

MMWRTM
**MORBIDITY AND MORTALITY
WEEKLY REPORT**

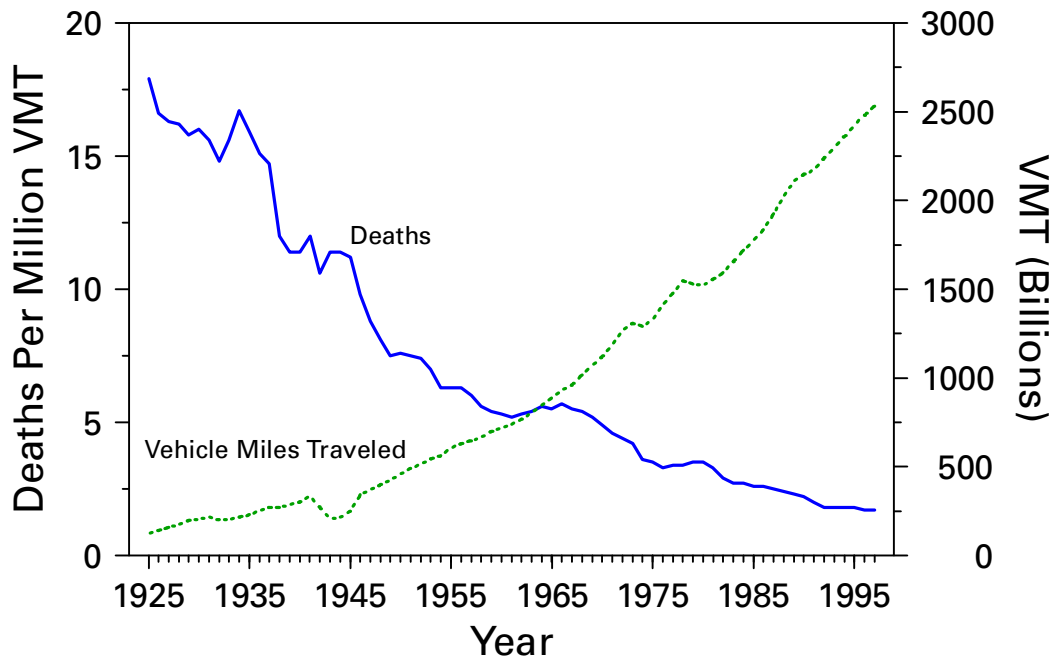
- 369** Motor-Vehicle Safety: A 20th Century Public Health Achievement
- 374** Update: Influenza Activity — United States and Worldwide, 1998–99 Season, and Composition of the 1999–2000 Influenza Vaccine
- 379** Varicella-Related Deaths — Florida, 1998
- 381** Notices to Readers

Achievements in Public Health, 1900–1999

Motor-Vehicle Safety: A 20th Century Public Health Achievement

The reduction of the rate of death attributable to motor-vehicle crashes in the United States represents the successful public health response to a great technologic advance of the 20th century—the motorization of America. Six times as many people drive today as in 1925, and the number of motor vehicles in the country has increased 11-fold since then to approximately 215 million (1). The number of miles traveled in motor vehicles is 10 times higher than in the mid-1920s. Despite this steep increase in motor-vehicle travel, the annual death rate has declined from 18 per 100 million vehicle miles traveled (VMT) in 1925 to 1.7 per 100 million VMT in 1997—a 90% decrease (Figure 1) (1).

FIGURE 1. Motor-vehicle–related deaths per million vehicle miles traveled (VMT) and annual VMT, by year — United States, 1925–1997



Motor-Vehicle Safety — Continued

Systematic motor-vehicle safety efforts began during the 1960s. In 1960, unintentional injuries caused 93,803 deaths (1); 41% were associated with motor-vehicle crashes. In 1966, after 5 years of continuously increasing motor-vehicle-related fatality rates, the Highway Safety Act created the National Highway Safety Bureau (NHSB), which later became the National Highway Traffic Safety Administration (NHTSA). The systematic approach to motor-vehicle-related injury prevention began with NHSB's first director, Dr. William Haddon (2). Haddon, a public health physician, recognized that standard public health methods and epidemiology could be applied to preventing motor-vehicle-related and other injuries. He defined interactions between host (human), agent (motor vehicle), and environmental (highway) factors before, during, and after crashes resulting in injuries. Tackling problems identified with each factor during each phase of the crash, NHSB initiated a campaign to prevent motor-vehicle-related injuries.

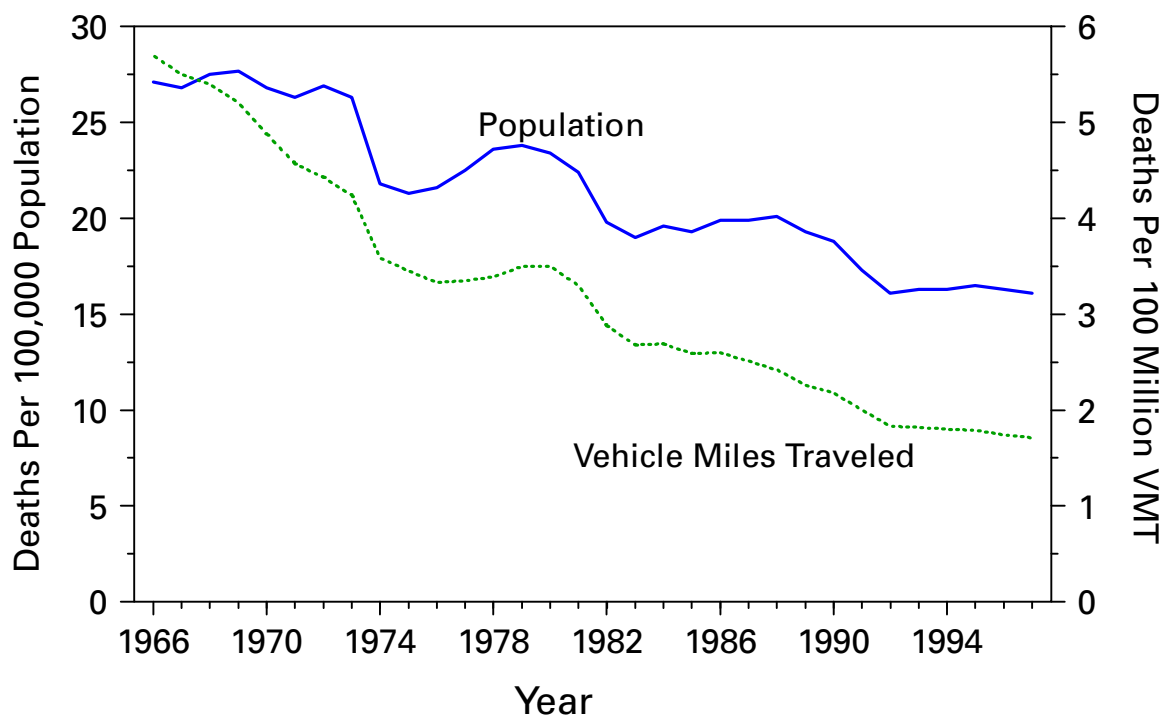
In 1966, passage of the Highway Safety Act and the National Traffic and Motor Vehicle Safety Act authorized the federal government to set and regulate standards for motor vehicles and highways, a mechanism necessary for effective prevention (2,3). Many changes in both vehicle and highway design followed this mandate. Vehicles (agent of injury) were built with new safety features, including head rests, energy-absorbing steering wheels, shatter-resistant windshields, and safety belts (3,4). Roads (environment) were improved by better delineation of curves (edge and center line stripes and reflectors), use of breakaway sign and utility poles, improved illumination, addition of barriers separating oncoming traffic lanes, and guardrails (4,5). The results were rapid. By 1970, motor-vehicle-related death rates were decreasing by both the public health measure (deaths per 100,000 population) and the traffic safety indicator (deaths per VMT) (Figure 2) (1).

Changes in driver and passenger (host) behavior also have reduced motor-vehicle crashes and injuries. Enactment and enforcement of traffic safety laws, reinforced by public education, have led to safer behavior choices. Examples include enforcement of laws against driving while intoxicated (DWI) and underage drinking, and enforcement of safety-belt, child-safety seat, and motorcycle helmet use laws (5,6).

Government and community recognition of the need for motor-vehicle safety prompted initiation of programs by federal and state governments, academic institutions, community-based organizations, and industry. NHTSA and the Federal Highway Administration within the U.S. Department of Transportation have provided national leadership for traffic and highway safety efforts since the 1960s (2). The National Center for Injury Prevention and Control, established at CDC in 1992, has contributed public health direction (7,8). State and local governments have enacted and enforced laws that affect motor-vehicle and highway safety, driver licensing and testing, vehicle inspections, and traffic regulations (2). Preventing motor-vehicle-related injuries has required collaboration among many professional disciplines (e.g., biomechanics has been essential to vehicle design and highway safety features). Citizen and community-based advocacy groups have played important prevention roles in areas such as drinking and driving and child-occupant protection (6). Consistent with the public/private partnerships that characterize motor-vehicle safety efforts, NHTSA sponsors "Buckle Up America" week (this year during May 24–31), which focuses on the need to always properly secure children in child-safety seats (additional information is

Motor-Vehicle Safety — Continued

FIGURE 2. Motor-vehicle–related death rates per 100,000 population and per 100 million vehicle miles traveled (VMT), by year — United States, 1966–1997



available by telephone, [202] 366-5399, or on the World-Wide Web at <http://www.nhtsa.dot.gov>.

SPECIFIC PUBLIC HEALTH CONCERNS

High-Risk Populations

Alcohol-impaired drivers. Annual motor-vehicle crash-related fatalities involving alcohol has decreased 39% since 1982, to approximately 16,000; these deaths account for 38.6% of all traffic deaths (9,10). Factors that may have contributed to this decline include increased public awareness of the dangers of drinking and driving; new and tougher state laws; stricter law enforcement; an increase in the minimum legal drinking age; prevention programs that offer alternatives such as safe rides (e.g., taxicabs and public transportation), designated drivers, and responsible alcohol-serving practices; and a decrease in per capita alcohol consumption (5,6).

Young drivers and passengers. Since 1975, motor-vehicle–related fatality rates have decreased 27% for young motor-vehicle occupants (ages 16–20 years). However, in 1997 the death rate was 28.3 per 100,000 population—more than twice that of the U.S. population (13.3 per 100,000 population) (9). Teenaged drivers are more likely than older drivers to speed, run red lights, make illegal turns, ride with an intoxicated driver, and drive after drinking alcohol or using drugs (11). Strategies that have contributed to improved motor-vehicle safety among young drivers include laws restricting purchase of alcohol among underaged youths (6) and some aspects of graduated licensing systems (e.g., nighttime driving restrictions) (12).

Motor-Vehicle Safety — Continued

Pedestrians. From 1975 to 1997, pedestrian fatality rates decreased 41%, from 4 per 100,000 population in 1975 to 2.3 in 1997 but still account for 13% of motor-vehicle-related deaths (9). Factors that may have reduced pedestrian fatalities include more and better sidewalks, pedestrian paths, playgrounds away from streets, one-way traffic flow, and restricted on-street parking (6).

Occupant-Protection Systems

Safety belts. In response to legislation, highly visible law enforcement, and public education, rates of safety belt use nationwide have increased from approximately 11% in 1981 to 68% in 1997 (8). Safety belt use began to increase following enactment of the first state mandatory-use laws in 1984 (6). All states except New Hampshire now have safety-belt use laws. Primary laws (which allow police to stop vehicles simply because occupants are not wearing safety belts) are more effective than secondary laws (which require that a vehicle be stopped for some other traffic violation) (6,13). The prevalence of safety belt use after enactment of primary laws increases 1.5–4.3 times, and motor-vehicle-related fatality rates decrease 13%–46% (13).

Child-safety and booster seats. All states have passed child passenger protection laws, but these vary widely in age and size requirements and the penalties imposed for noncompliance. Child-restraint use in 1996 was 85% for children aged <1 year and 60% for children aged 1–4 years (14). Since 1975, deaths among children aged <5 years have decreased 30% to 3.1 per 100,000 population, but rates for age groups 5–15 years have declined by only 11%–13% (9). Child seats are misused by as many as 80% of users (15–17). In addition, parents fail to recognize the need for booster seats for children who are too large for child seats but not large enough to be safely restrained in an adult lap-shoulder belt (18).

21ST CENTURY CHALLENGES

Despite the great success in reducing motor-vehicle-related death rates, motor-vehicle crashes remain the leading cause of injury-related deaths in the United States, accounting for 31% of all such deaths in 1996 (CDC, unpublished data, 1999). Furthermore, motor-vehicle-related injuries led all causes for deaths among persons aged 1–24 years. In 1997, motor-vehicle crashes resulted in 41,967 deaths (16 per 100,000 population), 3.4 million nonfatal injuries (1270 per 100,000 population) (9), and 23.9 million vehicles in crashes; cost estimates are \$200 billion (1).

The challenge for the 21st century is to sustain and improve motor-vehicle safety. Future success will require augmentation of the public health approach to 1) expand surveillance to better monitor nonfatal injuries, detect new problems, and set priorities; 2) direct research to emerging and priority problems; 3) implement the most effective programs and policies; and 4) strengthen interagency, multidisciplinary partnerships. Key public health activities will be to

- continue efforts shown to reduce alcohol-impaired driving and related fatalities and injuries.
- promote strategies such as graduated licensing that discourage teenage drinking and other risky driving behaviors such as speeding and encourage safety belt use.
- enhance pedestrian safety, especially for children and the elderly, through engineering solutions that reduce exposure to traffic and permit crossing streets safely

Motor-Vehicle Safety — Continued

and by encouraging safer pedestrian behaviors, such as crossing streets at intersections, and increasing visibility to drivers and driver awareness of pedestrians.

- accommodate the mobility needs of persons aged >65 years—a population that will almost double to 65 million by 2030—through a combination of alternative modes of transportation (e.g., walking and better public transportation) and development of strategies to reduce driving hazards (6,19).
- encourage the 30% of the population who do not wear safety belts to use them routinely.
- encourage proper use of age-appropriate child-safety seats and booster seats, especially for older children who have outgrown their child seats but are too small for adult lap-shoulder belts.
- conduct biomechanics research to better understand the causes of nonfatal disabling injuries, in particular brain and spinal cord injuries, as a foundation for prevention strategies.
- develop a comprehensive public health surveillance system at the federal, state, and local levels that track fatal and nonfatal motor-vehicle-related injuries and other injuries and diseases (i.e., outpatient and emergency department visits, hospitalizations, disabilities, and deaths) as a basis for setting prevention and research priorities.

Reported by: Div of Unintentional Injury Prevention, National Center for Injury Prevention and Control, CDC.

References

1. National Safety Council. Accident facts, 1998 edition. Itasca, Illinois: National Safety Council, 1998.
2. Committee on Injury Prevention and Control, Institute of Medicine. Reducing the burden of injury: advancing prevention and treatment. Washington, DC: National Academy Press, 1999.
3. Transportation Research Board. Safety research for a changing highway environment. Washington, DC: National Research Council, Transportation Research Board, 1990; special report no. 229.
4. Rice DP, MacKenzie EJ, Jones AS, et al. The cost of injury in the United States: a report to Congress. San Francisco, California: University of California, Institute of Health and Aging; Johns Hopkins University, Injury Prevention Center, 1989.
5. CDC/National Highway Traffic Safety Administration. Position papers from the Third National Injury Control Conference: setting the national agenda for injury control in the 1990s. Washington, DC: US Department of Health and Human Services, Public Health Service, CDC, 1992.
6. Graham JD. Injuries from traffic crashes: meeting the challenge. *Ann Rev Public Health* 1993;14:515-43.
7. Sleet DA, Bonzo S, Branche C. An overview of the National Center for Injury Prevention and Control at the Centers for Disease Control and Prevention. *Injury Prevention* 1998;4:308-12.
8. National Center for Injury Prevention and Control, CDC. Prevention of motor vehicle-related injuries: a compendium of articles from the *Morbidity and Mortality Weekly Report*, 1985-1996. Atlanta, Georgia: US Department of Health and Human Services, CDC, 1997.
9. National Highway Traffic Safety Administration. Traffic safety facts, 1997. Washington, DC: Department of Transportation, National Highway Traffic Safety Administration, 1998.
10. CDC. Alcohol involvement in fatal motor-vehicle crashes—United States, 1996-1997. *MMWR* 1998;47:1055-6,1063.
11. Hingson R, Howland J. Promoting safety in adolescents. In: Millstein SG, Petersen AC, Nightingale EO, eds. Promoting the health of adolescents: new directions for the 21st century. New York, New York: Oxford University Press, 1993.
12. Foss RD, Evenson KR. Effectiveness of graduated driver licensing in reducing motor vehicle crashes. *Am J Prev Med* 1999;16(1 suppl):47-56.

Motor-Vehicle Safety — Continued

13. Rivara FP, Thompson DC, Cummings P. Effectiveness of primary and secondary enforced seat belt laws. *Am J Prev Med* 1999;16(1 suppl):30–9.
14. National Highway Traffic Safety Administration. Research note. National occupant protection use survey, 1996—controlled intersection study. Washington DC: US Department of Transportation, National Highway Traffic Safety Administration, August 1997.
15. National Highway Traffic Safety Administration. NHTSA traffic tech note no. 133, observed patterns of misuse of child safety seats. Washington DC: US Department of Transportation, National Highway Traffic Safety Administration, September 1996.
16. CDC. Improper use of child safety seats—Kentucky, 1996. *MMWR* 1998;47:541–4.
17. Taft CH, Mickalide AD, Taft AR. Child passengers at risk in America: a national study of car seat misuse. Washington, DC: National Safe Kids Campaign, 1999.
18. CDC. National Child Passenger Safety Week—February 14–20, 1999. *MMWR* 1999;48:83–4.
19. Transportation Research Board. Transportation in an aging society: improving mobility and safety for older persons. Vol 1. Washington, DC: National Research Council, Transportation Research Board, 1988; special report no. 218.

**Update: Influenza Activity —
United States and Worldwide, 1998–99 Season,
and Composition of the 1999–2000 Influenza Vaccine**

In collaboration with the World Health Organization (WHO), the WHO international network of collaborating laboratories, and state and local health departments, CDC conducts surveillance to monitor influenza activity and to detect antigenic changes in the circulating strains of influenza viruses. This report summarizes surveillance for influenza in the United States and worldwide during the 1998–99 influenza season and describes the composition of the 1999–2000 influenza vaccine.

United States

Influenza activity began to increase in mid-January 1999 and peaked during the weeks ending February 6 through February 27. The predominant virus was influenza A(H3N2), although influenza type B viruses also circulated widely and were reported in all nine influenza surveillance regions. Influenza A(H1N1) viruses were sporadically isolated during the season in six of nine regions. During the weeks ending February 6 through February 27, 1999, >40 state and territorial epidemiologists reported widespread or regional influenza activity*, with widespread activity first reported from a state during the week ending January 16 and reported last during the week ending April 10. Beginning the week ending January 23, the proportion of patient visits to U.S. influenza sentinel physicians attributed to influenza-like illness (ILI) increased above baseline levels (0–3%) to 4% and remained elevated for 7 consecutive weeks. The proportion of visits for ILI was at baseline levels in all surveillance regions by the week ending March 20.

From October 4, 1998, through May 1, 1999, WHO and National Respiratory and Enteric Virus Surveillance System collaborating laboratories in the United States tested 86,826 specimens for respiratory viruses; 12,993 (15%) were positive for influenza. Of these, 10,041 (77%) were influenza type A, and 2952 (23%) were influenza

*Levels of activity are 1) *no activity*; 2) *sporadic*—sporadically occurring influenza-like illness (ILI) or culture-confirmed influenza with no outbreaks detected; 3) *regional*—outbreaks of ILI or culture-confirmed influenza in counties with a combined population of <50% of the state's total population; and 4) *widespread*—outbreaks of ILI or culture-confirmed influenza in counties with a combined population of ≥50% of the state's total population.

Influenza Activity — Continued

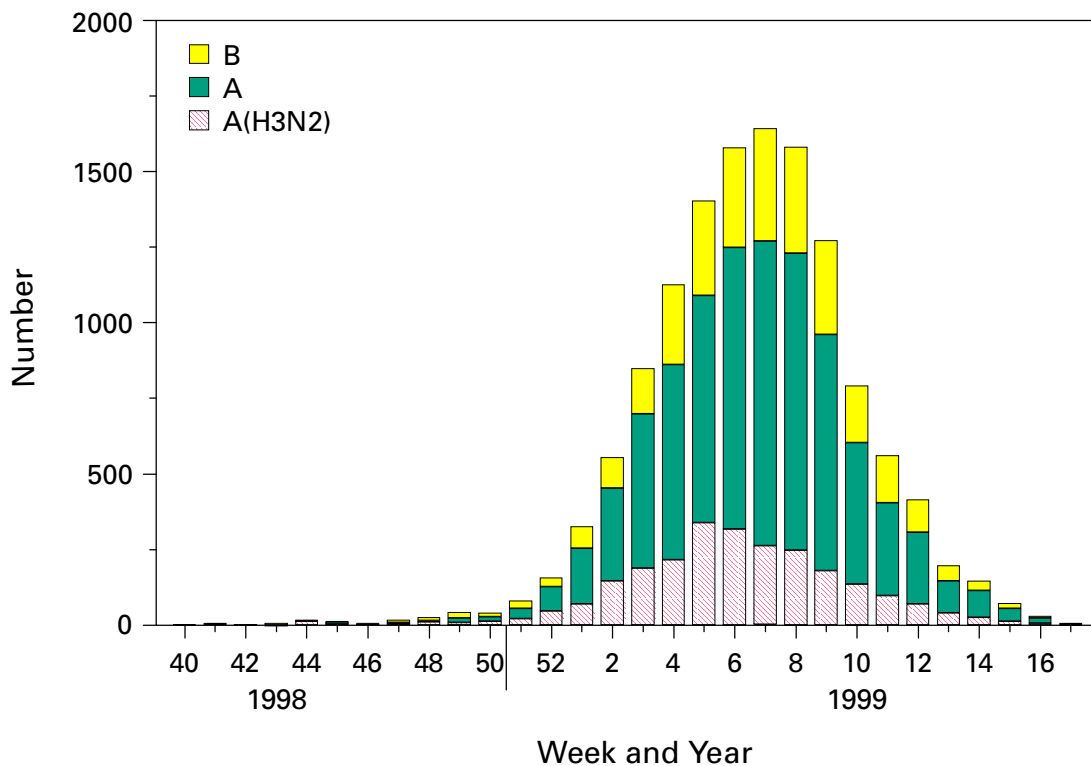
type B. Of the 2501 subtyped influenza A viruses, 2481 (99%) were type A(H3N2), and 20 (1%) were type A(H1N1) (Figure 1).

Beginning the week ending January 30, the proportion of deaths attributed to pneumonia and influenza (P&I) reported by 122 U.S. cities exceeded the epidemic threshold[†] for 12 consecutive weeks. During the week ending March 13, the proportion of deaths attributed to P&I peaked at 8.8% (Figure 2).

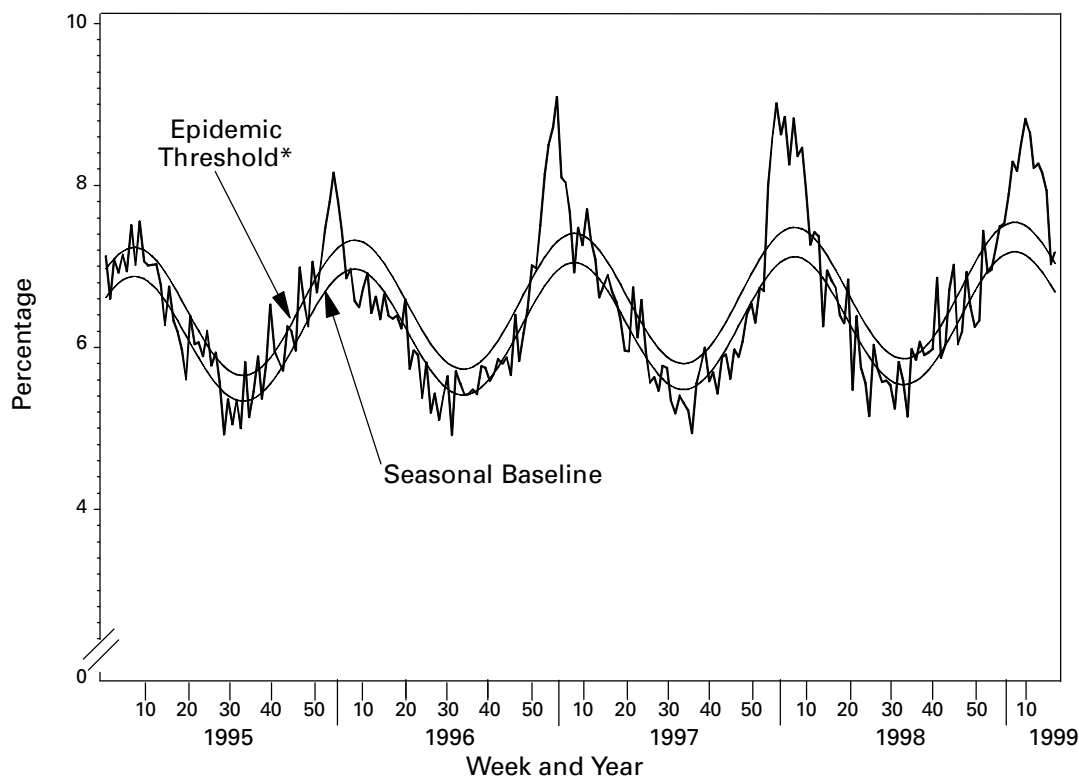
Of the 327 U.S. A(H3N2) isolates collected from October 4 through May 1 and antigenically characterized at CDC, 295 (90%) were similar to the 1998–99 A(H3N2) vaccine strain, A/Sydney/5/97, and 32 (10%) had antigenically drifted from A/Sydney/5/97 based on hemagglutination inhibition testing. Six U.S. influenza A(H1N1) isolates were characterized as A/Bayern/7/95-like viruses, antigenically distinct from A/Beijing/262/95, the 1998–99 A(H1N1) vaccine strain; however, the 1998–99 A(H1N1) vaccine strain produced high titers of antibodies that cross-react with A/Bayern/7/95. All 180 antigenically characterized B isolates were similar to the recommended type B vaccine strain, B/Beijing/184/93.

[†]An increase of 1.645 standard deviations above the seasonal baseline of P&I deaths is considered the epidemic threshold.

FIGURE 1. Number of influenza isolates* reported by the World Health Organization and National Respiratory and Enteric Virus Surveillance System collaborating laboratories, by week and year — United States, October 4, 1998, through May 1, 1999



*n=12,993.

*Influenza Activity — Continued***FIGURE 2. Weekly pneumonia and influenza mortality as a percentage of all deaths in 122 cities — United States, January 1995 through April 1999**

*The epidemic threshold is 1.645 standard deviations above the seasonal baseline. The expected seasonal baseline is projected using a robust regression procedure in which a periodic regression model is applied to observed percentages of deaths from pneumonia and influenza since 1983.

Worldwide

During October 1998–April 1999, influenza A(H3N2) viruses predominated in Austria, Bulgaria, Canada, China, Croatia, the Czech Republic, Denmark, Finland, France, Germany, Hong Kong, Iran, Israel, Japan, Korea, Latvia, Norway, Portugal, Romania, Russia, Slovakia, Sweden, Ukraine, and United Kingdom. Influenza A(H3N2) isolates also were reported from Algeria, Argentina, Australia, Belarus, Brazil, Ecuador, Egypt, French Guiana, Greece, Guam, Hungary, India, Italy, Malaysia, Martinique, the Netherlands, Nepal, Peru, the Philippines, Poland, Saudi Arabia, Senegal, Singapore, South Africa, Spain, Switzerland, Taiwan, and Thailand.

Influenza A(H1N1) viruses were isolated from sporadic cases in China, Croatia, France, Hong Kong, Japan, Korea, Martinique, the Philippines, Portugal, Russia, Slovakia, South Africa, Spain, and Thailand. During outbreaks in Peru in February and March, influenza A(H1N1) was the most frequently isolated influenza virus type/subtype. Other countries reporting influenza type A viruses include Belgium, Iceland, Lithuania, and Yugoslavia.

Influenza B isolates predominated in Belarus, Hungary, Poland, Spain, and Taiwan. The number of influenza type B isolates was approximately equal to the number of in-

Influenza Activity — Continued

influenza type A isolates in Belgium, Italy, the Netherlands, and Switzerland. Outbreaks associated with influenza type B viruses were reported in Brazil, French Guiana, and Japan. Influenza B viruses also were reported in Australia, Austria, Bulgaria, Canada, Chile, China, Croatia, the Czech Republic, Denmark, Finland, France, Germany, Greece, Guam, Hong Kong, Iceland, Israel, Latvia, Lithuania, Martinique, Nepal, Norway, Portugal, Romania, Russia, Saudi Arabia, Singapore, Slovakia, South Africa, Sweden, Thailand, United Kingdom, and Yugoslavia.

In April 1999, the first two cases of human influenza A(H9N2) illness were identified among children hospitalized in March in Hong Kong, Special Administrative Region, People's Republic of China. Case-patients were girls, aged 1 and 4 years; both recovered from their illnesses. Investigations are under way in Hong Kong to determine the potential impact of this new subtype in humans. Surveillance in Hong Kong has been maintained at enhanced levels since human influenza A(H5N1) infections were identified in 1997. An additional five suspected human cases of H9N2 illness from Guangdong Province, China, were reported in March 1999 (1). No human cases of influenza A(H5N1) illness have been identified since December 1997.

Composition of the 1999–2000 Vaccine

The Food and Drug Administration's Vaccines and Related Biologic Products Advisory Committee (VRBPAC) recommended that the 1999–2000 trivalent vaccine for the United States contain A/Sydney/5/97-like(H3N2), A/Beijing/262/95-like(H1N1), and B/Beijing/184/93-like viruses. This recommendation was based on antigenic analyses of recently isolated influenza viruses, epidemiologic data, and postvaccination serologic studies in humans.

Most influenza A(H3N2) isolates were A/Sydney/5/97-like viruses. A small percentage were distinguishable antigenically by hemagglutination-inhibition testing. However, these viruses were heterogeneous, and antigenic and genetic analysis did not reveal the emergence of a representative variant. Therefore, A/Sydney/5/97 will be retained as the influenza A(H3N2) 1999–2000 vaccine component.

A/Beijing/262/95-like (H1N1) viruses were identified in Asia and South America and A/Bayern/7/95-like (H1N1) viruses were identified in Europe and the United States during the preceding year. Persons who were vaccinated in an experimental vaccine trial with A/Beijing/262/95 in 1998 developed equivalent antibody levels against A/Bayern/7/95 and A/Beijing/262/95. Because A/Beijing/262/95-like viruses produce a cross-reactive antibody response to A/Bayern/7/95-like viruses, VRBPAC recommended retaining A/Beijing/262/95 for the 1999–2000 vaccine.

Influenza type B isolates from all continents except Asia were similar to B/Beijing/184/93, the 1998–99 recommended influenza B vaccine component. In the United States, circulating influenza B viruses remained similar to B/Beijing/184/93. Viruses antigenically related to the B/Victoria/2/87 reference strain were isolated in China, Japan, Singapore, and Thailand and co-circulated with B/Beijing/184/93-like viruses in these countries. However, B/Victoria/2/87-like viruses were not isolated outside of Asia. For the United States, VRBPAC recommended retaining a B/Beijing/184/93-like virus for the vaccine. Manufacturers will use the B/Yamanashi/16/98 strain as the 1999–2000 influenza B vaccine component because of its growth properties and its antigenic similarity to circulating B/Beijing/184/93-like viruses.

Reported by: Participating state and territorial epidemiologists and state public health laboratory directors. A Hay, PhD, WHO Collaborating Center for Reference and Research on Influenza,

Influenza Activity — Continued

National Institute for Medical Research, London, England. I Gust, MD, A Hampson, WHO Collaborating Center for Reference and Research on Influenza, Parkville, Australia. K Nerome, WHO Collaborating Center for Reference and Research on Influenza, National Institute of Infectious Diseases, Tokyo, Japan. W Lim, FRCPATH, Government Virus Unit; M Chan, FHKAM, TA Saw, FHKAM, KH Mak, FHKAM, Dept of Health, Hong Kong, Special Administrative Region, People's Republic of China. L Canas, Armstrong Laboratory, Brooks Air Force Base, Texas. Y Guo, MD, Institute of Virology, National Center for Preventive Medicine, Beijing, People's Republic of China. WHO National Influenza Centers, Div of Emerging and Other Communicable Diseases Surveillance and Control, Geneva, Switzerland. Div of Virology, Center for Biologics Evaluation and Research, Food and Drug Administration. National Respiratory Enteric Virus Surveillance System collaborating laboratories. WHO collaborating laboratories. Sentinel Physicians Influenza Surveillance System. WHO Collaborating Center for Reference and Research on Influenza, Influenza Br, Div of Viral and Rickettsial Diseases, National Center for Infectious Diseases, CDC.

Editorial Note: During the 1998–99 influenza season, both influenza A(H3N2) and influenza B viruses circulated worldwide, and influenza A(H3N2) predominated in the United States. This is the third consecutive year that influenza A(H3N2) viruses have predominated in the United States and the fourth consecutive year in which the proportion of deaths caused by P&I reported by 122 U.S. cities was elevated for several consecutive weeks. Overall, the 1998–99 influenza vaccine strains were well matched with the circulating virus strains.

Although influenza epidemics generally peak during December–March each year in temperate regions of the Northern Hemisphere, sporadic cases of influenza and occasionally large outbreaks can occur during the summer (2,3). In temperate regions of the Southern Hemisphere, the influenza season generally peaks during May–August. Influenza epidemics can occur any time of the year in the tropics. Therefore, U.S. physicians should continue to include influenza in the differential diagnosis of febrile respiratory illness during the summer, particularly among travelers to the tropics or Southern Hemisphere or among persons traveling with large international groups.

The identification of two cases of human influenza A(H9N2) infection in Hong Kong underscores the need for continued international virologic surveillance for influenza and the timely subtyping of influenza type A isolates. No plans exist to produce a vaccine against influenza A(H9N2). However, several laboratories are working to develop a candidate vaccine should the need arise.

Strains to be included in the influenza vaccine usually are selected during the preceding January through March because of scheduling requirements for production, quality control, packaging, distribution, and vaccine administration before the onset of the next influenza season. Recommendations of the Advisory Committee on Immunization Practices for the use of vaccine and antiviral agents for prevention and control of influenza were published in an *MMWR Recommendations and Reports* on April 30, 1999 (4).

References

1. Guo Y. Influenza as an emerging infection: influenza in China. Presented to the 4th International Conference on Emerging Infectious Diseases in the Pacific Rim. Bangkok, Thailand, 1998.
2. CDC. Influenza A outbreaks—Louisiana, August 1993. *MMWR* 1993;42:689–92.
3. CDC. Update: outbreak of influenza A infection—Alaska and the Yukon Territory, July–August 1998. *MMWR* 1998;47:685–8.
4. CDC. Prevention and control of influenza: recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR* 1999;48(no. RR-4):1–22.

Varicella-Related Deaths — Florida, 1998

During 1998, the Florida Department of Health (FDH) reported to CDC six fatal cases of varicella (chickenpox). FDH investigated all death certificates for 1998 with any mention of varicella as a contributory or underlying cause (1). Eight deaths were identified; two were reclassified as disseminated herpes zoster and six were related to varicella, for an annual varicella death rate of 0.4 deaths per million population. Two deaths occurred in children and four in adults; none had received varicella vaccine. The infection source was identified for three cases; two adults acquired varicella from children in the home, and one child acquired varicella from a classmate. One infection source was known to be unvaccinated; the other two were presumed to be unvaccinated. This report summarizes these varicella deaths and recommends prevention strategies.

Case 1. On February 19, a healthy, unvaccinated 6-year-old boy developed a varicella rash, abdominal pain, malaise, and loss of appetite following exposure to a classmate with varicella. The child had asthma and intermittently had been on inhaled steroid therapy but had not received steroids within the previous month. On February 22, he was hospitalized with hemorrhagic skin lesions, tachycardia, tachypnea, and a platelet count of 89,000 (normal range: 150,000–350,000). Several hours after admission he developed pulmonary edema and respiratory insufficiency and required mechanical ventilation. He died on February 23. Tissue samples of multiple organs had a positive polymerase chain reaction for varicella zoster virus (VZV).

Case 2. On March 27, a healthy, unvaccinated 58-year-old woman developed a varicella rash. She was born in Cuba and had moved to the United States in 1995. She did not have a history of or known exposure to varicella. On April 3, she was hospitalized with a 5-day history of increasing shortness of breath and productive cough and was diagnosed with varicella pneumonitis. She was treated with intravenous acyclovir and ceftriaxone, but developed adult respiratory distress syndrome (ARDS), disseminated intravascular coagulopathy, renal failure, and coma. She died on April 20.

Case 3. On April 27, a healthy, unvaccinated 29-year-old man developed a varicella rash. In early April, his children had contracted varicella. On April 29, he sought care at a local emergency department for chest pain and respiratory distress. Chest radiographs showed bilateral pulmonary interstitial infiltrates. On April 30, he began coughing up blood, was intubated because of increasing respiratory insufficiency, and was treated with intravenous acyclovir and antibiotics. He developed sepsis, ARDS, and multiorgan failure, and died May 12.

Case 4. On May 5, a 21-year-old unvaccinated female employee at a family child care center developed a varicella rash after exposure to a child with varicella. The employee had a history of asthma and was treated with 5 mg prednisolone per day. She was hospitalized on May 7 with varicella pneumonitis and received intravenous acyclovir on May 8, but she died the same day.

Case 5. On July 11, an 8-year-old unvaccinated boy developed a maculopapular rash diagnosed clinically as varicella and confirmed by direct fluorescent antibody test on July 23. He had acute lymphocytic leukemia (ALL) and had been on immunosuppressive therapy since receiving a bone marrow transplant on May 15. He had not had varicella and had no known varicella exposure. He was treated with varicella zoster immunoglobulin on July 16 and acyclovir on July 23. He died on July 25 after recur-

Varicella-Related Deaths — Continued

rence of leukemia with a graft-versus-host reaction complicated by disseminated varicella, cellulitis, ileus, and hypertension.

Case 6. On October 3, an unvaccinated 45-year-old man with diabetes mellitus, asthma, and cirrhosis of the liver developed a varicella rash. He was born in Cuba and had resided in the United States for 35 years. He had no history of varicella and no known exposure. He was not receiving steroids or immunosuppressive drugs. He was admitted to the hospital with varicella on October 5 and on October 6, treatment was initiated with oral acyclovir. He died on October 8; pathologic evidence from the post-mortem examination revealed VZV in all major organs.

Reported by: B Shelton, E Uribarri, M McCullom, S Heller, V Logsdon, B Keith, S Noll, P Molina, Florida county health depts; P Yambor, H Janowski, MPH, Bur of Immunizations, Florida Dept of Health; S Wiersma, MD, RS Hopkins, MD, State Epidemiologist, Bur of Epidemiology, Florida Dept of Health. SA Hall, MS, Association of Schools of Public Health, Atlanta, Georgia. Varicella Activity, Child Vaccine Preventable Diseases Br, Epidemiology and Surveillance Div, National Immunization Program; State Br, Div of Applied Public Health Training, Epidemiology Program Office; and an EIS Officer, CDC.

Editorial Note: Deaths continue to occur from varicella, a disease that is now vaccine-preventable. In Florida in 1998, the death rate was similar to the crude national varicella death rate of 0.4 per million population for 1990–1994, the 5 years preceding vaccine licensure (2). During this period, approximately 100 varicella-related deaths occurred yearly in the United States. Similar to Florida in 1998, in the rest of the United States 55% of varicella-associated deaths occurred among persons aged ≥ 20 years (CDC, unpublished data, 1998).

Varicella vaccine has been available since 1995 and is recommended for all susceptible persons aged ≥ 12 months (3,4). During July 1997–June 1998, the coverage level among children aged 19–35 months in Florida was 31%, slightly lower than the national coverage rate of 34% (CDC, unpublished data, 1999). In February 1999, the Advisory Committee on Immunization Practices (ACIP) recommended that all states require varicella vaccine for child care and school entry; implementation of this requirement should increase vaccine coverage dramatically. ACIP also strengthened recommendations for the vaccination of susceptible adults at high risk for exposure, including men living in households with children (5). ACIP continues to recommend that vaccination be considered for all susceptible adolescents and adults.

Five of the six case-patients who died because of varicella were eligible for vaccination. The sixth, a child with active ALL (case 5), was ineligible for vaccination. Under a special protocol, children with ALL who meet inclusion criteria may be vaccinated (3). Although one case-patient was receiving systemic steroids when she contracted varicella, the dose was not large enough to be a contraindication; varicella vaccine can be administered to adults receiving < 20 mg prednisone per day or its equivalent, and to children receiving < 2 mg per kg body weight per day or a total of < 20 mg per day (3).

Two case-patients (2 and 6) were aged > 30 years and were born and raised in Cuba. The epidemiology of varicella in tropical regions differs from that in temperate regions. VZV is heat labile and may not survive and transmit well in warm climates. In the tropics, age distribution of cases and VZV seroprevalence data have indicated a higher proportion of cases occurring among adults (6,7). Clinicians should be aware of the greater susceptibility of adults to varicella when evaluating persons from tropical countries.

Varicella-Related Deaths — Continued

Widespread implementation of ACIP recommendations will protect healthy children and adults, thus protecting persons with contraindications to vaccination from exposure to VZV. This includes infants aged <12 months, pregnant women, persons with cancers or other immunocompromising conditions, and persons on high-dose systemic steroids (3). Efforts to increase varicella vaccination of susceptible children, adolescents, and adults should include educating health-care providers that severe morbidity and death from varicella are preventable.

Varicella-related deaths became nationally notifiable on January 1, 1999. A standard form for reporting varicella-related deaths is available through state public health departments. Detailed investigations of these deaths, including history of varicella, presence of immunocompromising conditions, and initiation and progression of rash, will assist state health departments in differentiating between varicella-related and disseminated herpes zoster-related deaths. Varicella death surveillance data will be used by state health departments and CDC to improve prevention efforts.

References

1. Council of State and Territorial Epidemiologists. Inclusion of varicella-related deaths in the National Public Health Surveillance System. Atlanta, Georgia: Council of State and Territorial Epidemiologists, 1998 (position statement no. ID-10).
2. Seward J, Meyer P, Singleton J, et al. Varicella incidence and mortality, USA, 1990-1994. In: Abstracts of the 36th annual meeting of the Infectious Diseases Society of America. Denver, Colorado: Infectious Diseases Society of America, November 1998.
3. CDC. Prevention of varicella: recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 1996;45(no. RR-11).
4. Committee on Infectious Diseases, American Academy of Pediatrics. Recommendations for the use of live attenuated varicella vaccine. Pediatrics 1995;95:791-6.
5. CDC. Prevention of varicella: updated recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 1999;48 (in press).
6. Longfield JN, Winn RE, Gibson RL, Juchau SV, Hoffman PV. Varicella outbreaks in Army recruits from Puerto Rico. Arch Intern Med 1990;150:970-4.
7. Garnett GP, Cox MJ, Bundy DA, Didier JM, St. Catherine J. The age of infection with varicella-zoster virus in St Lucia, West Indies. Epidemiol Infect 1993;110:361-72.

*Notice to Readers***Possible Estuary-Associated Syndrome**

Pfiesteria piscicida (Pp) is an estuarine dinoflagellate that has been associated with fish kill events in estuaries along the eastern seaboard and possibly with human health effects (1,2). CDC, in collaboration with other federal, state, and local government agencies and academic institutions, is conducting multistate surveillance, epidemiologic studies, and laboratory research for possible estuary-associated syndrome (PEAS), including possible Pp-related human illness.

The surveillance system tracks PEAS rather than Pp-related illness because a Pp toxin(s) has not been identified and therefore a biomarker of exposure has not been developed. Detection of Pp or fish with lesions in water has been used as evidence of suspected Pp toxin(s) (3). However, Pp has been found in waters where there were no reports of harm to fish or persons. In addition, lesions on fish can result from various

Notices to Readers — Continued

biologic, physical, and environmental factors. Therefore, detecting Pp or observing fish with lesions may not be indicative of the presence of putative Pp toxin(s).

PEAS surveillance criteria resulted from a series of CDC-sponsored multistate workshops and differ from criteria developed in 1997 (3). Persons are considered to have PEAS if 1) they report developing symptoms within 2 weeks after exposure to estuarine water; 2) they report memory loss or confusion of any duration and/or three or more selected symptoms (i.e., headache, skin rash at the site of water contact, sensation of burning skin, eye irritation, upper respiratory irritation, muscle cramps, and gastrointestinal symptoms) that—with the exception of skin rash at the site of water contact and sensation of burning skin—persist for ≥ 2 weeks; and 3) a health-care provider cannot identify another cause for the symptoms.

It is unclear whether persons exposed to Pp while swimming, boating, or engaging in other recreational activities in coastal waters are at risk for developing illness. PEAS is not infectious and has not been associated with eating fish or shellfish caught in waters where Pp has been found. However, persons should avoid areas with large numbers of diseased, dying, or dead fish and should promptly report the event to the state's environmental or natural resource agency. In addition, persons should not go in or near the water in areas that are closed officially by the state and should not harvest or eat fish or shellfish from these areas. Persons who experience health problems after exposure to estuarine water, a fish-disease event, or a fish-kill site should contact their health-care provider and state or local public health agency.

Several states have established PEAS information lines: Delaware, (800) 523-3336; Florida, (888) 232-8635; Maryland, (888) 584-3110; North Carolina, (888) 823-6915; South Carolina, (888) 481-0125; and Virginia, (888) 238-6154.

Reported by: AL Hathcock, PhD, Delaware Dept of Health and Social Svcs. B Hughes, PhD, Florida Dept of Health. D Matuszak, MD, Maryland Dept of Health and Mental Hygiene. JS Cline, DDS, North Carolina Dept of Health and Human Svcs. R Ball, MD, South Carolina Dept of Health and Environmental Control. S Jenkins, VMD, Virginia Dept of Health. Health Studies Br and Surveillance Br, Div of Environmental Hazards and Health Effects, Div of Environmental Health and Laboratory Sciences, National Center for Environmental Health, CDC.

References

1. Smith CG, Music SI. *Pfiesteria* in North Carolina: the medical inquiry continues. *North Carolina Medical Journal* 1998;59:216-9.
2. Grattan LM, Oldach D, Tracy JK, et al. Learning and memory difficulties after environmental exposure to waterways containing toxin-producing *Pfiesteria* or *Pfiesteria*-like dinoflagellates. *Lancet* 1998;352:532-9.
3. CDC. Results of the public health response to *Pfiesteria* workshop—Atlanta, Georgia, September 29-30, 1997. *MMWR* 1997;46:951-2.

*Notice to Readers***National Dog Bite Prevention Week — May 16-22, 1999**

The Humane Society of the United States (HSUS) is sponsoring the fifth annual National Dog Bite Prevention Week during May 16-22, 1999. In recognition of the importance of a combined effort to prevent dog bites, HSUS and cosponsoring organizations are conducting events throughout the week that are designed to educate the

Notices to Readers — Continued

public about responsible dog ownership and dog bite safety. Cosponsors include CDC, the American Medical Association, the American Academy of Pediatrics, the American Veterinary Medical Association, the American Society of Plastic and Reconstructive Surgeons, State Farm Insurance Companies, the National Animal Control Association, the Independent Insurance Agents of America, and the U.S. Postal Service.

Campaign kits and additional information about National Dog Bite Prevention Week are available on the World-Wide Web at <http://www.nodogbites.org>*; by mail from The Humane Society of the United States, 2100 L Street, N.W., Washington, DC 20037; and by telephone, (202) 452-1100.

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

Notice to Readers

**Availability for Public Comment of Draft Document,
1999 USPHS/IDSA Guidelines for the Prevention of Opportunistic Infections
in Persons Infected with Human Immunodeficiency Virus**

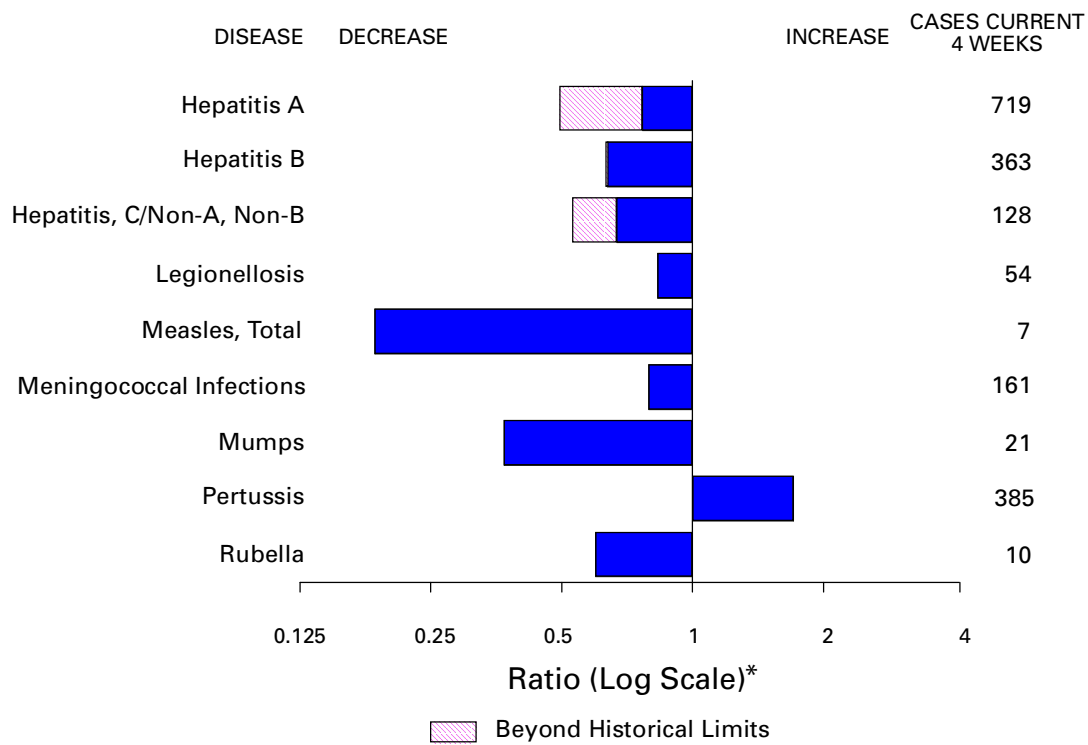
The *1999 USPHS/IDSA Guidelines for the Prevention of Opportunistic Infections in Persons Infected with Human Immunodeficiency Virus*, prepared by representatives of the Public Health Service, the Infectious Diseases Society of America, and other federal agencies, universities, professional societies, and community organizations, is now available for public comment. The draft document includes recommendations to prevent major parasitic, bacterial, fungal, and viral infections in persons with human immunodeficiency virus (HIV) infection in the era of highly active antiretroviral therapy.

The document is available on the World-Wide Web site of the AIDS Treatment Information Service, <http://www.hivatis.org>*, and in hard copy from the Division of HIV/AIDS Prevention—Intervention, Research, and Support, National Center for HIV, STD, and TB Prevention, Mailstop E-49, CDC, 1600 Clifton Rd., N.E., Atlanta, GA 30333; telephone (404) 639-2004; fax (404) 639-2007.

To ensure consideration, written comments on this draft document must be received at the above address no later than June 1, 1999.

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

FIGURE I. Selected notifiable disease reports, comparison of provisional 4-week totals ending May 8, 1999, 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 8, 1999 (18th Week)

	Cum. 1999		Cum. 1999
Anthrax	-	Plague	-
Brucellosis	12	Poliomyelitis, paralytic	-
Cholera	-	Psittacosis	11
Congenital rubella syndrome	2	Rabies, human	-
Cryptosporidiosis*	393	Rocky Mountain spotted fever (RMSF)	51
Diphtheria	-	Streptococcal disease, invasive Group A	765
Encephalitis: California*	3	Streptococcal toxic-shock syndrome*	17
eastern equine*	-	Syphilis, congenital [¶]	30
St. Louis*	-	Tetanus	5
western equine*	-	Toxic-shock syndrome	36
Hansen Disease	30	Trichinosis	5
Hantavirus pulmonary syndrome* [†]	2	Typhoid fever	93
Hemolytic uremic syndrome, post-diarrheal*	8	Yellow fever	-
HIV infection, pediatric* [‡]	57		

-: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 from reports to the Division of HIV/AIDS Prevention—Surveillance and Epidemiology, National Center for HIV, STD, and TB Prevention (NCHSTP), last update April 25, 1999.

[¶] Updated from reports to the Division of STD Prevention, NCHSTP.

TABLE II. Provisional cases of selected notifiable diseases, United States, weeks ending May 8, 1999, and May 9, 1998 (18th Week)

Reporting Area	AIDS		Chlamydia		<i>Escherichia coli</i> O157:H7		Gonorrhea		Hepatitis C/NA,NB	
	Cum. 1999*	Cum. 1998	Cum. 1999	Cum. 1998	NETSS†	PHLIS‡	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998
					Cum. 1999	Cum. 1999				
UNITED STATES	14,890	15,998	186,449	195,545	399	188	99,882	114,056	854	1,561
NEW ENGLAND	779	483	6,638	7,274	60	40	2,087	1,997	66	28
Maine	15	10	193	319	4	-	15	12	1	-
N.H.	23	12	332	346	3	2	22	31	-	-
Vt.	5	10	176	136	6	1	19	10	2	2
Mass.	500	206	3,183	2,983	32	19	925	729	62	26
R.I.	52	42	785	873	1	3	205	123	1	-
Conn.	184	203	1,969	2,617	14	15	901	1,092	-	-
MID. ATLANTIC	3,612	4,629	25,247	24,228	29	2	12,789	13,359	57	126
Upstate N.Y.	406	547	N	N	26	-	1,580	2,272	35	105
N.Y. City	1,894	2,654	13,137	12,578	-	1	5,474	5,382	-	-
N.J.	765	820	3,522	4,004	3	1	1,738	2,404	-	-
Pa.	547	608	8,587	7,646	N	-	3,997	3,301	22	21
E.N. CENTRAL	1,105	1,291	27,182	29,809	63	34	18,446	21,983	220	183
Ohio	183	247	7,539	9,350	32	8	4,603	5,680	-	5
Ind.	147	271	-	-	5	8	726	2,187	-	4
Ill.	505	487	9,779	7,906	15	7	6,953	6,361	8	22
Mich.	215	217	7,730	7,852	11	5	5,420	5,904	212	152
Wis.	55	69	2,134	4,701	N	6	744	1,851	-	-
W.N. CENTRAL	285	281	6,229	12,128	77	25	2,078	5,772	41	9
Minn.	44	48	2,179	2,468	23	17	816	844	-	-
Iowa	35	14	914	1,498	8	2	221	461	-	3
Mo.	102	138	-	4,173	8	5	-	3,089	39	4
N. Dak.	4	4	102	350	3	-	7	32	-	-
S. Dak.	12	7	580	580	1	1	55	98	-	-
Nebr.	26	31	865	1,031	27	-	350	394	-	2
Kans.	62	39	1,589	2,028	7	-	629	854	2	-
S. ATLANTIC	4,155	4,065	39,923	38,323	45	20	28,885	30,627	75	40
Del.	50	44	938	885	2	-	583	471	-	-
Md.	467	488	2,810	2,810	2	-	2,589	3,137	22	3
D.C.	160	339	N	N	-	-	964	1,237	-	-
Va.	231	285	4,484	3,170	11	7	2,868	2,146	7	1
W. Va.	24	34	766	1,729	1	1	200	558	11	3
N.C.	269	271	7,837	7,774	8	6	6,757	6,649	-	10
S.C.	402	275	6,444	6,567	5	1	3,313	4,207	12	-
Ga.	583	504	7,671	8,723	3	-	5,240	7,010	1	8
Fla.	1,969	1,825	8,973	6,665	13	5	6,371	5,212	22	15
E.S. CENTRAL	634	586	14,668	13,608	30	7	11,570	12,862	79	49
Ky.	104	85	2,634	2,152	11	-	1,185	1,203	6	7
Tenn.	286	180	4,847	4,440	12	3	3,739	3,743	37	39
Ala.	112	183	3,788	3,478	4	3	3,467	4,448	1	3
Miss.	132	138	3,399	3,538	3	1	3,179	3,468	35	-
W.S. CENTRAL	1,553	1,949	28,295	28,997	15	9	15,883	17,178	95	335
Ark.	56	71	1,922	1,205	3	2	884	1,400	1	3
La.	162	330	5,903	4,321	3	3	4,749	3,633	79	1
Okla.	46	107	2,768	3,623	4	4	1,433	1,932	2	1
Tex.	1,289	1,441	17,702	19,848	5	-	8,817	10,213	13	330
MOUNTAIN	545	513	9,529	10,542	32	16	2,545	2,855	60	194
Mont.	4	12	431	352	1	-	16	20	4	4
Idaho	8	12	501	640	1	2	26	53	4	77
Wyo.	3	1	281	244	2	3	10	11	20	46
Colo.	103	91	2,351	2,690	12	4	700	817	12	10
N. Mex.	21	76	1,172	1,284	2	1	209	249	4	30
Ariz.	274	198	3,161	3,657	8	3	1,148	1,324	12	1
Utah	54	44	635	774	6	2	65	75	2	14
Nev.	78	79	997	901	-	1	371	306	2	12
PACIFIC	2,222	2,201	28,738	30,636	48	35	5,599	7,423	161	597
Wash.	117	162	4,006	3,931	12	16	734	666	5	8
Oreg.	50	64	1,932	-	14	10	265	-	4	8
Calif.	2,016	1,928	21,353	25,209	22	8	4,384	6,489	152	539
Alaska	6	11	680	695	-	-	124	113	-	1
Hawaii	33	36	767	801	-	1	92	155	-	41
Guam	1	-	-	115	N	-	-	14	-	-
P.R.	493	661	U	U	4	U	116	144	-	-
V.I.	13	15	N	N	N	U	U	U	U	U
Amer. Samoa	-	-	U	U	N	U	U	U	U	U
C.N.M.I.	-	-	N	N	N	U	-	14	-	-

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

*Updated monthly from reports to the Division of HIV/AIDS Prevention—Surveillance and Epidemiology, National Center for HIV, STD, and TB Prevention, last update April 25, 1999.

†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 8, 1999, and May 9, 1998 (18th Week)

Reporting Area	Legionellosis		Lyme Disease		Malaria		Syphilis (Primary & Secondary)		Tuberculosis		Rabies, Animal
	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998	Cum. 1999*	Cum. 1998*	Cum. 1999
UNITED STATES	321	405	1,330	1,518	341	397	2,033	2,469	1,699	2,760	1,756
NEW ENGLAND	20	22	203	344	14	18	26	28	114	133	290
Maine	2	1	-	2	1	-	-	1	6	3	54
N.H.	2	2	-	7	-	3	-	1	-	2	15
Vt.	3	1	-	2	1	-	1	2	-	1	51
Mass.	5	8	122	82	4	13	16	19	59	69	59
R.I.	2	4	10	24	-	2	1	-	16	16	35
Conn.	6	6	71	227	8	-	8	5	33	42	76
MID. ATLANTIC	75	90	825	959	84	115	88	101	626	690	355
Upstate N.Y.	24	24	331	469	26	27	10	12	85	95	243
N.Y. City	5	22	5	24	22	59	41	19	394	419	U
N.J.	5	4	118	118	24	17	11	36	147	176	69
Pa.	41	40	371	348	12	12	26	34	U	U	43
E.N. CENTRAL	69	151	26	24	35	38	353	360	102	131	18
Ohio	28	53	19	17	8	2	31	60	U	U	5
Ind.	5	28	5	4	4	1	32	57	U	U	-
Ill.	10	20	1	1	13	19	238	144	U	U	-
Mich.	25	23	1	2	8	14	49	72	72	91	13
Wis.	1	27	U	U	2	2	3	27	30	40	-
W.N. CENTRAL	14	25	17	14	14	21	9	65	159	123	186
Minn.	-	3	8	3	2	8	4	5	68	41	36
Iowa	9	4	2	8	4	3	1	-	14	2	42
Mo.	4	8	-	2	7	7	-	47	57	50	6
N. Dak.	-	-	1	-	-	1	-	-	1	3	48
S. Dak.	1	-	-	-	-	-	-	1	3	7	25
Nebr.	-	8	-	-	-	-	1	4	6	4	1
Kans.	-	2	6	1	1	2	3	8	10	16	28
S. ATLANTIC	38	43	157	126	93	82	705	976	295	516	667
Del.	2	6	2	3	-	1	1	9	-	8	3
Md.	5	9	116	103	26	31	147	261	U	U	138
D.C.	-	3	1	4	7	5	14	30	15	39	-
Va.	8	4	7	4	19	9	55	71	44	89	165
W. Va.	N	N	4	4	1	-	2	-	15	20	39
N.C.	6	4	20	1	7	7	189	274	137	255	141
S.C.	6	4	2	1	-	3	91	120	84	105	56
Ga.	-	-	2	7	13	13	101	110	U	U	61
Fla.	11	12	5	4	26	13	105	101	U	U	64
E.S. CENTRAL	51	15	32	15	7	11	403	408	108	219	90
Ky.	44	8	16	2	2	1	43	43	U	U	19
Tenn.	5	3	7	7	3	5	205	203	U	U	30
Ala.	2	1	6	6	2	3	105	83	102	129	41
Miss.	-	3	3	-	-	2	50	79	6	90	-
W.S. CENTRAL	1	9	2	4	8	11	330	317	77	717	31
Ark.	-	-	-	3	-	1	27	49	42	38	-
La.	1	-	-	-	6	3	90	102	U	U	-
Okla.	-	3	2	-	1	1	72	16	35	39	31
Tex.	-	6	-	1	1	6	141	150	-	640	-
MOUNTAIN	19	20	3	1	14	20	47	90	55	78	59
Mont.	-	1	-	-	2	-	-	-	5	2	21
Idaho	-	-	-	-	1	1	-	-	-	4	-
Wyo.	-	1	1	-	-	-	-	-	1	1	23
Colo.	2	4	-	-	5	6	1	4	U	U	1
N. Mex.	1	2	1	-	2	6	-	10	21	21	-
Ariz.	2	3	-	-	4	4	43	68	U	U	14
Utah	8	8	1	-	-	1	1	3	13	21	-
Nev.	6	1	-	1	-	2	2	5	15	29	-
PACIFIC	34	30	65	31	72	81	72	124	163	153	60
Wash.	7	3	1	1	5	6	16	6	88	77	-
Oreg.	1	-	1	3	7	7	-	-	U	U	-
Calif.	25	27	63	27	55	67	54	118	U	U	55
Alaska	1	-	-	-	-	-	1	-	22	16	5
Hawaii	-	-	-	-	5	1	1	-	53	60	-
Guam	-	1	-	-	-	1	-	-	-	37	-
P.R.	-	-	-	-	-	-	73	81	-	46	27
V.I.	U	U	U	U	U	U	U	U	U	U	U
Amer. Samoa	U	U	U	U	U	U	U	U	U	U	U
C.N.M.I.	-	-	-	-	-	-	-	98	-	54	-

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

*Cumulative reports of provisional tuberculosis cases for 1998 and 1999 are unavailable ("U") for some areas using the Tuberculosis Information Management System (TIMS).

TABLE III. Provisional cases of selected notifiable diseases preventable by vaccination, United States, weeks ending May 8, 1999, and May 9, 1998 (18th Week)

Reporting Area	<i>H. influenzae</i> , invasive		Hepatitis (Viral), by type				Measles (Rubeola)					
	Cum. 1999*	Cum. 1998	A		B		Indigenous		Imported†		Total	
			Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998	1999	Cum. 1999	1999	Cum. 1999	Cum. 1999	Cum. 1998
UNITED STATES	424	433	5,557	7,805	1,989	3,016	-	16	-	10	26	24
NEW ENGLAND	31	30	67	113	34	52	-	-	-	1	1	1
Maine	2	2	2	10	-	-	-	-	-	-	-	-
N.H.	5	1	7	6	4	7	-	-	-	1	1	-
Vt.	4	2	3	7	1	2	-	-	-	-	-	-
Mass.	14	23	19	35	18	24	-	-	-	-	-	1
R.I.	-	2	7	8	11	8	-	-	-	-	-	-
Conn.	6	-	29	47	-	11	U	-	U	-	-	-
MID. ATLANTIC	55	66	334	579	254	446	-	-	-	2	2	9
Upstate N.Y.	33	24	82	123	63	106	-	-	-	2	2	-
N.Y. City	5	16	50	211	56	130	-	-	-	-	-	-
N.J.	17	24	42	103	33	81	U	-	U	-	-	8
Pa.	-	2	160	142	102	129	-	-	-	-	-	1
E.N. CENTRAL	50	68	1,147	1,076	170	584	-	-	-	-	-	4
Ohio	24	28	298	122	35	27	-	-	-	-	-	-
Ind.	1	13	29	97	4	271	-	-	-	-	-	3
Ill.	20	25	164	281	-	92	-	-	-	-	-	-
Mich.	5	-	631	482	131	160	-	-	-	-	-	1
Wis.	-	2	25	94	-	34	-	-	-	-	-	-
W.N. CENTRAL	38	29	259	645	108	133	-	-	-	-	-	-
Minn.	12	17	21	28	13	11	-	-	-	-	-	-
Iowa	9	1	58	306	19	18	-	-	-	-	-	-
Mo.	11	7	141	248	64	86	-	-	-	-	-	-
N. Dak.	-	-	-	2	-	2	U	-	U	-	-	-
S. Dak.	1	-	8	3	-	1	-	-	-	-	-	-
Nebr.	3	-	17	16	7	6	-	-	-	-	-	-
Kans.	2	4	14	42	5	9	-	-	-	-	-	-
S. ATLANTIC	105	77	631	537	381	279	-	1	-	3	4	6
Del.	-	-	1	2	-	-	-	-	-	-	-	1
Md.	29	24	119	137	63	56	-	-	-	-	-	1
D.C.	2	-	24	24	9	6	-	-	-	-	-	-
Va.	10	10	48	95	37	33	-	1	-	2	3	2
W. Va.	1	3	5	-	8	2	-	-	-	-	-	-
N.C.	16	11	50	36	69	76	-	-	-	-	-	-
S.C.	2	1	8	12	36	-	-	-	-	-	-	-
Ga.	21	18	160	114	45	57	-	-	-	-	-	1
Fla.	24	10	216	117	114	49	-	-	-	1	1	1
E.S. CENTRAL	39	24	179	154	161	155	-	-	-	-	-	-
Ky.	6	5	31	8	22	17	-	-	-	-	-	-
Tenn.	20	13	89	88	79	109	-	-	-	-	-	-
Ala.	11	5	33	33	36	29	-	-	-	-	-	-
Miss.	2	1	26	25	24	-	-	-	-	-	-	-
W.S. CENTRAL	25	25	1,090	1,399	158	443	-	1	-	2	3	-
Ark.	1	-	16	17	15	29	-	-	-	-	-	-
La.	5	11	38	13	48	11	-	-	-	-	-	-
Okla.	17	12	171	194	40	24	-	-	-	-	-	-
Tex.	2	2	865	1,175	55	379	-	1	-	2	3	-
MOUNTAIN	46	66	533	1,164	215	277	-	-	-	-	-	-
Mont.	1	-	7	19	8	3	U	-	U	-	-	-
Idaho	1	-	19	84	10	14	-	-	-	-	-	-
Wyo.	1	-	3	18	1	2	-	-	-	-	-	-
Colo.	6	12	98	90	35	36	-	-	-	-	-	-
N. Mex.	10	3	20	64	87	104	-	-	-	-	-	-
Ariz.	23	31	316	726	41	65	-	-	-	-	-	-
Utah	3	3	23	73	10	23	-	-	-	-	-	-
Nev.	1	17	47	90	23	30	-	-	-	-	-	-
PACIFIC	35	48	1,317	2,138	508	647	-	14	-	2	16	4
Wash.	-	2	94	352	18	46	-	-	-	-	-	1
Oreg.	14	24	91	163	29	67	-	8	-	-	8	-
Calif.	16	19	1,128	1,589	449	523	-	6	-	2	8	3
Alaska	4	1	3	9	7	5	-	-	-	-	-	-
Hawaii	1	2	1	25	5	6	-	-	-	-	-	-
Guam	-	-	-	-	-	1	U	-	U	-	-	-
P.R.	1	2	58	16	53	215	-	-	-	-	-	-
V.I.	U	U	U	U	U	U	U	U	U	U	U	U
Amer. Samoa	U	U	U	U	U	U	U	U	U	U	U	U
C.N.M.I.	-	-	-	1	-	28	U	-	U	-	-	-

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

*Of 84 cases among children aged <5 years, serotype was reported for 31 and of those, 4 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 8, 1999, and May 9, 1998 (18th Week)

Reporting Area	Meningococcal Disease		Mumps			Pertussis			Rubella		
	Cum. 1999	Cum. 1998	1999	Cum. 1999	Cum. 1998	1999	Cum. 1999	Cum. 1998	1999	Cum. 1999	Cum. 1998
UNITED STATES	945	1,166	5	127	324	29	1,755	1,483	4	23	210
NEW ENGLAND	44	59	-	1	-	-	145	288	-	3	33
Maine	3	4	-	-	-	-	-	5	-	-	-
N.H.	-	1	-	1	-	-	30	21	-	-	-
Vt.	3	1	-	-	-	-	10	26	-	-	-
Mass.	30	27	-	-	-	-	97	230	-	3	6
R.I.	2	3	-	-	-	-	3	-	-	-	-
Conn.	6	23	U	-	-	U	5	6	U	-	27
MID. ATLANTIC	81	121	1	16	161	5	423	184	1	3	96
Upstate N.Y.	21	29	-	2	3	3	375	95	-	2	88
N.Y. City	19	14	-	3	153	-	10	9	-	-	4
N.J.	16	32	U	-	2	U	-	8	U	-	4
Pa.	25	46	1	11	3	2	38	72	1	1	-
E.N. CENTRAL	139	171	-	15	29	1	136	169	-	-	-
Ohio	70	59	-	6	13	1	94	54	-	-	-
Ind.	7	26	-	-	2	-	2	45	-	-	-
Ill.	43	50	-	3	4	-	22	12	-	-	-
Mich.	19	17	-	6	10	-	18	20	-	-	-
Wis.	-	19	-	-	-	-	-	38	-	-	-
W.N. CENTRAL	113	99	-	4	18	-	24	106	2	2	7
Minn.	26	16	-	-	9	-	-	58	-	-	-
Iowa	28	14	-	3	6	-	11	25	2	2	-
Mo.	40	42	-	1	2	-	10	9	-	-	1
N. Dak.	-	-	U	-	1	U	-	-	U	-	-
S. Dak.	5	6	-	-	-	-	2	4	-	-	-
Nebr.	4	4	-	-	-	-	1	4	-	-	-
Kans.	10	17	-	-	-	-	-	6	-	-	6
S. ATLANTIC	169	168	2	29	24	11	100	95	-	2	4
Del.	2	1	-	-	-	-	-	-	-	-	-
Md.	25	19	-	3	-	1	29	20	-	1	-
D.C.	1	-	1	2	-	-	-	1	-	-	-
Va.	22	19	-	8	4	1	13	6	-	-	-
W. Va.	2	5	-	-	-	-	1	1	-	-	-
N.C.	20	25	-	5	6	3	25	40	-	1	3
S.C.	21	28	-	2	4	-	8	10	-	-	-
Ga.	26	37	-	-	1	2	8	1	-	-	-
Fla.	50	34	1	9	9	4	16	16	-	-	1
E.S. CENTRAL	81	88	-	1	3	1	34	41	-	-	-
Ky.	24	15	-	-	-	-	3	17	-	-	-
Tenn.	27	32	-	-	-	-	21	11	-	-	-
Ala.	18	27	-	1	1	1	7	12	-	-	-
Miss.	12	14	-	-	2	-	3	1	-	-	-
W.S. CENTRAL	63	141	1	15	23	5	52	81	-	5	54
Ark.	17	16	-	-	-	-	4	11	-	-	-
La.	27	24	-	1	1	-	3	-	-	-	-
Okla.	13	21	-	1	-	5	7	6	-	-	-
Tex.	6	80	1	13	22	-	38	64	-	5	54
MOUNTAIN	71	67	-	8	13	2	185	258	1	6	5
Mont.	-	2	U	-	-	U	1	1	U	-	-
Idaho	7	3	-	-	1	-	85	90	-	-	-
Wyo.	2	3	-	-	1	-	2	7	-	-	-
Colo.	20	16	-	3	1	1	36	57	-	-	-
N. Mex.	8	10	N	N	N	-	13	55	-	-	1
Ariz.	24	22	-	-	4	-	21	23	-	5	1
Utah	5	7	-	4	1	1	25	12	-	-	2
Nev.	5	4	-	1	5	-	2	13	1	1	1
PACIFIC	184	252	1	38	53	4	656	261	-	2	11
Wash.	24	26	-	1	4	3	399	99	-	-	9
Oreg.	32	43	N	N	N	-	8	20	-	-	-
Calif.	120	178	1	31	34	1	241	138	-	2	1
Alaska	4	1	-	1	2	-	3	-	-	-	-
Hawaii	4	4	-	5	13	-	5	4	-	-	1
Guam	-	1	U	-	2	U	-	-	U	-	-
P.R.	2	3	-	-	1	-	4	2	-	-	-
V.I.	U	U	U	U	U	U	U	U	U	U	U
Amer. Samoa	U	U	U	U	U	U	U	U	U	U	U
C.N.M.I.	-	-	U	-	2	U	-	1	U	-	-

N: Not notifiable

U: Unavailable

-: no reported cases

TABLE IV. Deaths in 122 U.S. cities,* week ending
May 8, 1999 (18th Week)

Reporting Area	All Causes, By Age (Years)						P&J [†] Total	Reporting Area	All Causes, By Age (Years)						P&J [†] Total
	All Ages	>65	45-64	25-44	1-24	<1			All Ages	>65	45-64	25-44	1-24	<1	
NEW ENGLAND	472	321	83	46	17	5	44	S. ATLANTIC	1,084	679	238	107	37	23	64
Boston, Mass.	152	78	34	29	8	3	18	Atlanta, Ga.	U	U	U	U	U	U	U
Bridgeport, Conn.	34	27	5	2	-	-	3	Baltimore, Md.	170	113	36	17	1	3	18
Cambridge, Mass.	11	11	-	-	-	-	1	Charlotte, N.C.	100	61	21	10	4	4	6
Fall River, Mass.	27	24	2	1	-	-	-	Jacksonville, Fla.	130	61	28	23	16	2	5
Hartford, Conn.	U	U	U	U	U	U	U	Miami, Fla.	105	64	26	13	1	1	-
Lowell, Mass.	27	22	3	1	1	-	2	Norfolk, Va.	48	34	7	4	2	1	1
Lynn, Mass.	13	12	-	1	-	-	-	Richmond, Va.	52	31	8	7	3	3	2
New Bedford, Mass.	31	29	1	1	-	-	2	Savannah, Ga.	84	52	24	4	2	2	7
New Haven, Conn.	44	30	8	3	2	1	5	St. Petersburg, Fla.	63	48	9	4	1	1	6
Providence, R.I.	U	U	U	U	U	U	U	Tampa, Fla.	202	144	37	12	4	5	14
Somerville, Mass.	5	5	-	-	-	-	-	Washington, D.C.	121	68	36	13	3	1	5
Springfield, Mass.	43	30	6	3	4	-	7	Wilmington, Del.	9	3	6	-	-	-	-
Waterbury, Conn.	23	17	5	1	-	-	2	E.S. CENTRAL	868	612	162	54	20	18	51
Worcester, Mass.	62	36	19	4	2	1	4	Birmingham, Ala.	168	114	29	11	9	3	20
MID. ATLANTIC	2,042	1,452	385	132	38	35	85	Chattanooga, Tenn.	82	66	11	3	2	-	7
Albany, N.Y.	43	35	6	1	-	1	1	Knoxville, Tenn.	122	95	25	-	1	1	1
Allentown, Pa.	U	U	U	U	U	U	U	Lexington, Ky.	81	57	16	5	1	2	4
Buffalo, N.Y.	90	59	19	8	2	2	3	Memphis, Tenn.	148	91	37	11	5	4	11
Camden, N.J.	41	28	8	2	-	3	2	Mobile, Ala.	76	59	11	2	1	3	3
Elizabeth, N.J.	U	U	U	U	U	U	U	Montgomery, Ala.	55	34	13	7	-	1	-
Erie, Pa.	47	38	6	3	-	-	3	Nashville, Tenn.	136	96	20	15	1	4	5
Jersey City, N.J.	49	35	8	3	2	1	-	W.S. CENTRAL	1,323	887	261	98	49	28	84
New York City, N.Y.	1,139	764	243	92	25	15	23	Austin, Tex.	71	47	13	6	2	3	5
Newark, N.J.	U	U	U	U	U	U	U	Baton Rouge, La.	42	28	12	2	-	-	1
Paterson, N.J.	33	22	8	-	-	3	-	Corpus Christi, Tex.	58	42	10	4	1	-	1
Philadelphia, Pa.	200	159	26	13	1	17	17	Dallas, Tex.	183	114	38	17	10	4	1
Pittsburgh, Pa.‡	62	43	12	3	2	2	5	El Paso, Tex.	84	57	13	8	5	1	7
Reading, Pa.	33	29	4	-	-	-	3	Ft. Worth, Tex.	81	51	21	5	3	1	10
Rochester, N.Y.	130	96	21	4	4	5	9	Houston, Tex.	355	226	76	24	18	11	29
Schenectady, N.Y.	11	8	3	-	-	-	1	Little Rock, Ark.	70	39	20	6	5	-	4
Scranton, Pa.	38	36	2	-	-	-	4	New Orleans, La.	U	U	U	U	U	U	U
Syracuse, N.Y.	79	62	12	2	1	2	8	San Antonio, Tex.	229	172	38	15	2	2	15
Trenton, N.J.	25	20	4	-	1	-	6	Shreveport, La.	61	46	6	5	1	3	8
Utica, N.Y.	22	18	3	1	-	-	-	Tulsa, Okla.	89	65	14	6	2	2	3
Yonkers, N.Y.	U	U	U	U	U	U	U	MOUNTAIN	895	614	173	72	19	17	54
E.N. CENTRAL	2,137	1,459	441	137	63	37	151	Albuquerque, N.M.	103	74	17	5	3	4	3
Akron, Ohio	48	30	16	2	-	-	1	Boise, Idaho	34	26	6	1	1	-	3
Canton, Ohio	26	21	4	1	-	-	2	Colo. Springs, Colo.	56	38	12	6	-	-	2
Chicago, Ill.	489	307	107	44	25	6	41	Denver, Colo.	108	70	24	10	1	3	11
Cincinnati, Ohio	99	71	19	4	2	3	13	Las Vegas, Nev.	236	163	44	20	7	2	17
Cleveland, Ohio	150	95	41	8	4	2	5	Ogden, Utah	23	19	2	2	-	-	2
Columbus, Ohio	177	114	44	13	2	4	19	Phoenix, Ariz.	85	53	20	10	1	1	2
Dayton, Ohio	130	104	20	3	2	1	10	Pueblo, Colo.	31	24	5	-	-	2	1
Detroit, Mich.	193	113	57	11	10	2	4	Salt Lake City, Utah	107	69	23	7	4	4	8
Evansville, Ind.	34	26	5	1	1	1	-	Tucson, Ariz.	112	78	20	11	2	1	5
Fort Wayne, Ind.	71	51	11	6	2	1	5	PACIFIC	1,300	909	252	86	24	28	133
Gary, Ind.	18	9	3	5	1	-	-	Berkeley, Calif.	17	10	5	-	-	2	1
Grand Rapids, Mich.	74	56	11	2	2	3	7	Fresno, Calif.	87	62	14	6	1	4	13
Indianapolis, Ind.	153	106	29	11	3	4	8	Glendale, Calif.	U	U	U	U	U	U	U
Lansing, Mich.	50	40	4	4	-	2	5	Honolulu, Hawaii	68	41	22	3	-	2	3
Milwaukee, Wis.	103	79	17	4	2	1	12	Long Beach, Calif.	78	54	16	4	1	3	10
Peoria, Ill.	55	41	11	1	1	1	2	Los Angeles, Calif.	U	U	U	U	U	U	U
Rockford, Ill.	50	36	9	3	-	2	3	Pasadena, Calif.	20	16	2	1	-	1	2
South Bend, Ind.	52	38	11	1	2	-	3	Portland, Oreg.	134	87	24	15	6	2	7
Toledo, Ohio	112	83	14	10	3	2	10	Sacramento, Calif.	191	145	30	10	2	4	30
Youngstown, Ohio	53	39	8	3	1	2	1	San Diego, Calif.	120	73	29	9	4	4	16
W.N. CENTRAL	647	455	109	45	21	17	51	San Francisco, Calif.	138	95	29	11	3	-	13
Des Moines, Iowa	U	U	U	U	U	U	U	San Jose, Calif.	174	124	35	8	4	3	16
Duluth, Minn.	37	28	4	4	1	-	3	Santa Cruz, Calif.	40	29	7	4	-	-	6
Kansas City, Kans.	U	U	U	U	U	U	U	Seattle, Wash.	111	82	19	7	2	1	6
Kansas City, Mo.	118	73	26	11	3	5	12	Spokane, Wash.	54	42	7	3	-	2	6
Lincoln, Nebr.	56	45	8	2	1	-	7	Tacoma, Wash.	68	49	13	5	1	-	4
Minneapolis, Minn.	201	149	26	17	5	4	22	TOTAL	10,768 [§]	7,388	2,104	777	288	208	717
Omaha, Nebr.	76	59	15	-	-	2	3								
St. Louis, Mo.	121	68	28	10	10	5	-								
St. Paul, Minn.	38	33	2	1	1	1	4								
Wichita, Kans.	U	U	U	U	U	U	U								

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.

**Contributors to the Production of the *MMWR* (Weekly)
Weekly Notifiable Disease Morbidity Data and 122 Cities Mortality Data**

Samuel L. Groseclose, D.V.M., M.P.H.

State Support Team

Robert Fagan
Jose Aponte
Gerald Jones
David Nitschke
Carol A. Worsham

CDC Operations Team

Carol M. Knowles
Deborah A. Adams
Willie J. Anderson
Patsy A. Hall
Amy K. Henion

The *Morbidity and Mortality Weekly Report (MMWR)* Series is prepared by the Centers for Disease Control and Prevention (CDC) and is available free of charge in electronic format and on a paid subscription basis for paper copy. To receive an electronic copy on Friday of each week, send an e-mail message to listserv@listserv.cdc.gov. The body content should read *SUBscribe mmwr-toc*. Electronic copy also is available from CDC's World-Wide Web server at <http://www.cdc.gov/> or from CDC's file transfer protocol server at <ftp.cdc.gov>. To subscribe for paper copy, contact Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402; telephone (202) 512-1800.

Data in the weekly *MMWR* are provisional, based on weekly reports to CDC by state health departments. The reporting week concludes at close of business on Friday; compiled data on a national basis are officially released to the public on the following Friday. Address inquiries about the *MMWR* Series, including material to be considered for publication, to: Editor, *MMWR* Series, Mailstop C-08, CDC, 1600 Clifton Rd., N.E., Atlanta, GA 30333; telephone (888) 232-3228.

All material in the *MMWR* Series is in the public domain and may be used and reprinted without permission; citation as to source, however, is appreciated.

Director, Centers for Disease Control
and Prevention
Jeffrey P. Koplan, M.D., M.P.H.
Deputy Director, Centers for Disease
Control and Prevention
Claire V. Broome, M.D.

Director, Epidemiology Program Office
Stephen B. Thacker, M.D., M.Sc.
Editor, *MMWR* Series
John W. Ward, M.D.
Managing Editor,
MMWR (weekly)
Karen L. Foster, M.A.

Writers-Editors,
MMWR (weekly)
Jill Crane
David C. Johnson
Teresa F. Rutledge
Caran R. Wilbanks
Desktop Publishing
Morie M. Higgins
Peter M. Jenkins

☆ U.S. Government Printing Office: 1999-733-228/87077 Region IV
