial pneumonia. MMWR 1997;46(no. RR-1):28–34,54–57,74–79.
5. Joseph CA, Watson JM, Harrison TG, Bartlett CLR. Nosocomial Legionnaires' disease in England and Wales, 1980–92. Epidemiol Infect 1992;112:329–45.
6. Plouffe JF, File TM Jr, Breiman RF, et al. Reevaluation of the definition of Legionnaires' disease: use of the urinary antigen assay. Clin Infect Dis 1995;20:1286–91.
7. Allegheny County Health Department. Approaches to prevention and control of *Legionella* infection in Allegheny County health care facilities. Pittsburgh, Pennsylvania: Allegheny County Health Department, 1993.
8. Stout JE, Yu VL, Best MG. Ecology of *Legionella pneumophila* within water distribution systems. Appl Environ Microbiol 1985;49:221–8.
9. Ciesielski CA, Blaser MJ, Wang WL. Role of stagnation and obstruction of water flow in isolation of *Legionella pneumophila* from hospital plumbing. Appl Environ Microbiol 1984;48:984–7.

Cancer Screening Offered by Worksites — United States, 1992 and 1995

Since the early 1970s, many U.S. businesses have implemented worksite health promotion programs to help contain employer health-care costs; improve employees' health status, productivity, and morale; reduce absenteeism and employee turnover; and provide a convenient setting for screening and education. Because approximately 130 million persons in the United States work, the worksite is an effective location for offering health screening and educational programs otherwise unaccessible to at-risk persons (*1,2*). From the late 1980s to the early 1990s, the prevalence of worksite health promotion activities increased in the United States (*3*). To characterize more recent national practices in worksite-based cancer screening programs, CDC examined data from two national probability surveys—the Office of Disease Prevention and Health Promotion's (ODPHP's) 1992 National Worksite Health Promotion Survey and CDC's 1995 Worksite Benchmark Survey (*4,5*). This report summarizes the results of the analysis, which indicate that, in contrast to previous findings about worksite health promotion in the 1980s, the prevalence of worksites offering cancer screening declined from 1992 to 1995.

Cancer Screening — Continued

The 1992 ODPHP survey was designed to measure worksite health promotion activities, policies, screening programs, and educational efforts in 14 program areas. In 1995, CDC implemented the Benchmark Survey, designed to provide prevalence measures of worksites' philanthropy, policies, and practices related to acquired immunodeficiency syndrome and compare them with eight other health topics. The Benchmark Survey also included selected questions from the ODPHP survey to measure changes since 1992. Both surveys measured the prevalence of worksite screening programs for colorectal, skin, cervical, oral, and breast cancers. The 1995 survey also asked about prostate cancer screening.

The sampling frame for both surveys was a list obtained from commercial vendors of all U.S. private-sector worksites with ≥50 employees (*4,5*). Stratified random samples of 1507 (1992) and 1720 (1995) worksites for the respective surveys were selected to represent four size strata and six standard industry types. Both surveys used computer-assisted telephone interviews of directors of health promotion or human resources. The response rate among eligible worksites sampled was 74% for the 1992 survey and 78% for the 1995 survey (*4,5*). Estimates of prevalence rates for the 1992 survey were obtained from the survey's technical report (*4*). Weighted estimates and their associated sampling variances for the 1995 survey were computed using SUDAAN. From 1992 to 1995, changes of ≥7% for worksites offering cancer screening and ≥12% for worksites offering specific cancer screenings were detectable at the 0.05 (two-tailed) level with 80% power.

The overall proportion of worksites offering cancer screening decreased significantly from 1992 (12.0%; 95% confidence interval [CI]=±2.0%) to 1995 (6.5%; 95% CI=±2.6%), with significant interactions by size and type of worksite (Table 1). Decreases occurred in three of the four size strata (range: 8.2%–22.5%), but not in the smallest worksites. Despite significant decreases, the prevalence of worksites offering screening increased directly with the number of employees at the worksite. Stratification by industry type indicated substantial decreases in the prevalence of cancer screening programs offered by the agriculture/mining/construction (7.5%), wholesale/retail (7.6%), and transportation/public utilities (7.5%) industries. In comparison, the prevalences of programs offered by finance/insurance/real estate, manufacturing, and service industries were unchanged.

Of the worksites offering cancer screenings, breast cancer screening was the most common test offered in both 1992 and 1995 (Table 2). The proportion of worksites providing colorectal and oral cancer screenings decreased substantially from 1992 to 1995, and the proportion of worksites offering screening for breast and cervical cancers was unchanged. Screening for prostate cancer was not directly assessed by the 1992 survey; however, prostate cancer screening was the second most frequently offered screening service in 1995.

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Editorial Note: The findings in this report indicate that substantially fewer U.S. worksites offered cancer screening in 1995 than in 1992. Potential reasons for this decrease include recent trends in corporate downsizing; employers' uncertainty regarding the effectiveness of worksite screening programs; and employers' perceptions of on-site screenings as duplicating services available elsewhere. In addition, employers may

Cancer Screening — Continued

TABLE 1. Percentage of worksites offering cancer screenings, by size and industry type — United States, 1992 and 1995

Size/Industry	1992 (n=1507) %	1992 (95% CI*)	1995 (n=1720) %	1995 (95% CI)	% Change from 1992 to 1995
Size of worksite					
50– 99 employees	6.2	(±2.3%)	4.4	(± 4.2%)	—
100–249 employees	13.4	(±3.3%)	5.2	(± 2.7%)	– 8.2†
250–749 employees	22.7	(±5.1%)	10.3	(± 4.0%)	–12.5†
≥750 employees	57.5	(±8.0%)	35.2	(±10.9%)	–22.5§
Type of industry					
Agriculture/Mining/Construction	9.5	(±5.0%)	2.0	(± 1.8%)	– 7.5§
Manufacturing	10.1	(±3.2%)	7.6	(± 8.1%)	—
Transportation/Communications/Utilities	15.8	(±6.7%)	7.5	(± 4.6%)	– 7.5¶
Wholesale/Retail	9.0	(±3.6%)	1.4	(± 1.2%)	– 7.6†
Finance/Insurance/Real estate	12.1	(±6.5%)	5.8	(± 3.9%)	—
Services	14.9	(±4.3%)	11.3	(± 5.6%)	—
Total	**12.0**	**(±2.0%)**	**6.5**	**(± 2.6%)**	**—****

*Confidence interval.
†p<0.001.
§p<0.01.
¶p<0.05.
**Overall test not reported because of interactions by size and type of worksite.

recognize the need for screening services to include appropriate links to the health-care delivery system to ensure that employees receive appropriate diagnostic follow-up, but such comprehensive services can be costly (*6*).

Advantages of worksite screening programs include decreasing health-care costs by early detection and treatment of disease and reducing the barriers of time, cost, and inconvenience (*2*). However, the efficacy of worksite-based screening programs has not been conclusively established, and benefits have focused primarily on mammography (*7*).

The findings in this report are subject to at least three limitations. First, overall objectives and contexts of the two surveys differed; however, individual questions were similar or identical. Second, some survey questions about specific cancer screening programs may have required knowledge not available to some respondents, possibly introducing measurement bias. Finally, because only 12% of worksites in 1992 and 6% in 1995 offered cancer screening programs, estimates of the specific types of cancer screenings offered were associated with wide confidence intervals.

In addition to confirming the findings in this report, priorities for assessment include determining the reasons for the decrease and assessing the efficacy of worksite programs. Employers should consider offering screening services if they have been proven effective. If the screening test is effective but the efficacy of offering the test at the worksite is unknown, employers can be influential in encouraging screening, even if they do not offer the service onsite. To provide comprehensive screening services for their employees, employers should consider promoting and offering screening

Cancer Screening — Continued

TABLE 2. Percentage of cancer screenings offered in worksites reporting at least one type of cancer screening, by type of cancer — United States, 1992 and 1995

Type of cancer	1992 (n=181) %	1992 (n=181) (95% CI*)	1995 (n=215) %	1995 (n=215) (95% CI)	% Change from 1992 to 1995
Breast	62.5	(±8.6%)	58.9	(±17.8%)	—
Prostate	NA[†]	—	29.2	(±14.2%)	—
Colorectal	55.0	(±8.9%)	25.0	(±12.9%)	–30.0[§]
Cervical	28.3	(±8.0%)	17.3	(±21.2%)	—
Skin	23.3	(±7.5%)	16.0	(± 9.8%)	—
Oral	15.0	(±6.4%)	2.2	(± 2.8%)	–12.8[§]

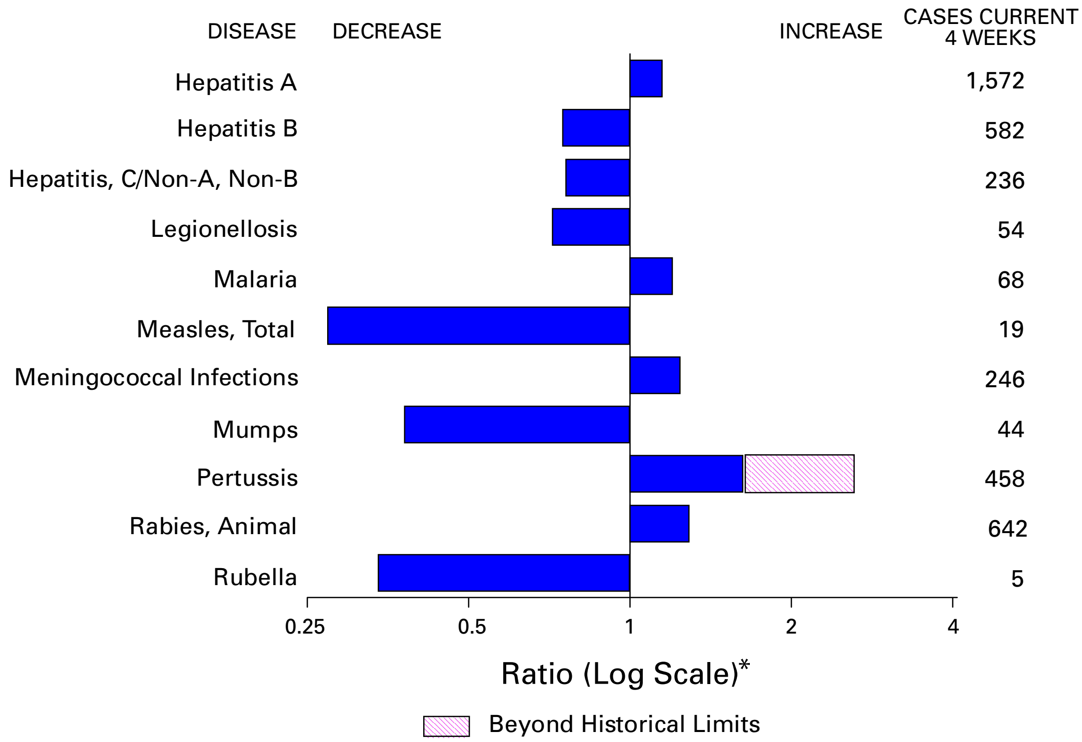
*Confidence interval.
[†] Not asked.
[§] $p<0.001$.

and ensuring that insurance carriers and managed-care plans cover and actively promote screening programs.

References

1. O'Donnell MP, Ainsworth TH. Health promotion in the workplace. New York: John Wiley and Sons, 1984.
2. Warner KE. Wellness at the worksite. Health Aff 1990;9:63–79.
3. Public Health Service, US Department of Health and Human Services. 1992 National Survey of Worksite Health Promotion Activities: summary. Am J Health Promotion 1993;7:452–64.
4. Public Health Service, US Department of Health and Human Services. 1992 National Survey of Worksite Health Promotion Activities: final report. Reproduced by the US Department of Commerce, National Technical Information Service, 1992; report no. PB93-100204.
5. US Department of Health and Human Services. Business Responds to AIDS Benchmark Survey: technical report. Atlanta: US Department of Health and Human Services, Public Health Service, CDC, 1996.
6. Stokols D, Pelletier KR, Fielding JE. The ecology of work and health: research and policy directions for the promotion of employee health. Health Educ Q 1996;23:137–58.
7. Eley JW. Analyzing costs and benefits of mammography screening in the workplace. AAOHN J 1989;37:171–7.

FIGURE I. Selected notifiable disease reports, comparison of provisional 4-week totals ending May 10, 1997, with historical data — United States



*Ratio of current 4-week total to mean of 15 4-week totals (from previous, comparable, and subsequent 4-week periods for the past 5 years). The point where the hatched area begins is based on the mean and two standard deviations of these 4-week totals.

TABLE I. Summary — provisional cases of selected notifiable diseases, United States, cumulative, week ending May 10, 1997 (19th Week)

	Cum. 1997		Cum. 1997
Anthrax	-	Plague	1
Brucellosis	15	Poliomyelitis, paralytic	-
Cholera	1	Psittacosis	15
Congenital rubella syndrome	2	Rabies, human	2
Cryptosporidiosis*	399	Rocky Mountain spotted fever (RMSF)	47
Diphtheria	4	Streptococcal disease, invasive Group A	500
Encephalitis: California*	4	Streptococcal toxic-shock syndrome*	13
eastern equine*	-	Syphilis, congenital¶	47
St. Louis*	-	Tetanus	11
western equine*	-	Toxic-shock syndrome	39
Hansen Disease	40	Trichinosis	5
Hantavirus pulmonary syndrome*†	3	Typhoid fever	96
Hemolytic uremic syndrome, post-diarrheal*	14	Yellow fever	-
HIV infection, pediatric*§	92		

-:no reported cases
*Not notifiable in all states.
†Updated weekly from reports to the Division of Viral and Rickettsial Diseases, National Center for Infectious Diseases (NCID).
§Updated monthly to the Division of HIV/AIDS Prevention–Surveillance and Epidemiology, National Center for HIV, STD, and TB Prevention (NCHSTP), last update April 29, 1997.
¶Updated from reports to the Division of STD Prevention, NCHSTP.

TABLE II. Provisional cases of selected notifiable diseases, United States, weeks ending May 10, 1997, and May 11, 1996 (19th Week)

Reporting Area	AIDS		Chlamydia		*Escherichia coli* O157:H7		Gonorrhea		Hepatitis C/NA,NB	
					NETSS†	PHLIS§				
	Cum. 1997*	Cum. 1996	Cum. 1997	Cum. 1996	Cum. 1997	Cum. 1997	Cum. 1997	Cum. 1996	Cum. 1997	Cum. 1996
UNITED STATES	20,222	22,011	134,060	148,362	356	156	86,477	108,717	1,053	1,173
NEW ENGLAND	671	872	5,618	6,902	30	14	1,866	2,849	17	40
Maine	25	15	333	U	1	-	17	18	-	-
N.H.	8	25	252	255	1	-	47	54	3	3
Vt.	16	8	136	172	2	1	18	23	-	12
Mass.	282	488	2,573	2,406	22	13	823	793	12	22
R.I.	55	61	761	777	1	-	188	202	2	3
Conn.	285	275	1,563	3,292	3	-	773	1,759	-	-
MID. ATLANTIC	6,683	5,899	16,236	26,366	27	4	9,806	13,230	117	99
Upstate N.Y.	1,143	753	N	N	16	3	1,737	48	95	78
N.Y. City	3,308	3,288	8,154	14,055	5	-	3,793	6,129	-	2
N.J.	1,444	1,144	2,593	5,498	6	-	1,499	3,372	-	-
Pa.	788	714	5,489	6,813	N	1	2,777	3,681	22	19
E.N. CENTRAL	1,416	1,879	21,646	32,699	62	20	13,023	21,373	213	192
Ohio	270	441	5,082	7,519	18	9	3,221	5,370	5	4
Ind.	302	305	3,204	3,595	13	2	2,205	2,461	5	6
Ill.	509	770	4,128	9,488	14	-	2,051	6,262	16	44
Mich.	259	253	6,689	7,992	17	2	4,416	5,486	187	138
Wis.	76	110	2,543	4,105	N	7	1,130	1,794	-	-
W.N. CENTRAL	383	530	8,103	11,702	50	31	3,751	4,546	54	21
Minn.	79	108	-	1,806	29	18	U	-	1	-
Iowa	59	43	1,765	1,360	12	5	452	381	15	8
Mo.	150	231	3,942	5,120	3	5	2,609	3,070	25	8
N. Dak.	4	4	323	381	3	2	23	11	2	-
S. Dak.	2	7	428	479	-	-	41	73	-	-
Nebr.	35	39	258	793	2	-	89	164	1	2
Kans.	54	98	1,387	1,763	1	1	537	847	10	3
S. ATLANTIC	4,846	5,746	30,323	20,110	48	11	30,029	36,656	94	65
Del.	69	113	-	-	1	1	401	532	-	-
Md.	576	658	2,577	2,253	2	1	4,673	4,825	6	-
D.C.	282	376	N	N	-	-	1,319	1,571	-	-
Va.	421	316	3,926	4,440	N	4	2,927	3,566	8	5
W. Va.	27	32	1,259	800	N	-	583	397	3	6
N.C.	281	279	6,270	U	12	5	5,757	7,139	22	18
S.C.	270	278	4,498	U	1	-	3,991	4,163	17	13
Ga.	683	865	3,375	4,256	15	-	4,438	8,017	U	-
Fla.	2,237	2,829	8,418	8,361	17	-	5,940	6,446	38	23
E.S. CENTRAL	609	771	11,898	10,487	29	7	12,018	11,277	140	218
Ky.	60	119	2,388	2,485	9	-	1,628	1,482	7	12
Tenn.	285	281	4,557	4,433	15	7	3,875	3,850	78	179
Ala.	151	243	2,763	3,192	2	-	3,890	4,935	5	1
Miss.	113	128	2,190	377	3	-	2,625	1,010	50	26
W.S. CENTRAL	2,040	2,090	12,271	8,042	13	4	8,736	7,715	105	136
Ark.	83	97	460	545	1	1	928	1,449	-	2
La.	385	554	2,582	2,502	3	3	2,430	2,813	75	59
Okla.	116	67	2,782	2,562	-	-	1,755	1,625	4	43
Tex.	1,456	1,372	6,447	2,433	9	-	3,623	1,828	26	32
MOUNTAIN	601	639	7,665	5,418	34	24	2,617	2,836	138	252
Mont.	16	8	311	483	3	-	14	12	4	9
Idaho	18	10	569	600	5	-	43	34	18	65
Wyo.	11	2	184	268	2	-	20	10	51	79
Colo.	156	178	100	8	13	8	554	643	19	25
N. Mex.	58	43	1,278	1,446	4	3	508	332	26	31
Ariz.	158	193	3,559	1,018	N	10	1,112	1,385	15	28
Utah	41	77	609	555	4	-	77	113	2	7
Nev.	143	128	1,055	1,040	3	3	289	307	3	8
PACIFIC	2,973	3,585	20,300	26,636	63	38	4,631	8,235	175	150
Wash.	241	309	3,378	3,687	11	4	747	855	9	26
Oreg.	128	188	1,250	1,899	16	14	194	150	4	3
Calif.	2,570	3,025	14,652	20,054	33	17	3,383	6,852	107	52
Alaska	12	10	489	315	3	-	162	181	-	2
Hawaii	22	53	531	681	N	3	145	197	55	67
Guam	2	3	-	134	N	-	-	26	-	3
P.R.	520	418	N	N	22	U	241	105	39	13
V.I.	29	6	N	N	N	U	-	-	-	-
Amer. Samoa	-	-	-	-	N	U	-	-	-	-
C.N.M.I.	-	-	N	N	N	U	11	11	2	-

N: Not notifiable U: Unavailable -: no reported cases C.N.M.I.: Commonwealth of Northern Mariana Islands

*Updated monthly to the Division of HIV/AIDS Prevention–Surveillance and Epidemiology, National Center for HIV, STD, and TB Prevention, last update April 29, 1997.

†National Electronic Telecommunications System for Surveillance.

§Public Health Laboratory Information System.

TABLE II. (Cont'd.) Provisional cases of selected notifiable diseases, United States, weeks ending May 10, 1997, and May 11, 1996 (19th Week)

Reporting Area	Legionellosis		Lyme Disease		Malaria		Syphilis (Primary & Secondary)		Tuberculosis		Rabies, Animal
	Cum. 1997	Cum. 1996	Cum. 1997	Cum. 1996	Cum. 1997	Cum. 1996	Cum. 1997	Cum. 1996	Cum. 1997	Cum. 1996	Cum. 1997
UNITED STATES	300	268	918	1,467	423	398	2,835	4,448	4,859	6,120	2,503
NEW ENGLAND	23	13	179	146	12	11	59	66	114	192	389
Maine	1	1	3	-	1	3	-	-	-	8	82
N.H.	4	-	4	2	1	1	-	1	1	3	19
Vt.	3	1	2	-	1	1	-	-	2	-	64
Mass.	7	6	45	13	7	4	34	27	71	55	73
R.I.	4	5	33	21	2	2	-	-	7	18	7
Conn.	4	N	92	110	-	-	25	38	33	108	144
MID. ATLANTIC	49	57	590	1,173	102	124	130	255	1,061	1,051	545
Upstate N.Y.	11	10	83	457	21	19	14	25	123	115	392
N.Y. City	-	3	5	198	51	73	29	121	564	539	-
N.J.	6	7	136	121	21	24	49	69	223	237	50
Pa.	32	37	366	397	9	8	38	40	151	160	103
E.N. CENTRAL	115	96	16	11	30	48	269	714	575	685	33
Ohio	64	33	12	7	4	6	91	281	116	104	28
Ind.	15	24	4	4	3	3	64	93	48	65	2
Ill.	-	13	-	-	5	23	24	192	288	389	1
Mich.	31	16	-	-	15	8	45	71	81	102	2
Wis.	5	10	U	U	3	8	45	77	42	25	-
W.N. CENTRAL	26	18	10	34	11	9	51	188	159	158	152
Minn.	1	1	8	1	5	3	-	39	43	37	16
Iowa	5	2	-	5	3	1	3	11	20	19	59
Mo.	5	4	-	11	2	4	32	122	59	55	7
N. Dak.	2	-	-	-	-	-	-	-	4	2	21
S. Dak.	1	2	-	-	-	-	-	-	2	11	17
Nebr.	8	7	2	-	1	-	-	6	4	12	1
Kans.	4	2	-	17	-	1	16	10	27	22	31
S. ATLANTIC	44	31	76	48	105	64	1,191	1,473	1,012	1,072	1,112
Del.	4	2	-	24	2	2	11	16	7	20	25
Md.	15	5	56	4	29	19	309	220	101	94	201
D.C.	2	1	5	1	6	3	41	60	30	49	1
Va.	4	9	-	-	21	7	104	181	111	82	225
W. Va.	-	1	-	3	-	1	1	3	21	22	26
N.C.	5	3	3	10	6	7	271	398	123	123	351
S.C.	2	3	1	2	5	3	157	165	125	120	57
Ga.	-	-	1	-	12	8	197	291	173	228	103
Fla.	12	7	10	4	24	14	100	139	321	334	123
E.S. CENTRAL	9	17	24	21	12	10	689	1,028	377	476	100
Ky.	-	2	2	6	2	3	64	54	74	84	10
Tenn.	4	7	9	6	3	5	288	346	79	148	65
Ala.	1	1	2	1	4	1	167	209	149	157	25
Miss.	4	7	11	8	3	1	170	419	75	87	-
W.S. CENTRAL	4	2	4	8	5	10	301	458	122	661	61
Ark.	-	-	-	5	1	-	29	114	74	63	17
La.	1	-	1	-	4	-	138	208	-	-	1
Okla.	-	2	2	2	-	-	48	62	48	57	43
Tex.	3	-	1	1	-	10	86	74	-	541	-
MOUNTAIN	16	14	1	-	28	22	58	52	177	211	28
Mont.	1	1	-	-	2	1	-	-	2	7	6
Idaho	1	-	-	-	-	-	-	1	4	3	-
Wyo.	1	2	-	-	1	2	-	1	2	1	8
Colo.	3	5	-	-	14	12	1	16	37	37	-
N. Mex.	1	-	-	-	4	1	-	-	8	28	1
Ariz.	4	3	1	-	3	3	49	30	77	91	12
Utah	4	-	-	-	1	2	2	-	6	10	-
Nev.	1	3	-	-	3	1	6	4	41	34	1
PACIFIC	14	20	18	26	118	100	87	214	1,262	1,614	83
Wash.	3	1	-	1	6	6	6	2	74	92	-
Oreg.	-	-	8	8	7	8	3	3	50	64	1
Calif.	10	19	10	16	101	82	76	208	1,042	1,367	70
Alaska	-	-	-	-	2	1	1	-	32	30	12
Hawaii	1	-	-	1	2	3	1	1	64	61	-
Guam	-	-	-	-	-	-	-	3	-	45	-
P.R.	-	-	-	-	3	-	75	42	-	47	20
V.I.	-	-	-	-	-	-	-	-	-	-	-
Amer. Samoa	-	-	-	-	-	-	-	-	-	-	-
C.N.M.I.	-	-	-	-	-	-	4	1	-	-	-

N: Not notifiable U: Unavailable -: no reported cases

TABLE III. Provisional cases of selected notifiable diseases preventable by vaccination, United States, weeks ending May 10, 1997, and May 11, 1996 (19th Week)

Reporting Area	*H. influenzae,* invasive		Hepatitis (Viral), by type				Measles (Rubeola)					
			A		B		Indigenous		Imported†		Total	
	Cum. 1997*	Cum. 1996	Cum. 1997	Cum. 1996	Cum. 1997	Cum. 1996	1997	Cum. 1997	1997	Cum. 1997	Cum. 1997	Cum. 1996
UNITED STATES	427	447	9,245	9,807	2,933	3,359	3	29	1	14	43	120
NEW ENGLAND	24	10	204	120	69	80	-	-	-	-	-	6
Maine	3	-	26	10	4	2	-	-	-	-	-	-
N.H.	2	6	13	3	5	4	-	-	-	-	-	-
Vt.	-	-	6	2	1	5	-	-	-	-	-	1
Mass.	16	4	88	60	40	19	-	-	-	-	-	4
R.I.	2	-	20	3	8	4	-	-	-	-	-	-
Conn.	1	-	51	42	11	46	-	-	-	-	-	1
MID. ATLANTIC	50	78	707	793	397	642	-	7	-	4	11	12
Upstate N.Y.	4	5	93	140	79	115	-	1	-	3	4	4
N.Y. City	17	24	257	370	127	322	-	4	-	1	5	7
N.J.	20	28	139	147	94	110	-	1	-	-	1	-
Pa.	9	21	218	136	97	95	-	1	-	-	1	1
E.N. CENTRAL	61	81	793	920	309	400	-	4	-	2	6	10
Ohio	38	47	164	372	35	46	-	-	-	-	-	2
Ind.	5	2	118	128	33	47	-	-	-	-	-	-
Ill.	11	23	173	211	54	123	-	4	-	1	5	1
Mich.	6	4	288	131	175	151	-	-	-	1	1	2
Wis.	1	5	50	78	12	33	-	-	-	-	-	5
W.N. CENTRAL	20	14	681	723	198	163	-	9	-	1	10	6
Minn.	12	7	59	27	13	10	-	-	-	1	1	5
Iowa	2	2	95	159	28	20	-	-	-	-	-	-
Mo.	2	3	357	353	133	107	-	1	-	-	1	1
N. Dak.	-	-	7	17	1	-	-	-	-	-	-	-
S. Dak.	2	1	6	34	-	-	-	8	-	-	8	-
Nebr.	1	1	47	83	9	10	U	-	U	-	-	-
Kans.	1	-	110	50	14	16	-	-	-	-	-	-
S. ATLANTIC	98	85	548	322	436	401	1	1	-	2	3	2
Del.	-	1	11	5	2	1	-	-	-	-	-	1
Md.	34	30	115	72	62	62	-	-	-	1	1	-
D.C.	2	3	13	15	18	14	-	-	-	1	1	-
Va.	6	4	67	54	43	52	-	-	-	-	-	-
W. Va.	3	4	5	10	6	11	-	-	-	-	-	-
N.C.	13	13	76	42	86	129	-	-	-	-	-	-
S.C.	4	3	53	29	41	38	-	-	-	-	-	-
Ga.	17	22	51	7	45	5	-	-	-	-	-	-
Fla.	19	5	157	88	133	89	1	1	-	-	1	1
E.S. CENTRAL	32	15	302	661	268	309	-	-	-	-	-	-
Ky.	5	3	26	10	13	28	-	-	-	-	-	-
Tenn.	19	6	199	479	158	197	-	-	-	-	-	-
Ala.	8	5	42	84	29	20	-	-	-	-	-	-
Miss.	-	1	35	88	68	U	U	-	U	-	-	-
W.S. CENTRAL	22	15	1,799	1,566	306	286	-	2	-	1	3	2
Ark.	1	-	103	193	17	33	-	-	-	-	-	-
La.	2	-	79	45	43	39	-	-	-	-	-	-
Okla.	14	14	634	691	10	18	-	-	-	-	-	-
Tex.	5	1	983	637	236	196	-	2	-	1	3	2
MOUNTAIN	40	26	1,539	1,508	336	403	-	1	-	-	1	10
Mont.	-	-	43	50	4	4	-	-	-	-	-	-
Idaho	-	1	65	118	10	50	-	-	-	-	-	-
Wyo.	-	-	17	17	13	13	-	-	-	-	-	-
Colo.	6	5	180	152	70	57	-	-	-	-	-	3
N. Mex.	3	7	106	193	117	142	-	-	-	-	-	-
Ariz.	12	9	738	493	69	73	-	1	-	-	1	3
Utah	3	4	285	355	36	45	-	-	-	-	-	-
Nev.	16	-	105	130	17	19	-	-	-	-	-	4
PACIFIC	80	123	2,672	3,194	614	675	2	5	1	4	9	72
Wash.	1	1	197	214	20	44	-	-	-	-	-	4
Oreg.	17	17	135	466	49	47	-	-	-	-	-	2
Calif.	58	103	2,273	2,454	528	581	2	2	1	4	6	1
Alaska	1	-	14	26	12	1	-	-	-	-	-	63
Hawaii	3	2	53	34	5	2	-	3	-	-	3	2
Guam	-	-	-	3	-	-	U	-	U	-	-	-
P.R.	-	-	132	21	452	66	-	-	-	-	-	1
V.I.	-	-	-	-	-	-	U	-	U	-	-	-
Amer. Samoa	-	-	-	-	-	-	U	-	U	-	-	-
C.N.M.I.	4	10	1	1	19	5	U	1	U	-	1	-

N: Not notifiable U: Unavailable -: no reported cases

*Of 89 cases among children aged <5 years, serotype was reported for 39 and of those, 16 were type b.

†For imported measles, cases include only those resulting from importation from other countries.

TABLE III. (Cont'd.) Provisional cases of selected notifiable diseases preventable by vaccination, United States, weeks ending May 10, 1997, and May 11, 1996 (19th Week)

Reporting Area	Meningococcal Disease		Mumps			Pertussis			Rubella		
	Cum. 1997	Cum. 1996	1997	Cum. 1997	Cum. 1996	1997	Cum. 1997	Cum. 1996	1997	Cum. 1997	Cum. 1996
UNITED STATES	1,522	1,403	13	222	252	70	1,818	1,133	3	15	74
NEW ENGLAND	94	56	-	6	-	11	420	224	-	-	11
Maine	9	8	-	-	-	-	6	10	-	-	-
N.H.	9	1	-	-	-	-	55	16	-	-	-
Vt.	2	3	-	-	-	-	149	7	-	-	2
Mass.	51	19	-	1	-	11	193	188	-	-	7
R.I.	6	5	-	4	-	-	12	-	-	-	-
Conn.	17	20	-	1	-	-	5	3	-	-	2
MID. ATLANTIC	126	135	-	24	33	-	134	88	-	1	5
Upstate N.Y.	31	35	-	4	8	-	50	45	-	-	3
N.Y. City	23	25	-	-	8	-	19	14	-	1	1
N.J.	27	29	-	-	2	-	5	4	-	-	1
Pa.	45	46	-	20	15	-	60	25	-	-	-
E.N. CENTRAL	203	218	1	25	68	4	144	171	-	2	3
Ohio	84	75	1	10	26	3	60	55	-	-	-
Ind.	23	31	-	4	5	1	20	10	-	-	-
Ill.	62	64	-	7	13	-	20	49	-	-	1
Mich.	17	25	-	4	23	-	26	11	-	-	2
Wis.	17	23	-	-	1	-	18	46	-	2	-
W.N. CENTRAL	111	106	-	8	4	6	106	51	-	-	-
Minn.	12	9	-	3	1	4	65	32	-	-	-
Iowa	23	22	-	3	-	-	15	2	-	-	-
Mo.	58	47	-	-	1	2	16	10	-	-	-
N. Dak.	-	2	-	-	2	-	2	-	-	-	-
S. Dak.	3	3	-	-	-	-	1	1	-	-	-
Nebr.	5	10	U	2	-	U	2	2	U	-	-
Kans.	10	13	-	-	-	-	5	4	-	-	-
S. ATLANTIC	277	202	4	39	25	8	173	104	-	2	12
Del.	4	2	-	-	-	-	-	10	-	-	-
Md.	27	20	-	4	12	1	63	42	-	-	-
D.C.	1	3	-	-	-	-	2	-	-	-	1
Va.	24	26	-	4	3	1	19	5	-	1	-
W. Va.	10	9	-	-	-	-	3	2	-	-	-
N.C.	47	31	-	6	-	-	35	24	-	-	-
S.C.	37	28	2	9	3	1	8	1	-	1	1
Ga.	53	62	-	4	2	4	6	4	-	-	-
Fla.	74	21	2	12	5	1	37	16	-	-	10
E.S. CENTRAL	117	113	1	15	10	1	36	121	-	-	-
Ky.	28	16	-	2	-	-	2	110	-	-	-
Tenn.	44	34	-	4	1	-	16	7	-	-	-
Ala.	29	33	1	5	3	1	10	1	-	-	-
Miss.	16	30	U	4	6	U	8	3	U	-	N
W.S. CENTRAL	162	164	-	23	22	4	29	39	-	1	7
Ark.	22	21	-	-	-	-	3	3	-	-	-
La.	28	32	-	7	8	-	7	3	-	-	1
Okla.	17	14	-	-	-	3	5	4	-	-	-
Tex.	95	97	-	16	14	1	14	29	-	1	6
MOUNTAIN	87	84	1	11	13	24	519	124	1	1	4
Mont.	6	1	-	-	-	-	2	5	-	-	-
Idaho	5	11	-	2	-	13	382	40	-	-	2
Wyo.	-	-	-	1	-	-	3	-	-	-	-
Colo.	26	14	1	3	1	10	98	24	-	-	-
N. Mex.	16	18	N	N	N	-	20	26	-	-	-
Ariz.	16	25	-	-	1	-	9	5	1	1	1
Utah	12	8	-	3	2	1	3	3	-	-	-
Nev.	6	7	-	2	9	-	2	21	-	-	1
PACIFIC	345	325	6	71	77	12	257	211	2	8	32
Wash.	43	43	-	5	8	8	137	87	-	-	1
Oreg.	69	61	-	1	-	4	11	22	-	-	-
Calif.	231	215	5	54	54	-	104	93	2	3	29
Alaska	1	4	1	2	2	-	1	-	-	-	-
Hawaii	1	2	-	9	13	-	4	9	-	5	2
Guam	-	1	U	-	3	U	-	-	U	-	-
P.R.	7	2	-	4	1	-	-	-	-	-	-
V.I.	-	-	U	-	-	U	-	-	U	-	-
Amer. Samoa	-	-	U	-	-	U	-	-	U	-	-
C.N.M.I.	-	-	U	1	-	U	-	-	U	-	-

N: Not notifiable U: Unavailable -: no reported cases

TABLE IV. Deaths in 122 U.S. cities,* week ending May 10, 1997 (19th Week)

Reporting Area	All Causes, By Age (Years)						P&I[†] Total
	All Ages	>65	45-64	25-44	1-24	<1	
NEW ENGLAND	602	443	100	38	10	11	40
Boston, Mass.	149	100	28	9	6	6	12
Bridgeport, Conn.	31	21	5	4	-	1	2
Cambridge, Mass.	21	19	2	-	-	-	1
Fall River, Mass.	35	28	5	2	-	-	-
Hartford, Conn.	71	56	8	4	1	2	3
Lowell, Mass.	30	26	3	1	-	-	4
Lynn, Mass.	18	11	3	3	1	-	-
New Bedford, Mass.	25	19	5	1	-	-	1
New Haven, Conn.	30	18	7	3	2	-	2
Providence, R.I.	47	38	8	-	-	1	3
Somerville, Mass.	8	8	-	-	-	-	-
Springfield, Mass.	41	30	7	4	-	-	3
Waterbury, Conn.	36	27	7	2	-	-	3
Worcester, Mass.	60	42	12	5	-	1	6
MID. ATLANTIC	2,240	1,550	419	188	43	40	108
Albany, N.Y.	45	30	8	4	-	3	3
Allentown, Pa.	22	18	4	-	-	-	-
Buffalo, N.Y.	62	50	7	3	2	-	3
Camden, N.J.	19	9	5	2	1	2	-
Elizabeth, N.J.	22	15	5	1	1	-	1
Erie, Pa.	42	36	4	1	-	1	2
Jersey City, N.J.	38	24	8	4	1	1	1
New York City, N.Y.	1,187	790	237	124	18	18	35
Newark, N.J.	35	13	12	9	-	1	3
Paterson, N.J.	26	12	12	2	-	-	1
Philadelphia, Pa.	300	203	53	23	13	8	20
Pittsburgh, Pa.§	55	43	10	2	-	-	3
Reading, Pa.	8	7	1	-	-	-	1
Rochester, N.Y.	133	98	21	7	3	4	9
Schenectady, N.Y.	27	22	4	1	-	-	3
Scranton, Pa.	35	32	3	-	-	-	1
Syracuse, N.Y.	83	64	15	2	1	1	11
Trenton, N.J.	47	34	7	2	3	1	3
Utica, N.Y.	20	19	1	-	-	-	1
Yonkers, N.Y.	34	31	2	1	-	-	7
E.N. CENTRAL	2,140	1,447	444	144	55	47	146
Akron, Ohio	39	28	7	3	-	1	-
Canton, Ohio	38	32	2	3	1	-	8
Chicago, Ill.	453	265	107	56	13	10	30
Cincinnati, Ohio	145	99	29	8	7	2	12
Cleveland, Ohio	159	104	36	13	3	3	5
Columbus, Ohio	210	143	50	9	2	6	17
Dayton, Ohio	110	82	19	3	2	4	15
Detroit, Mich.	201	122	59	9	3	7	6
Evansville, Ind.	60	42	12	-	5	1	1
Fort Wayne, Ind.	54	42	8	4	-	-	5
Gary, Ind.	U	U	U	U	U	U	U
Grand Rapids, Mich.	40	26	7	5	-	2	1
Indianapolis, Ind.	186	134	33	7	7	5	13
Lansing, Mich.	39	29	7	2	-	1	3
Milwaukee, Wis.	117	81	17	12	4	3	15
Peoria, Ill.	28	18	8	1	1	-	2
Rockford, Ill.	42	28	12	1	1	-	3
South Bend, Ind.	42	35	3	3	1	-	2
Toledo, Ohio	108	82	18	2	4	2	6
Youngstown, Ohio	69	55	10	3	1	-	2
W.N. CENTRAL	714	511	114	39	17	18	42
Des Moines, Iowa	U	U	U	U	U	U	U
Duluth, Minn.	26	21	5	-	-	-	-
Kansas City, Kans.	28	18	7	2	1	-	2
Kansas City, Mo.	104	61	15	5	3	5	2
Lincoln, Nebr.	33	26	6	1	-	-	1
Minneapolis, Minn.	168	129	23	9	3	4	16
Omaha, Nebr.	96	62	19	9	2	4	9
St. Louis, Mo.	132	103	18	3	5	3	8
St. Paul, Minn.	58	40	10	6	1	1	3
Wichita, Kans.	69	51	11	4	2	1	1
S. ATLANTIC	1,094	720	208	105	29	32	67
Atlanta, Ga.	186	99	44	26	3	14	3
Baltimore, Md.	149	87	33	19	9	1	15
Charlotte, N.C.	80	54	14	7	2	3	9
Jacksonville, Fla.	119	90	19	9	-	1	3
Miami, Fla.	104	60	24	13	6	1	-
Norfolk, Va.	60	37	9	9	2	3	6
Richmond, Va.	79	55	13	7	2	2	4
Savannah, Ga.	63	46	11	2	1	3	7
St. Petersburg, Fla.	72	56	10	2	2	2	4
Tampa, Fla.	173	129	31	9	2	2	16
Washington, D.C.	U	U	U	U	U	U	U
Wilmington, Del.	9	7	-	2	-	-	-
E.S. CENTRAL	589	395	108	57	17	12	37
Birmingham, Ala.	U	U	U	U	U	U	U
Chattanooga, Tenn.	63	47	7	9	-	-	5
Knoxville, Tenn.	73	50	12	7	3	1	4
Lexington, Ky.	38	26	5	3	2	2	4
Memphis, Tenn.	140	93	29	13	3	2	12
Mobile, Ala.	54	34	13	3	3	1	-
Montgomery, Ala.	41	28	6	4	3	-	4
Nashville, Tenn.	180	117	36	18	3	6	8
W.S. CENTRAL	1,357	866	281	131	49	30	90
Austin, Tex.	86	48	19	11	2	6	4
Baton Rouge, La.	31	22	5	3	-	1	-
Corpus Christi, Tex.	66	47	11	5	2	1	5
Dallas, Tex.	168	93	39	27	7	2	9
El Paso, Tex.	70	56	10	1	2	1	7
Ft. Worth, Tex.	102	68	20	5	9	-	10
Houston, Tex.	390	225	88	52	17	8	26
Little Rock, Ark.	61	41	14	3	1	2	2
New Orleans, La.	U	U	U	U	U	U	U
San Antonio, Tex.	201	139	36	15	4	7	12
Shreveport, La.	64	47	11	2	3	1	3
Tulsa, Okla.	118	80	28	7	2	1	12
MOUNTAIN	1,003	680	196	75	31	21	68
Albuquerque, N.M.	123	84	20	13	1	5	1
Boise, Idaho	32	23	6	3	-	-	4
Colo. Springs, Colo.	59	38	16	2	2	1	5
Denver, Colo.	97	66	18	5	2	6	5
Las Vegas, Nev.	178	115	41	14	6	2	7
Ogden, Utah	24	15	6	2	1	-	3
Phoenix, Ariz.	192	140	32	13	3	4	23
Pueblo, Colo.	37	28	8	-	-	1	2
Salt Lake City, Utah	108	68	16	10	12	2	10
Tucson, Ariz.	153	103	33	13	4	-	8
PACIFIC	1,750	1,205	319	150	38	38	136
Berkeley, Calif.	17	11	4	2	-	-	-
Fresno, Calif.	75	56	10	3	1	5	7
Glendale, Calif.	28	25	1	2	-	-	3
Honolulu, Hawaii	75	58	7	7	2	1	7
Long Beach, Calif.	75	54	14	2	2	3	11
Los Angeles, Calif.	401	270	81	32	11	7	15
Pasadena, Calif.	18	14	2	2	-	-	3
Portland, Oreg.	132	88	27	9	2	6	6
Sacramento, Calif.	171	131	24	9	5	2	30
San Diego, Calif.	135	83	29	20	3	-	9
San Francisco, Calif.	120	79	25	14	1	1	12
San Jose, Calif.	186	121	38	15	6	6	18
Santa Cruz, Calif.	26	20	4	2	-	-	3
Seattle, Wash.	144	88	26	23	3	4	4
Spokane, Wash.	55	41	11	1	-	2	3
Tacoma, Wash.	92	66	16	7	2	1	5
TOTAL	11,489[¶]	7,817	2,189	927	289	249	734

U: Unavailable -: no reported cases

*Mortality data in this table are voluntarily reported from 122 cities in the United States, most of which have populations of 100,000 or more. A death is reported by the place of its occurrence and by the week that the death certificate was filed. Fetal deaths are not included.

†Pneumonia and influenza.

§Because of changes in reporting methods in this Pennsylvania city, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.

¶Total includes unknown ages.

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