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MORBIDITY AND MORTALITY WEEKLY REPORT

Necrotic Arachnidism — Pacific Northwest, 1988–1996

Although spider bites are common in many parts of the United States, most domestic spiders are not substantially venomous to man. The best known exceptions are widow spiders (*Latrodectus* spp., including the black widow *L. mactans*) and brown spiders (*Loxesceles* spp., particularly the brown recluse, *Lox. reclusa*). However, cases of arachnid envenomation from the hobo spider (*Tegenaria agrestis*) are being reported increasingly in the Pacific Northwest. This report summarizes investigations of three cases of *T. agrestis* bites among persons in Idaho, Oregon, and Washington; spider bites reported to U.S. poison-control centers during 1994; and emphasizes the need for physicians in the northwestern United States to consider this species as a cause of toxic arachnidism.

Case Reports

Case 1. On November 23, 1995, a 10-year-old boy residing in suburban Portland, Oregon, was bitten on the lower leg while asleep in bed. Within 48 hours, two swollen and erythematous lesions 3–4 cm in diameter developed around the site of the bite. Both were hot to the touch, with central blistering. Seven days after the bite, necrosis and skin sloughing developed, and his entire leg and ankle were red and edematous. The patient reportedly was febrile and nauseated and had severe headaches. Treatment included oral diphenhydramine hydrochloride and alternating local applications of heat and ice. After 30 days, ecchymotic residua were still visible, but local tenderness was diminished. Migraine-like headaches persisted for 4 months. Pesticide applicators who inspected the house reported that it was infested with *T. agrestis* spiders.

Case 2. On October 8, 1992, a 42-year-old woman residing in Bingham County, Idaho, who had a history of phlebitis felt a burning sensation on her left ankle while at work at a convenience store. She rolled up the leg of her pants and found a crushed brown spider, subsequently identified as *T. agrestis*. The pain on her ankle persisted, and within 3 hours she was dizzy and nauseated and had a severe headache. An erythematous lesion with a vesicular center was noted several hours later; by the next day the vesicle had ruptured, leaving an open ulcer with a diameter of approximately 2 mm. During the next 10 weeks the ulcer deepened and expanded to a diameter of approximately 30 mm, circumscribed by a blackish margin. The patient sought medical care on December 26, 1992, and received a course of antibiotics. The ulceration continued to enlarge, and swelling of the leg and toes impaired walking. A venogram

Necrotic Arachnidism — Continued

in July 1993 indicated deep venous thrombosis, which did not respond to standard therapy. The lesion healed slowly between May and November 1994, but left a cratered scar. The patient remains unable to work in situations requiring standing or walking.

Case 3. In late January 1988, a 56-year-old resident of Spokane, Washington, was bitten by a "bug" on her right thigh. Within 24 hours, she developed a severe headache, nausea, and altered mentation. Although symptoms persisted, she did not seek medical attention until February 16, 1988, when she began to bleed from her ears and other orifices. She was admitted to a hospital with a diagnosis of aplastic anemia, pancytopenia, and thrombocytopenia. An eschar on her leg was consistent with necrosis from a spider bite. Despite transfusion therapy, the patient developed severe internal hemorrhage and died in early March 1988. *T. agrestis* spiders were abundant along railroad tracks adjacent to the patient's home during an inspection of the patient's neighborhood of residence.

Spider Bites Reported to Poison-Control Centers During 1994

Some persons who suspect they have been bitten by spiders and some physicians who treat spider bites contact poison-control centers for advice or information; most of these centers use a standard coding scheme for classifying calls. In 1994, poison-control center log reports compiled by the American Association of Poison Control Centers listed 9418 spider bites (Table 1) (*1*). Of these, a disproportionate number (1027 [10.9%]) was reported to poison-control centers in Idaho, Oregon, and Washington, which comprise approximately 4% of the U.S. population. A specific kind of spider was noted for 246 of these bites, including 66 (27%) that were classified as brown recluse bites (there is no coding category for hobo spiders).

Adapted from: CD Summary *1995;14(no. 22), Center for Disease Prevention and Epidemiology, Oregon Health Div, Oregon Dept of Human Resources. Reported by: DK Vest, Idaho Falls, Idaho. WE Keene, PhD, M Heumann, MPH, Center for Disease Prevention and Epidemiology, Oregon Health Div, Oregon Dept of Human Resources; S Kaufman, MD, West Linn Pediatric Clinic, West Linn, Oregon.*

Editorial Note: Although envenomating spider bites in the Pacific Northwest often are erroneously attributed to brown recluse spiders, most such bites are caused by hobo spiders (formerly also known as "aggressive house" spiders). In Idaho, Oregon, and Washington, venomous spider bites usually are reported from areas with well-established populations of hobo spiders (*2*). *T. agrestis* spiders often are found in the

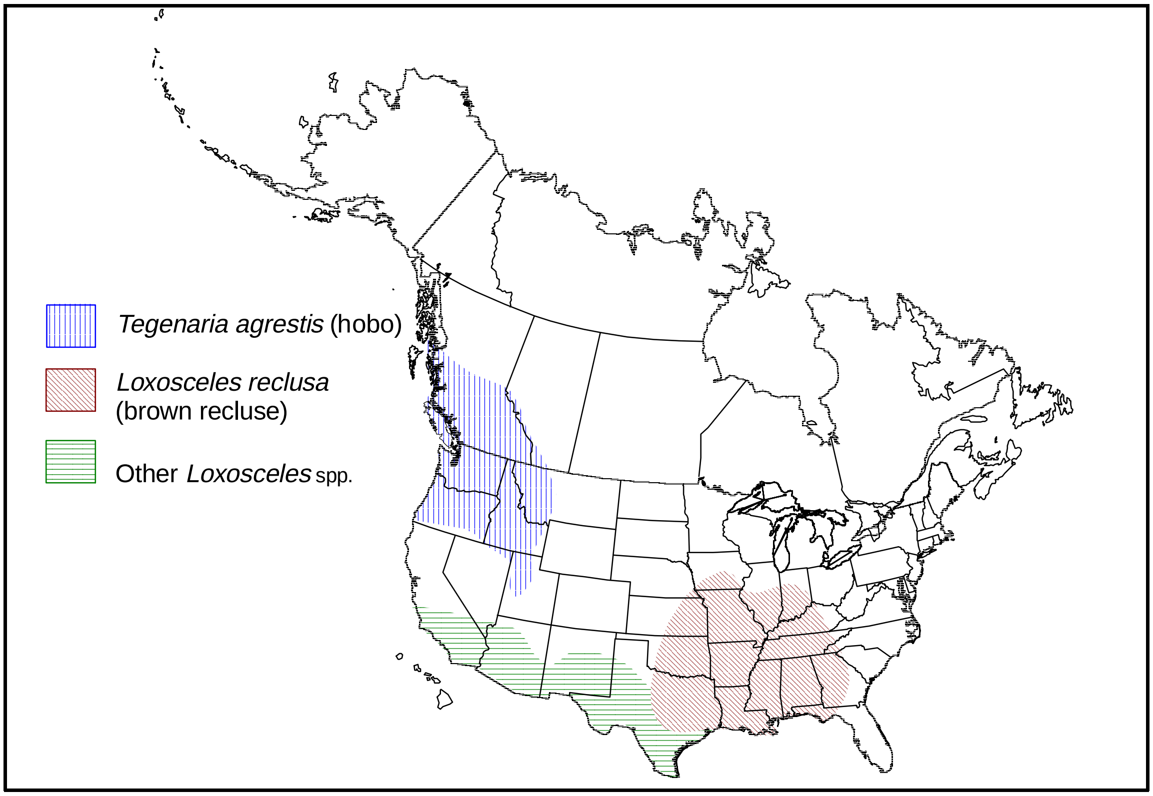
TABLE 1. Reported spider bites to poison-control centers — United States and Pacific Northwest, 1994

	United States*		Pacific Northwest†	
Type of spider	**No**	**(%)**	**No.**	**(%)**
Black widow	2120	(22.5)	139	(13.5)
Brown recluse	1835	(19.5)	66	(6.4)
Tarantula	82	(0.9)	41	(4.0)
Other/Unknown	5381	(57.1)	781	(76.1)
Total	**9418**	**(100.0)**	**1027**	**(100.0)**

*A total of 65 reporting poison-control centers that represent 83% of the U.S. population (*1*).
†A total of three reporting poison-control centers that represent 100% of the population in Idaho, Oregon, and Washington. Source: 1994 Annual Report of the Toxic Exposure Surveillance System for each state, published by each state's poison-control center.

Necrotic Arachnidism — Continued

FIGURE 1. Distribution of venomous spiders causing necrotic ulceration — United States and Canada, 1996



homes of persons with these bites; recluse spiders are never found (*3*). *Lox. reclusa* and other *Loxosceles* species are not found in the Pacific Northwest (Figure 1) (*4*).

The local effects of *T. agrestis* envenomation are similar to those of brown recluse bites—a syndrome described as necrotic arachnidism (*5*). Although many bites occur without substantial envenomation, the cases described in this report illustrate the possible severe outcomes for hobo spider envenomation. Similar local reactions can result from the bite of yellow sac spiders (*Cheiracanthium* spp.), which are widely distributed in North America and elsewhere (*6*).

The bite of the hobo spider usually is initially painless. A small area of induration may appear within 30 minutes, surrounded by an area of expanding erythema that can attain a diameter of 5–15 cm. Blisters develop within 15–35 hours; soon thereafter the blisters can rupture with a serous exudate encrusting the cratered wound. An eschar can develop with underlying necrosis and eventual sloughing of affected tissue. Lesions generally heal within 45 days, but can result in a permanent scar; healing can require up to 3 years if the bite occurred in fatty tissue. The most common systemic symptom is a severe headache—occurring as soon as 30 minutes after the bite, and usually within 10 hours—that can persist for a week. Other symptoms can include nausea, weakness, fatigue, temporary memory loss, and vision impairment. Protracted systemic effects, including aplastic anemia, intractable vomiting, or profuse secretory diarrhea, are rare but may be associated with death (*7*).

Necrotic Arachnidism — Continued

Optimal treatment for necrotic spider bites is not well defined (*5*). Systemic corticosteroid therapy may be of benefit if any substantial hematologic abnormalities are noted other than a moderate leukocytosis. Surgical repair may be necessary in severe cases of ulcerative lesions, but should not be initiated until the primary necrotizing process is completed (*5*).

T. agrestis is native to Europe and probably was introduced into the Seattle area in the 1920s or early 1930s (*8*); it subsequently has spread as far as central Utah and the Alaskan panhandle (Figure 1). Hobo spiders build funnel-shaped webs in dark, moist areas, often in wood piles, crawl spaces, or around the perimeters of homes (*9*); they rarely climb vertical surfaces and are uncommon above basements or ground level. Hobo spiders are moderately large (7–14 mm body length; 27–45 mm leg span) and brown with grey markings. They can move quickly (up to 1 m/second) (*2*), and can bite if provoked or threatened. Mature spiders are abundant from mid-summer through fall when males, which are more venomous that females, wander in search of females (*9*).

Practical control strategies should emphasize personal protection rather than attempted eradication of *T. agrestis* populations. Exposure can be reduced through the use of gloves and other clothing that covers the skin while working in crawl spaces and similar locations and through precaution when retrieving firewood or other items stored in potentially infested areas. Screens on basement and ground-floor windows and insulation strips under doors may reduce the risk for spider infestation.

Venomous spider bites are not reportable in any state, and there are no reliable estimates of the incidence of such bites or how often medical attention is sought for them. The addition of a specific designation for hobo spider envenomations in poison-control center report classifications may provide better information on how frequently these bites occur. Medical references should be updated to acknowledge causes of necrotic arachnidism other than *Loxosceles* spp.

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Lake-Associated Outbreak of *Escherichia coli* O157:H7 — Illinois, 1995

On July 5, 1995, the Winnebago County Health Department (WCHD) in northern Illinois received a report from the local hospital of five cases of *Escherichia coli* O157:H7 infection among children who resided in Rockford. Interviews of the children's parents revealed no common food source; however, on June 24–25, they all had visited an Illinois state park with a lake swimming beach. On July 6, the Illinois Department of Public Health (IDPH) closed the swimming beach because of suspected transmission of infection through lake water. WCHD and IDPH investigated the outbreak to assess risk factors for illness and determine the source of infection. This report summarizes the findings of the investigation, which indicate that ingesting contaminated and untreated lake water can result in infection.

Epidemiologic and Laboratory Investigation

A case was defined as onset of at least one of the following in a resident of or a visitor to Rockford, Illinois, during June 24–July 1: diarrhea with culture-confirmed *E. coli* O157:H7 infection; diarrhea with serologically confirmed *E. coli* O157:H7 infection by antibody testing; hemolytic uremic syndrome (HUS); or bloody diarrhea. Cases were identified by reporting by telephone from hospital laboratories, reporting by telephone from physicians, telephone calls to the health department by persons after extensive news media coverage, and telephone calls to persons who had camped at the park. Isolates of *E. coli* O157:H7 cultured from stool samples obtained from six persons who swam in the lake were sent to CDC for both Shiga toxin testing and for pulsed-field gel electrophoresis (PFGE). Shiga toxins were detected in all six isolates, and all six had the same PFGE pattern. Acute-phase serum samples from 11 persons were tested for immunoglobulin G and immunoglobulin M antibody titers to *E. coli* O157:H7; these samples were obtained from persons for whom appropriate stool samples had not been obtained (nine) or for whom stool cultures were negative (two).

A total of 12 cases were identified, including seven with culture-confirmed *E. coli* O157:H7, three with positive serology, one with HUS and had culture-confirmed *E. coli* O157, and one with culture-negative bloody diarrhea. Seven patients were male; ages ranged from 2 to 12 years. The median period from swimming in the lake to onset of illness was 4 days (range: 0–6 days). Cultures of stool from eight persons with confirmed *E. coli* O157:H7 infection were negative for *Salmonella*, *Shigella*, and *Campylobacter*. Two families each had two children with *E. coli* O157:H7. Bloody diarrhea occurred in nine cases; three cases (in children aged 2, 4, and 5 years) developed HUS and were hospitalized for at least 1 month each.

The first of two case-control studies was conducted July 6–13 to assess whether swimming in the lake was associated with risk for disease. The parents of seven ill children were asked to provide the name of one adult neighbor or friend with a child who was within 1 year of age of the ill child (three cases were identified later in the investigation, and the parents of two refused to participate). A questionnaire was administered regarding activities during the week preceding illness, including restaurants visited, foods eaten from a concession stand at the lake, recreational activities, and park exposure (including swimming in the lake). A matched analysis of information for the case-patients and controls indicated that swimming at the park was the only risk factor for illness (the seven case-patients swam at the lake and the seven controls did not swim at the lake; matched odds ratio [OR]=undefined; 95% confidence interval [CI]=4.0–undefined).

The second case-control study was conducted July 14–28 to assess specific risk factors for infection among persons who swam in the lake. Cases included 10 ill persons who had visited the lake for 1 day. Controls were selected by identifying families who camped at the state park the same weekend the ill persons had visited the lake and swam in the same lake. Two controls were matched to each case in two age categories (1–6 years and 7–12 years). Case and control parents were asked about their child's drinking-fountain water consumption, concession stand purchases, recreational activities (e.g., boating, hiking, and fishing), and swimming behaviors (e.g., area of the lake in which they swam, duration of stay in the water, whether they submerged their heads, and whether they put water in their mouths or swallowed water). Analysis by unmatched odds ratios suggested that risk for illness was associated with taking lake water into the mouth (unmatched OR=9.8, 95% CI=1.03–93.5) and swallowing lake water (unmatched OR=12.4, 95% CI=1.3–118.3).

Environmental Investigation

The park includes two connected lakes. The 50-acre lake with the bathing beach is fed by a stream; the outflow for this lake is connected to the second lake where swimming is not permitted. Water movement from the first lake to the second was limited because of dry conditions. On June 24 and June 25, an estimated 2200 and 2500 persons visited the beach area (approximate attack rate=0.3%). None of the ill persons reported swimming in the second lake. Facilities at the implicated lake included two concrete vault privies, each containing two toilets. To determine whether these privies were watertight, the concrete vaults were filled with water; no leakage was observed. Handwashing facilities were not available. Samples obtained from the potable water supply for the showers and drinking fountain were tested July 10 and 12, but were negative for fecal coliforms. No cattle farms or sewage outlets that would affect water quality were adjacent to the stream that feeds into the swimming lake.

In Illinois, state regulations require facilities to perform fecal coliform testing of swimming beach waters when requested by IDPH and stipulate that a beach be closed when any two consecutive tests detect fecal coliform levels >500 per 100 mL (*1*). Two samples collected at the beach on June 21 had levels of 660 and 900 *E. coli* per 100 mL. Four samples collected on July 6, after the lake had been closed to swimming, were not analyzed for *E. coli* but fecal coliform levels were <25 per 100 mL. On July 10, the level of *E. coli* was >500 per 100 mL in two of six beach water samples; water samples from the lake were cultured for *E. coli* O157:H7 but were negative. Although many waterfowl (e.g., geese and ducks) were observed at the beach, waterfowl droppings cultured on July 12 were negative for *E. coli* O157:H7. Because *E. coli* O157:H7 can survive for up to 1 month in tap water, the bathing beach was closed for the remainder of the 1995 swimming season.

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Editorial Note: Although most outbreaks of *E. coli* O157:H7 have been associated with eating contaminated, undercooked ground beef, others have been linked to drinking apple cider, eating vegetables, and swimming in or drinking contaminated water (*2–6*). This report describes the third outbreak of lake-associated *E. coli* O157:H7 infections documented in the United States since 1991 (*7,8*). Investigations of the two previous outbreaks concluded that infected swimmers had contaminated the water with *E. coli* O157:H7.

Bathing beaches usually are regulated by the environmental division of each state health department. The fecal coliform level used as a threshold for closing beaches varies among states. Methods used for testing for fecal coliforms are insensitive to low concentrations of pathogens, and the infectious dose for *E. coli* O157:H7 is low (*2*). The sensitivity of routine microbiologic testing of swimming water also may be limited because contamination caused by swimmers may be transient. The fecal coliform test usually indicates fecal contamination from warm-blooded mammals but is not specific for pathogenic organisms or a human source (*9*). In the lake in Illinois, fecal coliform levels were high on July 10 after no one had been swimming in the water for 4 days, possibly indicating contamination of water by nonhuman sources.

Measures to decrease risks associated with swimming in unchlorinated water should be directed toward reducing the likelihood of fecal contamination of swimming water. Such measures could include providing changing tables for infants in locker rooms, providing adequate toilet and handwashing facilities, posting signs warning against drinking lake water and defecating in the lake, recommending that children with gastrointestinal illness or dirty diapers not swim in the lake, and prohibiting children who are not toilet trained from swimming.

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Electricity-Related Deaths on Lakes — Oklahoma, 1989–1993

Drowning accounts for approximately 4200 deaths each year in the United States (*1*). Although electricity is documented infrequently as a cause of such fatalities, contact with electricity can result in death through temporary paralysis and drowning of persons who are swimming or wading, or through electrocution. From June 1989 through September 1993, five persons died on lakes in Oklahoma following contact or suspected contact with electrical currents. Four deaths occurred at two adjoining lakes in northeastern Oklahoma (lake A), and one at a lake in the southern part of the state (lake B). The five deaths occurred among males aged 13–50 years who were either swimming, working on or near docks, or working with electricity when they sustained fatal injuries. This report summarizes the investigation of these deaths by medical examiners (MEs) and the Oklahoma State Department of Health (OSDH).

OSDH identified electricity-related deaths on lakes through its injury surveillance system, which includes information from hospital medical records, the Office of the State Medical Examiner, ambulance reports, department of public safety reports, newspaper clippings, and vital statistics (*2*). During July–September 1993, OSDH identified two deaths that resulted from contact with electrical currents at one lake with 4000 private and 120 commercial docks. Three additional deaths subsequently were identified for 1989–1993.

Case Reports

Case 1. On September 5, 1993, a 46-year-old man was scuba diving with a companion in lake A when he contacted a submergible water pump and lost consciousness underwater. His companion noted a blue softball-size ball of flame emitting from a pipe that contained the pump's power cables and an electrical sensation in the water. The companion retrieved the man and began cardiopulmonary resuscitation at the scene but was unsuccessful in reviving him. The ME listed the cause of death as electrocution.

Case 2. On July 27, 1993, a 13-year-old boy died after he jumped from a boat dock into lake A to swim; the dock lights were on at the time. He immediately surfaced and was screaming, then submerged and did not resurface. An adult who entered the water to assist the boy felt an electrical current and called to others to turn off the dock lights. Power company employees inspected the electrical system for the dock lights and identified a short in the wiring; the wiring was in contact with the dock's metal frame and transmitted sufficient electrical current into the water to cause a shock. The ME listed the boy's cause of death as drowning, possibly secondary to electrical shock.

Case 3. On July 24, 1991, a 50-year-old man was found lying unconscious on a boat dock at lake A. His son was electrically shocked when he attempted to revive the man. The man had been wearing wet socks and shoes, and an electrical short was detected in the dock's wiring. The ME listed the cause of death as electrocution.

Case 4. On December 8, 1989, a 32-year-old man and his co-workers were rewiring a water pump submerged in lake A and stringing electrical wire from the water pump up a hill to a relay station. When his co-workers were unable to locate him, they searched the area and found blood on rocks along the shoreline. A lake patrol diver found the man under 25 feet of water; he was alive and had a laceration above his right eye. Cardiopulmonary resuscitation efforts were unsuccessful. The ME listed the cause of death as drowning.

Electricity-Related Deaths on Lakes — Continued

Case 5. On June 1, 1989, a 36-year-old man was installing a fuel pump in the engine compartment of a houseboat on lake B. His elbow contacted the wires of a broken light bulb that was connected to a 110-volt line from the boat dock, and he died at the scene. The ME listed the cause of death as low-voltage electrocution.

Follow-Up Investigation

As a result of these deaths, during January 1994, OSDH inspected 11 commercial docks that had the most severe deficiencies during a 1989 inspection and five randomly selected private docks at lake A. The inspection identified life-threatening violations, including failure to have grounded electrical systems or to have weatherproofed electrical boxes. Because of these violations, OSDH recommended that the local dam authority require electrical inspection of all commercial docks before issuing dock permits; terminate electrical service to docks that fail inspection until improvements were completed; require that commercial docks be inspected every 3 years; and require that private docks be inspected every 2 years. An inspection of 116 commercial docks at lake A in 1989 indicated that 96% violated the National Electrical Code and that ungrounded electrical systems were the most common violation (R. McElvany, OSDH, personal communication, 1994).

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Editorial Note: The findings in this report underscore both the importance and difficulty of identifying electricity-related drownings. No state or national surveillance systems exist for electricity-related deaths on U.S. lakes and other bodies of water. Although data are collected about the number of drownings that occur nationally, these data are not subcategorized by secondary cause of death. To improve identification of causes of drownings, local surveillance systems should require a more detailed description of drowning incidents. In the cases described in this report, electricity-related drownings were identified through reports of the Oklahoma Lake Patrol, the narrative portion of ME records, ambulance reports, hospital records, and newspaper clippings. Electricity-related near-drowning episodes are rarely reported because of the lack of a detailed description of the incident, poor documentation on medical records, or because the patients do not seek medical attention (*3*).

Electricity-related drownings are difficult to identify because physical evidence of electricity-induced burns may not be readily apparent. Burns result from localized heating of tissue; however, during an electricity-related drowning, water dissipates heat and prevents the skin from attaining temperatures required for burning.

Electricity-related drownings can be prevented by regular inspections for ground fault failure and strict enforcement of the National Electric Code through frequent inspection of pools and docks. Employers should implement appropriate control measures to prevent contact with energized electrical conductors, especially in wet environments. When drownings occur at pools or near docks and the cause cannot be readily identified, the electrical system of the pool or dock should be inspected. Improved surveillance for drownings could be enhanced by including narrative information on death certificates for which injuries are listed as the primary cause of death.

Electricity-Related Deaths on Lakes— Continued

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Outbreak of Cryptosporidiosis at a Day Camp — Florida, July–August 1995

On July 27, 1995, the Alachua County Public Health Unit (ACPHU) in central Florida was notified of an outbreak of gastroenteritis among children and counselors at a day camp on the grounds of a public elementary school. This report summarizes the outbreak investigation, which implicated *Cryptosporidium parvum* as the causative agent and underscores the role of contaminated water as a vehicle for transmission of this organism.

The camp operated from June 12 through August 4 and enrolled 98 children (age range: 4–12 years) and six counselors during the 3 weeks before the outbreak. A confirmed case of cryptosporidiosis was defined as gastrointestinal symptoms (i.e., abdominal pain, nausea, vomiting, and three or more watery stools each day) in a camp attendee during July 20–August 23 with *C. parvum* isolated in stool. A probable case was defined as gastrointestinal symptoms during July 20–August 23 in a camp attendee who did not submit a stool sample for testing. A questionnaire was administered to each of the 104 persons attending the camp; for some children, information was obtained from parents and camp records.

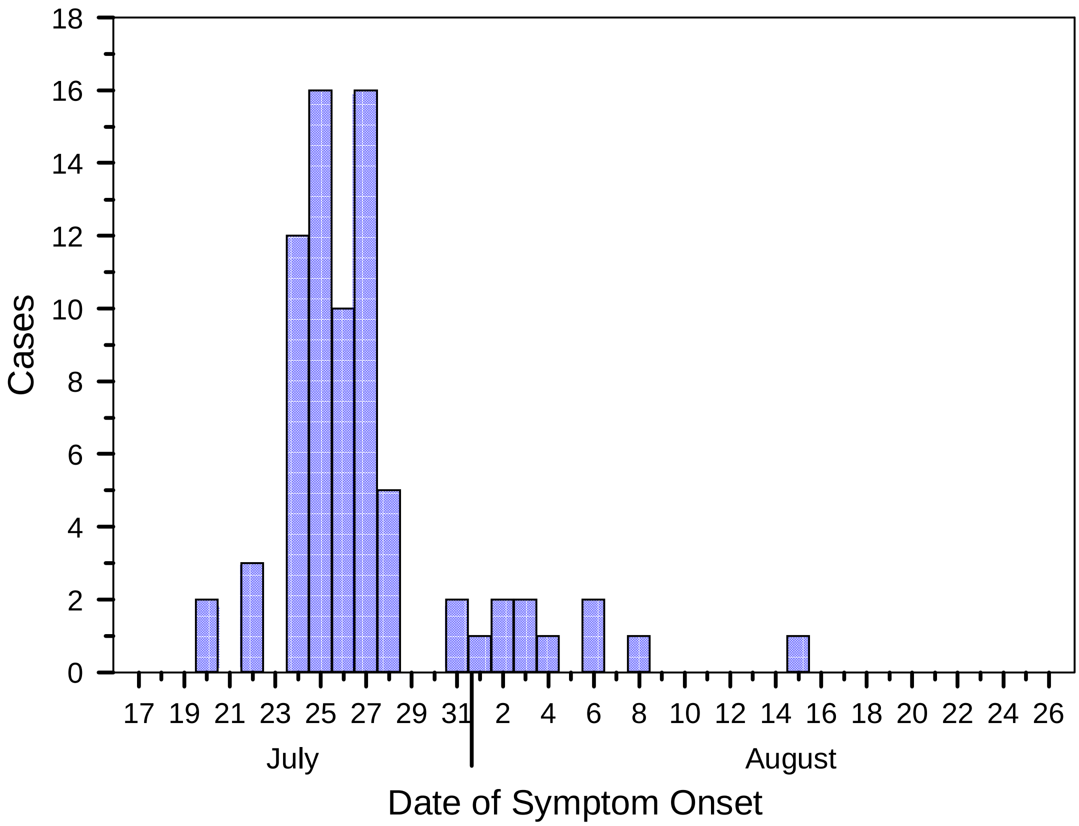
Of the 104 persons attending the camp, 77 (74%) had symptoms (abdominal pain [74%], nausea [73%], diarrhea [71%], vomiting [57%], and fever [43%]) with onset during July 20–August 15, including 72 of 98 children and five of six counselors (Figure 1). Follow-up phone calls to 67 of 79 households of those who attended the camp indicated that 24 household members had onset of gastrointestinal symptoms during July 20–August 23.

Stool specimens for bacterial enteric pathogen testing were obtained from 44 camp attendees within 10 days of onset of symptoms; all were negative. Sixteen stool specimens were obtained for testing for ova and parasites; all 16 yielded *C. parvum*.

Risk for illness was not associated with participating in a particular camp activity or eating a lunch or snack provided by the camp. Water sources for the camp included an outdoor drinking fountain, a sink inside the trailer that served as camp headquarters, and portable coolers. The coolers were filled at either a kitchen sink inside the school or an outdoor faucet with an attached hose and spray nozzle used for washing garbage cans. Although water consumption from any source could not be quantified, virtually all persons at the camp reported drinking water from one of the camp sources during the 3 weeks before the outbreak. Water samples were tested (*1*) from the city's water treatment plant, all school sources used by campers, and three sinks inside the school. The water treatment plant samples were repeatedly negative. Outdoor faucet samples were positive for total coliforms and *C. parvum*; other tests from

Outbreak of Cryptosporidiosis — Continued

FIGURE 1. Number of illnesses reported among persons attending a summer day camp, by date of symptom onset — Florida, July 17–August 26, 1995



school sites were negative or below detectable limits for total coliform, *Escherichia coli*, and ova and parasites. The area around the outdoor faucet was not fenced, and feces of unknown origin were observed on several occasions near the faucet and attached hose.

Based on these findings, ACPHU recommended discontinuing use of coolers for water and the outdoor faucet, and enclosing the faucet area by fence. In addition, parents and staff were taught proper handwashing technique and given information about *C. parvum*. Staff returning to school used alternate water sources until the system was superchlorinated, flushed, and cleared.

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Editorial Note: The protozoan parasite *C. parvum* was first identified as a human pathogen in 1976; since then, the organism has been increasingly recognized as an agent of gastrointestinal illness. In immunocompetent persons, cryptosporidiosis can

Outbreak of Cryptosporidiosis — Continued

cause moderately severe watery diarrhea that usually lasts 1–20 days (average: 10 days) (*2*). In immunocompromised persons (e.g., those with acquired immunodeficiency syndrome [AIDS] or those taking certain chemotherapeutic regimens), the infection can cause severe, unrelenting diarrhea. The antibiotic paromomycin can improve symptoms and decrease parasite excretion in the feces of some persons with AIDS and is the treatment of choice for immunosupppressed patients (*3,4*).

Cryptosporidiosis is transmitted by the fecal-oral route, most commonly by direct person-to-person transmission or by drinking water that has been contaminated with human or animal feces. In 1993, cryptosporidiosis caused the largest waterborne disease outbreak ever recorded, when an estimated 400,000 persons in Milwaukee became ill after drinking contaminated municipal water (*5*). The outbreak described in this report most likely was related to drinking contaminated water. Contamination probably occurred at the nozzle of the hose used to fill the water coolers rather than at or near the water treatment plant. Sources of drinking water should be protected from possible fecal contamination, and hoses, which are particularly susceptible to back-syphonage, should not be used to provide drinking water. Public water sources that cannot be protected should be posted as nonpotable.

C. parvum was promptly identified as the source of this outbreak, in part because the Florida State Public Health Laboratory examines all fecal specimens submitted for ova and parasite analysis for *C. parvum*. The diagnosis of cryptosporidiosis can be delayed or missed when physicians assume incorrectly that diagnostic laboratories routinely perform specific tests for *C. parvum* when a fecal examination for parasites is requested. A recent national survey of clinical laboratories found that only 5% did so (*6*). If cryptosporidiosis is suspected in the differential diagnosis, physicians should specifically request testing for *C. parvum*. In addition, when reporting the results of fecal examinations, clinical laboratories should specify what tests were performed rather than only indicating that no enteric pathogens were identified.

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Notice to Readers

Satellite Videoconference on Essentials of Managed Care and the Implications for Public Health Officials

CDC, the Health Resources and Services Administration, the Association of State and Territorial Health Officials, the National Association of County and City Health Officials, the Public Health Foundation, and the Public Health Training Network (PHTN) will cosponsor a satellite videoconference, "Essentials of Managed Care and the Implications for Public Health Officials," on June 28, 1996, from 11:30 a.m. to 4 p.m. eastern daylight time.

This videoconference will present principles and business practices of managed care, followed by a discussion of public health challenges and opportunities in a managed-care environment. The course consists of didactic segments, group activities, and opportunities for questions and answers.

Information about enrollment is available by calling (800) 468-4456. There is an enrollment fee. Materials will be delivered to participants before the broadcast. Information about viewing sites is available from PHTN, telephone (800) 728-8232; from the PHTN/CDC Fax Information System, (404) 332-4565 (request document 564012); and from state PHTN distance-learning coordinators.

Notice to Readers

National Occupational Research Agenda

Each day in the United States, an average of 137 persons die from work-related diseases (*1*); an additional 16 die from on-the-job injuries (*2*). In 1994, employers reported 6.3 million work-related injuries and 515,000 cases of occupational illnesses (*3*). In the same year, occupational injuries alone cost $121 billion in lost wages, lost productivity, administrative expenses, health care, and related costs (*4*)—a figure that does not include the costs of occupational diseases, for which reliable estimates are not available. As jobs shift from manufacturing to services, increasingly common characteristics include longer hours, compressed workweeks, shift work, part-time and temporary work, and diminished job security; in addition, new chemicals, materials, processes, and equipment are being introduced more quickly.

In response to these issues and to provide a framework to guide occupational safety and health research during the next decade, CDC's National Institute for Occupational Safety and Health (NIOSH) and its partners in the public and private sectors have published the National Occupational Research Agenda (NORA) (*5*).* Approximately 500 outside organizations and persons provided input to NIOSH for the development of NORA. This effort to focus and coordinate research—both for NIOSH and the entire occupational safety and health community—attempts to address

*Single copies of NORA are available without charge from the Publications Office, NIOSH, CDC, Mailstop C-13, 4676 Columbia Parkway, Cincinnati, OH 45226-1998; telephone (800) 365-4674 or (for persons outside the United States) (513) 533-8328; fax (513) 533-8573. NORA also is available on the NIOSH Home Page on the World-Wide Web: http://www.cdc.gov/niosh/homepage.html.

Notice to Readers — Continued

systematically topics identified as high priority and most likely to yield health and safety improvements for workers and industry.

NORA identifies 21 research priorities grouped into three categories: Disease and Injury, Work Environment and Workforce, and Research Tools and Approaches (see box). To initiate implementation of NORA, NIOSH will convene its NORA partners to refine further the preliminary approaches agreed to in identifying the NORA research priorities. Throughout the process of implementing NORA, NIOSH will attempt to expand its partnerships and improve coordination throughout the occupational safety and health community.

References

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3. Bureau of Labor Statistics. Workplace injuries and illnesses in 1994. BLS News, December 15, 1995; publication 95-508.
4. National Safety Council. Accident facts. Itasca, Illinois: National Safety Council, 1995.
5. NIOSH. National Occupational Research Agenda. Cincinnati: US Department of Health and Human Services, Public Health Service, CDC, 1996; DHHS publication no. (NIOSH)96-115.

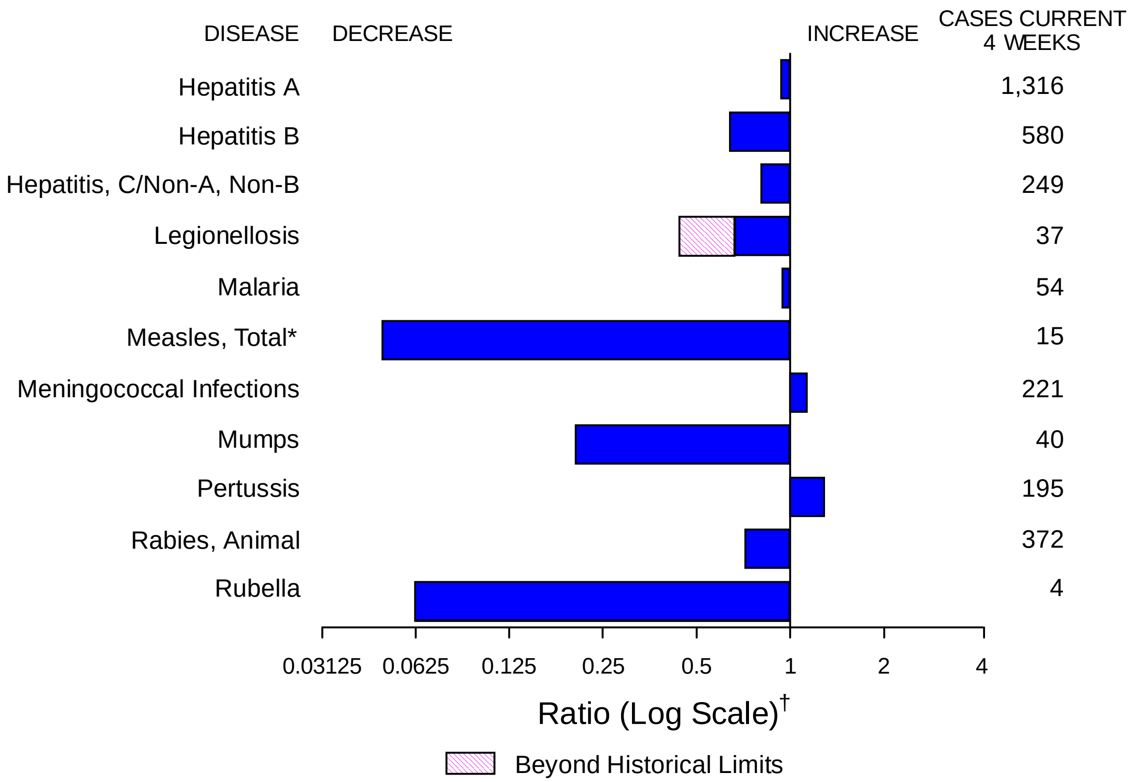
Priority Research Areas for National Occupational Research Agenda

Category	Research Priority
Disease and Injury	Allergic and irritant dermatitis
	Asthma and chronic obstructive pulmonary disease
	Fertility and pregnancy abnormalities
	Hearing loss
	Infectious diseases
	Low-back disorders
	Musculoskeletal disorders of the upper extremities
	Traumatic injuries
Work Environment and Workforce	Emerging technologies
	Indoor environment
	Mixed exposures
	Organization of work
	Special populations at risk
Research Tools and Approaches	Cancer research methods
	Control technology and personal protective equipment
	Exposure assessment methods
	Health services research
	Intervention effectiveness research
	Risk assessment methods
	Social and economic consequences of workplace illness and injury
	Surveillance research methods

Erratum: Vol. 45, No. 18

On page 381, Figure I, Selected notifiable disease reports, comparison of 4-week totals ending May 4, 1996, with historical data — United States, was incorrect. The graph below is correct for the week ending May 4, 1996.

FIGURE I. Selected notifiable disease reports, comparison of 4-week totals ending May 4, 1996, with historical data — United States



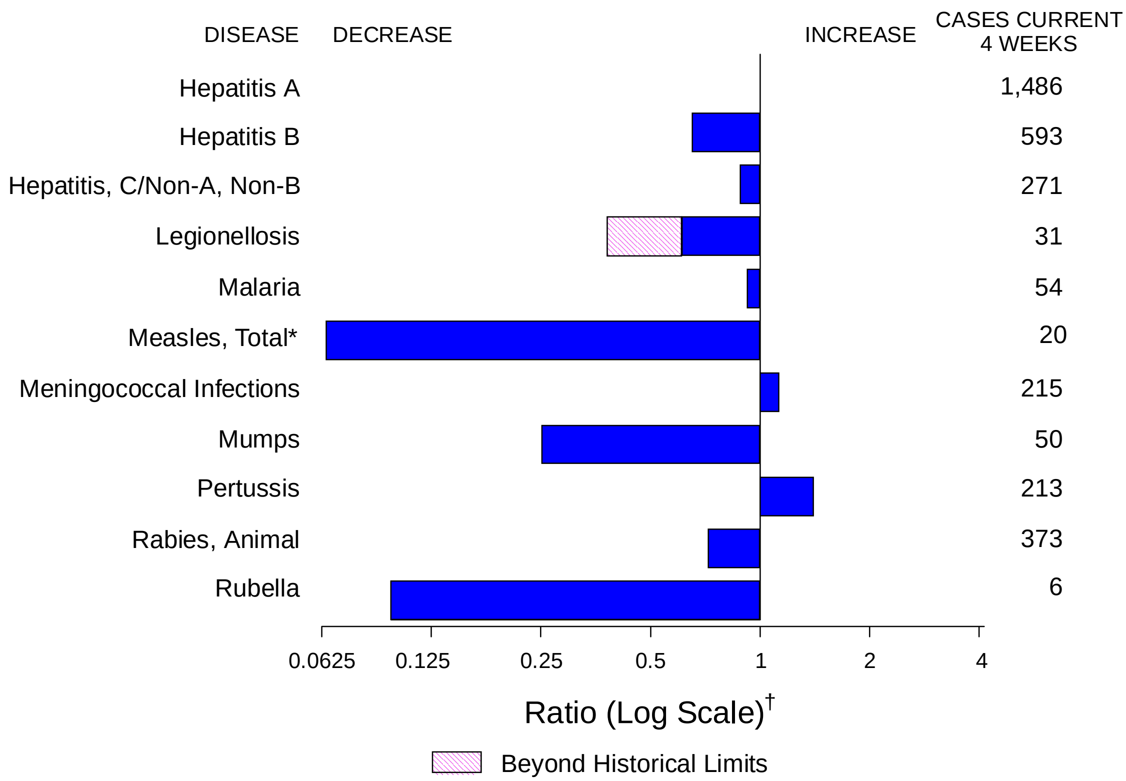
*The large apparent decrease in the number of reported cases of measles (total) reflects dramatic fluctuations in the historical baseline.

†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.

Erratum: Vol. 45, No. 19

On page 405, Figure I, Selected notifiable disease reports, comparison of 4-week totals ending May 11, 1996, with historical data — United States, was incorrect. The graph below is correct for the week ending May 11, 1996.

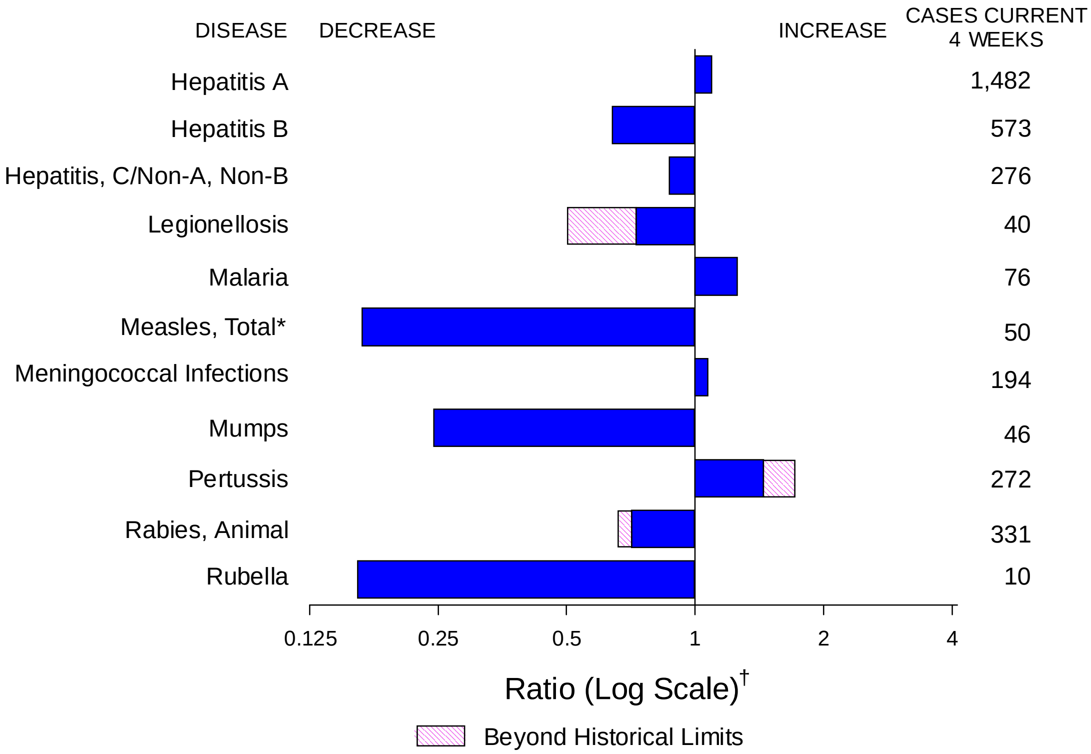
FIGURE I. Selected notifiable disease reports, comparison of 4-week totals ending May 11, 1996, with historical data — United States



*The large apparent decrease in the number of reported cases of measles (total) reflects dramatic fluctuations in the historical baseline.

†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.

FIGURE I. Selected notifiable disease reports, comparison of 4-week totals ending May 25, 1996, with historical data — United States



*The large apparent decrease in the number of reported cases of measles (total) reflects dramatic fluctuations in the historical baseline.

†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 — cases of selected notifiable diseases, United States, cumulative, week ending May 25, 1996 (21st Week)

	Cum. 1996		Cum. 1996
Anthrax	-	HIV infection, pediatric*§	92
Brucellosis	31	Plague	-
Cholera	1	Poliomyelitis, paralytic¶	-
Congenital rubella syndrome	1	Psittacosis	10
Cryptosporidiosis*	591	Rabies, human	-
Diphtheria	1	Rocky Mountain spotted fever (RMSF)	72
Encephalitis: California*	-	Streptococcal toxic-shock syndrome*	10
eastern equine*	1	Syphilis, congenital**	-
St. Louis*	-	Tetanus	5
western equine*	-	Toxic-shock syndrome	57
Hansen Disease	36	Trichinosis	11
Hantavirus pulmonary syndrome*†	5	Typhoid fever	126

*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, National Center for HIV, STD, and TB Prevention (NCHSTP) (proposed), last update April 30, 1996.
¶ One suspected case of polio with onset in 1996 has been reported to date.
**Updated quarterly from reports to the Division of STD Prevention, NCHSTP. First quarter 1996 is not yet available.
-: no reported cases

TABLE II. Cases of selected notifiable diseases, United States, weeks ending May 25, 1996, and May 27, 1995 (21st Week)

Reporting Area	AIDS*		Chlamydia	*Escherichia coli* O157:H7		Gonorrhea		Hepatitis C/NA,NB		Legionellosis	
				NETSS†	PHLIS§						
	Cum. 1996	Cum. 1995	Cum. 1996	Cum. 1996	Cum. 1996	Cum. 1996	Cum. 1995	Cum. 1996	Cum. 1995	Cum. 1996	Cum. 1995
UNITED STATES	21,920	29,206	102,017	339	155	104,407	153,956	1,447	1,617	282	489
NEW ENGLAND	878	1,443	3,846	31	17	3,001	2,054	50	54	15	6
Maine	15	23	-	3	-	18	30	-	-	1	1
N.H.	25	47	299	1	2	60	43	3	7	-	-
Vt.	8	13	-	5	5	25	17	20	5	2	-
Mass.	490	638	2,700	12	10	884	1,186	24	41	6	4
R.I.	61	120	847	3	-	214	210	3	1	6	1
Conn.	279	602	-	7	-	1,800	568	-	-	N	N
MID. ATLANTIC	5,707	7,415	15,375	34	23	12,205	16,914	143	145	60	62
Upstate N.Y.	568	828	N	23	12	2,415	3,547	122	68	14	17
N.Y. City	3,281	3,945	5,969	-	-	3,467	6,532	1	1	-	1
N.J.	1,143	1,661	1,892	11	5	2,192	1,310	-	66	7	14
Pa.	715	981	7,514	N	6	4,131	5,525	20	10	39	30
E.N. CENTRAL	1,874	2,464	14,891	82	40	16,063	31,753	175	136	85	164
Ohio	438	536	3,636	32	8	2,094	10,285	4	5	39	76
Ind.	309	197	4,116	15	6	2,878	3,243	6	-	21	38
Ill.	758	1,102	-	19	12	6,760	8,202	22	45	2	17
Mich.	257	493	4,101	16	14	2,911	7,372	143	86	19	15
Wis.	112	136	3,038	N	-	1,420	2,651	-	-	4	18
W.N. CENTRAL	548	675	10,086	62	27	4,824	8,193	94	29	20	32
Minn.	109	149	-	17	13	U	1,198	-	2	1	-
Iowa	44	40	1,609	10	6	444	581	73	3	4	11
Mo.	237	277	5,324	10	-	3,201	4,761	14	10	4	8
N. Dak.	4	1	2	1	1	1	11	-	3	-	2
S. Dak.	7	7	575	2	-	81	84	-	1	2	-
Nebr.	40	52	762	6	2	153	402	2	7	7	9
Kans.	107	149	1,814	16	5	944	1,156	5	3	2	2
S. ATLANTIC	5,803	7,481	20,435	21	4	39,351	44,067	101	111	42	77
Del.	114	153	-	-	-	588	809	1	-	-	-
Md.	658	1,119	2,519	N	1	5,176	5,187	-	3	6	14
D.C.	373	461	N	-	-	1,737	1,913	-	-	1	3
Va.	317	547	4,790	N	1	3,892	4,411	7	4	10	5
W. Va.	31	35	-	N	-	181	223	6	21	1	3
N.C.	266	404	-	6	2	7,785	9,973	19	26	3	14
S.C.	283	400	-	1	-	4,578	4,748	14	8	3	14
Ga.	871	936	4,632	4	-	8,722	8,374	-	11	-	9
Fla.	2,890	3,426	8,494	10	-	6,692	8,429	54	38	18	15
E.S. CENTRAL	776	958	11,448	10	5	11,490	17,011	292	536	22	14
Ky.	120	118	2,755	-	1	1,685	1,844	11	15	3	4
Tenn.	283	379	5,158	5	4	4,415	5,339	248	519	10	6
Ala.	244	261	3,535	2	-	5,390	6,652	1	2	-	3
Miss.	129	200	U	3	-	U	3,176	32	-	9	1
W.S. CENTRAL	2,096	2,490	4,963	12	4	7,460	18,322	167	89	2	10
Ark.	97	108	-	6	2	1,205	1,916	1	2	-	4
La.	559	360	2,574	4	2	2,926	4,776	69	54	-	2
Okla.	55	130	2,389	1	-	1,501	10	59	21	2	3
Tex.	1,385	1,892	-	1	-	1,828	11,620	38	12	-	1
MOUNTAIN	648	975	3,421	37	16	2,755	3,629	262	197	14	56
Mont.	8	8	-	4	-	13	35	9	8	1	2
Idaho	10	24	642	11	4	36	53	67	25	-	1
Wyo.	2	5	289	-	-	12	20	87	79	2	4
Colo.	181	340	-	13	5	698	1,193	23	30	6	24
N. Mex.	43	81	-	2	-	358	420	33	28	-	4
Ariz.	197	267	1,420	N	7	1,366	1,343	27	13	3	5
Utah	79	58	254	5	-	49	-	11	7	1	3
Nev.	128	192	816	2	-	223	565	5	7	1	13
PACIFIC	3,590	5,305	17,552	50	19	7,258	12,013	163	320	22	68
Wash.	313	457	4,095	11	5	941	992	26	80	1	5
Oreg.	189	173	-	12	10	201	202	3	24	-	-
Calif.	3,025	4,509	12,664	26	-	5,794	10,242	57	206	21	58
Alaska	10	45	363	1	-	200	313	2	1	-	-
Hawaii	53	121	430	N	4	122	264	75	9	-	5
Guam	3	-	102	N	-	24	44	1	-	-	1
P.R.	423	1,084	N	5	U	121	235	17	61	-	-
V.I.	6	19	N	-	U	-	16	-	-	-	-
Amer. Samoa	-	-	-	-	U	-	8	-	-	-	-
C.N.M.I.	-	-	N	-	U	11	12	-	-	-	-

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, National Center for HIV, STD, and TB Prevention (proposed), last update April 30, 1996.

†National Electronic Telecommunications System for Surveillance.

§Public Health Laboratory Information System.

TABLE II. (Cont'd.) Cases of selected notifiable diseases, United States, weeks ending May 25, 1996, and May 27, 1995 (21st Week)

Reporting Area	Lyme Disease		Malaria		Meningococcal Disease		Syphilis (Primary & Secondary)		Tuberculosis		Rabies, Animal	
	Cum. 1996	Cum. 1995	Cum. 1996	Cum. 1995	Cum. 1996	Cum. 1995	Cum. 1996	Cum. 1995	Cum. 1996	Cum. 1995	Cum. 1996	Cum. 1995
UNITED STATES	1,334	1,955	406	402	1,547	1,497	3,893	6,869	6,162	6,801	2,023	2,678
NEW ENGLAND	58	179	13	16	53	69	65	89	144	160	240	704
Maine	2	2	3	1	9	5	-	2	4	-	-	-
N.H.	2	11	1	1	1	14	1	1	4	5	33	83
Vt.	-	2	1	-	3	6	-	-	-	1	66	98
Mass.	28	16	5	4	20	22	31	35	59	89	42	258
R.I.	21	36	3	2	-	-	-	1	20	17	21	107
Conn.	5	112	-	8	20	22	33	50	57	48	78	158
MID. ATLANTIC	1,106	1,440	96	101	121	181	177	385	1,093	1,438	294	605
Upstate N.Y.	593	767	27	21	38	53	25	34	123	159	156	232
N.Y. City	157	140	42	48	21	23	61	206	579	789	-	-
N.J.	77	157	22	22	30	48	46	73	255	265	58	150
Pa.	279	376	5	10	32	57	45	72	136	225	80	223
E.N. CENTRAL	19	68	35	53	204	225	645	1,115	695	586	16	6
Ohio	15	5	6	2	78	59	228	396	110	105	3	1
Ind.	4	7	5	4	33	33	98	104	77	48	1	-
Ill.	-	3	7	36	46	62	212	415	434	411	1	2
Mich.	-	1	11	6	26	42	41	120	39	-	6	2
Wis.	U	52	6	5	21	29	66	80	35	22	5	1
W.N. CENTRAL	43	31	11	10	126	87	172	337	175	238	191	136
Minn.	1	-	3	3	15	16	27	18	35	53	12	8
Iowa	16	1	1	1	27	16	10	25	23	33	99	43
Mo.	7	14	5	4	56	33	126	278	76	90	12	14
N. Dak.	-	-	-	-	2	-	-	-	2	1	19	15
S. Dak.	-	-	-	-	3	4	-	-	13	10	37	32
Nebr.	-	1	-	2	10	7	5	7	7	10	3	-
Kans.	19	15	2	-	13	11	4	9	19	41	9	24
S. ATLANTIC	52	158	96	83	330	238	1,421	1,745	1,031	1,105	1,015	872
Del.	1	19	2	1	2	2	16	7	20	20	26	44
Md.	25	94	21	21	29	17	252	167	110	174	246	171
D.C.	1	1	3	8	5	2	68	51	54	42	2	7
Va.	-	11	8	16	27	28	199	281	82	105	229	159
W. Va.	3	12	1	1	8	4	1	1	23	42	38	41
N.C.	12	11	8	6	36	41	440	486	158	117	268	167
S.C.	2	5	3	-	34	31	186	276	40	123	22	53
Ga.	-	4	8	10	81	52	117	306	240	10	118	127
Fla.	8	1	42	20	108	61	142	170	304	472	66	103
E.S. CENTRAL	20	12	11	9	96	90	734	1,629	452	541	71	112
Ky.	4	2	1	-	17	22	60	89	102	122	17	8
Tenn.	6	7	5	4	9	28	439	335	74	183	28	46
Ala.	1	1	2	5	36	23	235	249	181	160	26	56
Miss.	9	2	3	-	34	17	U	956	95	76	-	2
W.S. CENTRAL	7	33	11	5	181	183	486	1,208	682	794	25	48
Ark.	4	2	-	1	25	21	134	188	30	90	3	22
La.	-	-	1	1	36	25	215	440	-	12	12	9
Okla.	2	14	-	-	14	19	63	-	30	-	10	17
Tex.	1	17	10	3	106	118	74	580	622	692	-	-
MOUNTAIN	-	2	25	26	93	116	46	106	210	265	37	48
Mont.	-	-	2	2	3	2	-	3	7	3	5	17
Idaho	-	-	-	1	11	5	1	-	4	6	-	-
Wyo.	-	1	2	-	3	5	1	-	3	1	13	17
Colo.	-	-	13	15	15	27	16	63	32	5	2	-
N. Mex.	-	-	1	3	18	24	-	4	35	40	1	2
Ariz.	-	-	3	2	26	41	25	17	87	115	14	10
Utah	-	-	3	2	9	5	-	-	10	10	-	1
Nev.	-	1	1	1	8	7	3	19	32	85	2	1
PACIFIC	29	32	108	99	343	308	147	255	1,680	1,674	134	147
Wash.	1	1	7	8	48	49	2	7	95	104	-	-
Oreg.	7	1	8	6	65	55	4	6	43	23	-	-
Calif.	20	30	88	77	224	197	141	241	1,454	1,444	126	141
Alaska	-	-	1	1	4	5	-	1	24	31	8	6
Hawaii	1	-	4	7	2	2	-	-	64	72	-	-
Guam	-	-	-	-	1	3	2	2	35	33	-	-
P.R.	-	-	-	-	3	13	58	133	58	86	18	28
V.I.	-	-	-	-	-	-	-	1	-	-	-	-
Amer. Samoa	-	-	-	-	-	-	-	-	-	2	-	-
C.N.M.I.	-	-	-	-	-	-	1	3	-	13	-	-

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

TABLE III. Cases of selected notifiable diseases preventable by vaccination, United States, weeks ending May 25, 1996, and May 27, 1995 (21st Week)

Reporting Area	*H. influenzae,* invasive		Hepatitis (viral), by type				Measles (Rubeola)			
			A		B		Indigenous		Imported†	
	Cum. 1996*	Cum. 1995	Cum. 1996	Cum. 1995	Cum. 1996	Cum. 1995	1996	Cum. 1996	1996	Cum. 1996
UNITED STATES	533	564	10228	10,384	3,531	3,940	25	136	1	15
NEW ENGLAND	12	29	127	85	59	89	-	5	-	1
Maine	2	1	10	13	2	2	-	-	-	-
N.H.	7	7	4	5	4	12	-	-	-	-
Vt.	-	1	3	3	2	1	-	1	-	-
Mass.	3	7	64	33	19	30	-	3	-	1
R.I.	-	-	4	11	5	8	-	-	-	-
Conn.	-	13	42	20	27	36	-	1	-	-
MID. ATLANTIC	77	64	636	646	522	526	-	4	-	4
Upstate N.Y.	24	19	163	146	136	135	-	-	-	-
N.Y. City	10	14	278	306	249	179	-	4	-	3
N.J.	26	9	121	92	88	134	U	-	U	-
Pa.	17	22	74	102	49	78	-	-	-	1
E.N. CENTRAL	74	101	879	1,426	376	471	-	4	-	3
Ohio	49	50	408	825	51	48	-	2	-	-
Ind.	3	14	138	61	66	99	-	-	-	-
Ill.	14	25	134	276	61	127	-	1	-	1
Mich.	3	11	142	159	174	166	-	-	-	2
Wis.	5	1	57	105	24	31	-	1	-	-
W.N. CENTRAL	23	32	793	626	214	258	9	15	-	1
Minn.	10	14	37	64	13	20	9	13	-	1
Iowa	6	2	184	35	69	18	-	-	-	-
Mo.	5	13	366	446	105	187	-	2	-	-
N. Dak.	-	-	22	12	-	2	-	-	-	-
S. Dak.	1	-	34	12	-	1	-	-	-	-
Nebr.	1	1	92	13	8	14	-	-	-	-
Kans.	-	2	58	44	19	16	-	-	-	-
S. ATLANTIC	130	146	433	458	524	533	1	3	-	-
Del.	1	-	5	7	1	3	-	1	-	-
Md.	31	40	88	82	126	117	1	2	-	-
D.C.	4	-	15	4	15	10	-	-	-	-
Va.	4	16	62	79	62	37	-	-	-	-
W. Va.	4	6	10	10	11	29	-	-	-	-
N.C.	14	20	49	51	129	116	-	-	-	-
S.C.	3	-	29	15	38	21	-	-	-	-
Ga.	60	31	13	43	7	49	U	-	U	-
Fla.	9	33	162	167	135	151	-	-	-	-
E.S. CENTRAL	9	4	759	523	332	424	-	-	-	-
Ky.	2	1	15	28	26	43	-	-	-	-
Tenn.	1	-	530	415	206	329	-	-	-	-
Ala.	5	3	94	47	22	52	-	-	-	-
Miss.	1	-	120	33	78	-	-	-	-	-
W.S. CENTRAL	21	30	1,795	1,085	358	409	-	-	-	2
Ark.	-	4	242	94	34	19	-	-	-	-
La.	1	1	55	35	47	71	-	-	-	-
Okla.	19	16	757	233	41	50	-	-	-	-
Tex.	1	9	741	723	236	269	-	-	-	2
MOUNTAIN	60	52	1,488	1,736	437	331	3	14	-	1
Mont.	-	-	53	27	4	9	-	-	-	-
Idaho	1	2	122	175	54	39	-	1	-	-
Wyo.	30	2	18	63	14	9	-	-	-	-
Colo.	5	8	159	212	57	54	-	3	-	1
N. Mex.	7	7	207	343	147	139	-	-	-	-
Ariz.	9	17	473	488	93	41	-	3	-	-
Utah	6	5	376	374	54	27	3	3	-	-
Nev.	2	11	80	54	14	13	-	4	-	-
PACIFIC	127	106	3,318	3,799	709	899	12	91	1	3
Wash.	1	4	220	228	46	62	12	26	-	-
Oreg.	18	14	471	819	34	50	-	1	-	-
Calif.	105	86	2,562	2,664	625	774	-	1	1	2
Alaska	1	-	28	15	2	6	-	63	-	-
Hawaii	2	2	37	73	2	7	U	-	U	1
Guam	-	-	2	2	-	-	U	-	U	-
P.R.	1	3	36	24	150	138	-	1	-	-
V.I.	-	-	-	-	-	2	U	-	U	-
Amer. Samoa	-	-	-	5	-	-	U	-	U	-
C.N.M.I.	10	3	1	14	5	6	U	-	U	-

*Of 111 cases among children aged <5 years, serotype was reported for 26 and of those, 5 were type b.
†For imported measles, cases include only those resulting from importation from other countries.
N: Not notifiable U: Unavailable -: no reported cases

TABLE III. (Cont'd.) Cases of selected notifiable diseases preventable by vaccination, United States, weeks ending May 25, 1996, and May 27, 1995 (21st Week)

Reporting Area	Measles (Rubeola), cont'd. Total		Mumps			Pertussis			Rubella		
	Cum. 1996	Cum. 1995	1996	Cum. 1996	Cum. 1995	1996	Cum. 1996	Cum. 1995	1996	Cum. 1996	Cum. 1995
UNITED STATES	151	196	6	256	395	75	1,162	1,069	3	71	39
NEW ENGLAND	6	4	-	-	4	8	185	160	-	8	6
Maine	-	-	-	-	2	-	8	18	-	-	-
N.H.	-	-	-	-	-	-	17	13	-	-	1
Vt.	1	-	-	-	-	-	7	5	-	2	-
Mass.	4	2	-	-	1	8	150	117	-	4	2
R.I.	-	2	-	-	-	-	-	-	-	-	-
Conn.	1	-	-	-	1	-	3	7	-	2	3
MID. ATLANTIC	8	3	1	33	58	4	92	99	-	4	4
Upstate N.Y.	-	-	-	9	15	4	53	59	-	3	-
N.Y. City	7	-	1	9	7	-	14	15	-	1	3
N.J.	-	3	U	-	8	U	-	6	U	-	1
Pa.	1	-	-	15	28	-	25	19	-	-	-
E.N. CENTRAL	7	7	1	65	64	12	146	116	-	3	-
Ohio	2	1	-	26	20	10	66	37	-	-	-
Ind.	-	-	-	5	5	-	12	9	-	-	-
Ill.	2	-	-	15	19	2	51	26	-	1	-
Mich.	2	4	1	19	20	-	12	32	-	2	-
Wis.	1	2	-	-	-	-	5	12	-	-	-
W.N. CENTRAL	16	1	-	3	25	3	56	70	-	1	-
Minn.	14	-	-	1	2	3	38	27	-	-	-
Iowa	-	-	-	-	6	-	2	1	-	1	-
Mo.	2	1	-	-	14	-	10	17	-	-	-
N. Dak.	-	-	-	2	-	-	-	5	-	-	-
S. Dak.	-	-	-	-	-	-	1	7	-	-	-
Nebr.	-	-	-	-	3	-	1	3	-	-	-
Kans.	-	-	-	-	-	-	4	10	-	-	-
S. ATLANTIC	3	1	1	29	60	3	122	100	-	12	6
Del.	1	-	-	-	-	-	8	5	-	-	-
Md.	2	-	-	12	17	3	50	12	-	-	-
D.C.	-	-	-	-	-	-	-	2	-	1	-
Va.	-	-	-	3	13	-	5	7	-	-	-
W. Va.	-	-	-	-	-	-	2	-	-	-	-
N.C.	-	-	-	-	16	-	25	50	-	-	-
S.C.	-	-	1	5	6	-	5	10	-	1	-
Ga.	-	-	U	2	-	U	6	-	U	-	-
Fla.	-	1	-	7	8	-	21	14	-	10	6
E.S. CENTRAL	-	-	1	12	11	1	38	29	-	-	-
Ky.	-	-	-	-	-	-	23	5	-	-	-
Tenn.	-	-	-	1	-	-	9	4	-	-	-
Ala.	-	-	-	4	4	1	3	20	-	-	-
Miss.	-	-	1	7	7	-	3	-	N	N	N
W.S. CENTRAL	2	2	1	12	26	3	24	58	-	2	2
Ark.	-	2	-	-	5	-	2	7	-	-	-
La.	-	-	1	9	6	1	4	3	-	1	-
Okla.	-	-	-	-	-	-	4	9	-	-	-
Tex.	2	-	-	3	15	2	14	39	-	1	2
MOUNTAIN	15	61	-	19	15	6	148	255	1	3	4
Mont.	-	-	-	-	1	-	4	3	-	-	-
Idaho	1	-	-	-	2	-	65	71	-	-	-
Wyo.	-	-	-	-	-	-	-	-	-	-	-
Colo.	4	21	-	1	-	1	19	35	1	1	-
N. Mex.	-	29	N	N	N	1	27	28	-	-	-
Ariz.	3	10	-	1	2	1	10	106	-	1	3
Utah	3	-	-	2	3	3	6	10	-	-	1
Nev.	4	1	-	15	7	-	17	2	-	1	-
PACIFIC	94	117	1	83	132	35	351	182	2	38	17
Wash.	26	16	-	8	10	16	136	30	-	1	-
Oreg.	1	1	N	N	N	2	27	13	1	1	1
Calif.	3	98	1	59	108	17	179	124	1	34	14
Alaska	63	-	-	2	12	-	-	-	-	-	-
Hawaii	1	2	U	14	2	U	9	15	U	2	2
Guam	-	-	U	3	3	U	-	-	U	-	-
P.R.	1	7	-	1	1	-	-	8	-	-	-
V.I.	-	-	U	-	2	U	-	-	U	-	-
Amer. Samoa	-	-	U	-	-	U	-	-	U	-	-
C.N.M.I.	-	-	U	-	-	U	-	-	U	-	-

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

TABLE IV. Deaths in 121 U.S. cities,* week ending May 25, 1996 (21st Week)

Reporting Area	All Causes, By Age (Years)						P&I† Total
	All Ages	≥65	45-64	25-44	1-24	<1	
NEW ENGLAND	561	367	109	58	16	11	28
Boston, Mass.	185	95	47	27	9	7	12
Bridgeport, Conn.	43	31	6	6	-	-	-
Cambridge, Mass.	15	12	1	2	-	-	-
Fall River, Mass.	17	15	1	1	-	-	-
Hartford, Conn.	55	38	13	1	2	1	2
Lowell, Mass.	19	16	1	2	-	-	-
Lynn, Mass.	11	7	3	1	-	-	1
New Bedford, Mass.	21	19	1	1	-	-	2
New Haven, Conn.	32	18	8	6	-	-	1
Providence, R.I.	41	36	3	1	-	1	2
Somerville, Mass.	5	2	2	1	-	-	-
Springfield, Mass.	44	26	11	2	3	2	3
Waterbury, Conn.	26	19	4	2	1	-	1
Worcester, Mass.	47	33	8	5	1	-	4
MID. ATLANTIC	2,419	1,583	505	242	40	49	100
Albany, N.Y.	60	42	8	6	1	3	5
Allentown, Pa.	12	10	2	-	-	-	-
Buffalo, N.Y.	84	51	27	5	1	-	2
Camden, N.J.	31	17	8	2	1	3	2
Elizabeth, N.J.	24	18	5	1	-	-	-
Erie, Pa.§	44	33	7	2	-	2	3
Jersey City, N.J.	45	31	6	5	1	2	-
New York City, N.Y.	1,299	814	289	156	20	20	30
Newark, N.J.	63	25	11	19	5	3	2
Paterson, N.J.	31	20	5	3	2	1	3
Philadelphia, Pa.	300	212	54	23	4	7	15
Pittsburgh, Pa.§	78	56	17	2	2	1	6
Reading, Pa.	19	18	1	-	-	-	3
Rochester, N.Y.	132	101	21	7	1	2	12
Schenectady, N.Y.	24	15	7	2	-	-	2
Scranton, Pa.§	23	18	5	-	-	-	1
Syracuse, N.Y.	94	65	20	3	2	4	10
Trenton, N.J.	31	17	9	4	-	1	4
Utica, N.Y.	25	20	3	2	-	-	-
Yonkers, N.Y.	U	U	U	U	U	U	U
E.N. CENTRAL	2,192	1,467	423	186	51	61	160
Akron, Ohio	58	44	7	4	1	2	-
Canton, Ohio	46	34	9	3	-	-	5
Chicago, Ill.	432	245	102	59	9	13	48
Cincinnati, Ohio	156	105	29	11	6	5	15
Cleveland, Ohio	147	87	37	16	6	1	6
Columbus, Ohio	172	118	35	15	-	4	8
Dayton, Ohio	117	80	21	13	1	2	5
Detroit, Mich.	224	147	46	11	11	9	8
Evansville, Ind.	54	45	5	3	-	1	-
Fort Wayne, Ind.	52	44	5	1	1	1	6
Gary, Ind.	22	15	3	4	-	-	-
Grand Rapids, Mich.	57	43	9	1	-	4	4
Indianapolis, Ind.	219	135	40	25	11	8	19
Madison, Wis.	U	U	U	U	U	U	U
Milwaukee, Wis.	109	75	23	9	-	2	10
Peoria, Ill.	55	45	5	1	-	4	2
Rockford, Ill.	58	42	12	1	1	2	9
South Bend, Ind.	59	49	6	-	3	1	5
Toledo, Ohio	99	71	20	6	-	2	10
Youngstown, Ohio	56	43	9	3	1	-	-
W.N. CENTRAL	663	476	120	40	13	5	41
Des Moines, Iowa	32	22	7	3	-	-	1
Duluth, Minn.	24	20	2	2	-	-	1
Kansas City, Kans.	22	12	5	4	-	1	-
Kansas City, Mo.	77	44	15	7	2	-	4
Lincoln, Nebr.	U	U	U	U	U	U	U
Minneapolis, Minn.	187	145	29	8	5	-	19
Omaha, Nebr.	84	61	16	3	2	2	10
St. Louis, Mo.	116	80	22	9	3	2	-
St. Paul, Minn.	45	38	7	-	-	-	3
Wichita, Kans.	76	54	17	4	1	-	3
S. ATLANTIC	1,197	758	239	139	37	24	60
Atlanta, Ga.	171	107	37	17	7	3	3
Baltimore, Md.	220	119	54	39	4	4	19
Charlotte, N.C.	U	U	U	U	U	U	U
Jacksonville, Fla.	130	82	26	17	2	3	5
Miami, Fla.	96	59	15	16	4	2	1
Norfolk, Va.	64	38	11	4	3	8	5
Richmond, Va.	62	40	14	7	1	-	1
Savannah, Ga.	63	40	13	7	2	1	6
St. Petersburg, Fla.	65	55	5	3	2	-	1
Tampa, Fla.	174	128	31	12	1	2	15
Washington, D.C.	132	80	28	15	8	1	4
Wilmington, Del.	20	10	5	2	3	-	-
E.S. CENTRAL	797	537	153	68	20	16	44
Birmingham, Ala.	130	73	36	11	5	3	1
Chattanooga, Tenn.	101	80	10	9	1	1	7
Knoxville, Tenn.	77	49	22	6	-	-	5
Lexington, Ky.	52	37	6	4	4	1	-
Memphis, Tenn.	190	131	31	18	5	5	19
Mobile, Ala.	84	62	16	4	1	1	3
Montgomery, Ala.	37	27	8	1	-	1	1
Nashville, Tenn.	126	78	24	15	4	4	8
W.S. CENTRAL	1,441	914	300	141	47	39	79
Austin, Tex.	65	45	10	6	3	1	1
Baton Rouge, La.	65	38	13	7	3	4	2
Corpus Christi, Tex.	40	28	11	-	-	1	2
Dallas, Tex.	219	132	41	31	8	7	3
El Paso, Tex.	87	56	14	11	5	1	4
Ft. Worth, Tex.	88	53	13	10	5	7	2
Houston, Tex.	390	239	94	38	8	11	37
Little Rock, Ark.	77	52	15	4	4	2	4
New Orleans, La.	94	59	20	11	4	-	-
San Antonio, Tex.	177	110	46	15	2	4	16
Shreveport, La.	56	43	8	3	2	-	3
Tulsa, Okla.	83	59	15	5	3	1	5
MOUNTAIN	919	620	174	68	28	28	51
Albuquerque, N.M.	107	83	15	4	4	1	3
Colo. Springs, Colo.	49	30	12	4	2	1	2
Denver, Colo.	81	52	13	9	2	5	7
Las Vegas, Nev.	211	146	42	18	4	1	7
Ogden, Utah	19	9	7	-	1	2	2
Phoenix, Ariz.	176	100	39	16	8	12	16
Pueblo, Colo.	26	17	8	1	-	-	-
Salt Lake City, Utah	111	76	19	8	5	3	8
Tucson, Ariz.	139	107	19	8	2	3	6
PACIFIC	2,057	1,411	360	190	48	47	137
Berkeley, Calif.	14	7	5	2	-	-	-
Fresno, Calif.	104	76	10	6	7	5	10
Glendale, Calif.	38	28	3	5	1	1	5
Honolulu, Hawaii	90	61	16	8	3	2	5
Long Beach, Calif.	82	60	11	8	1	2	15
Los Angeles, Calif.	786	533	145	76	18	14	29
Pasadena, Calif.	19	9	5	1	2	2	1
Portland, Oreg.	142	103	21	9	4	5	7
Sacramento, Calif.	U	U	U	U	U	U	U
San Diego, Calif.	128	84	23	17	-	4	21
San Francisco, Calif.	136	81	28	23	1	2	14
San Jose, Calif.	197	142	35	14	4	2	16
Santa Cruz, Calif.	29	19	7	2	-	1	2
Seattle, Wash.	152	106	28	12	3	3	4
Spokane, Wash.	61	44	11	2	2	2	5
Tacoma, Wash.	79	58	12	5	2	2	3
TOTAL	12,246¶	8,133	2,383	1,132	300	280	700

*Mortality data in this table are voluntarily reported from 121 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 these 3 Pennsylvania cities, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.

¶Total includes unknown ages.

U: Unavailable -: no reported cases

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