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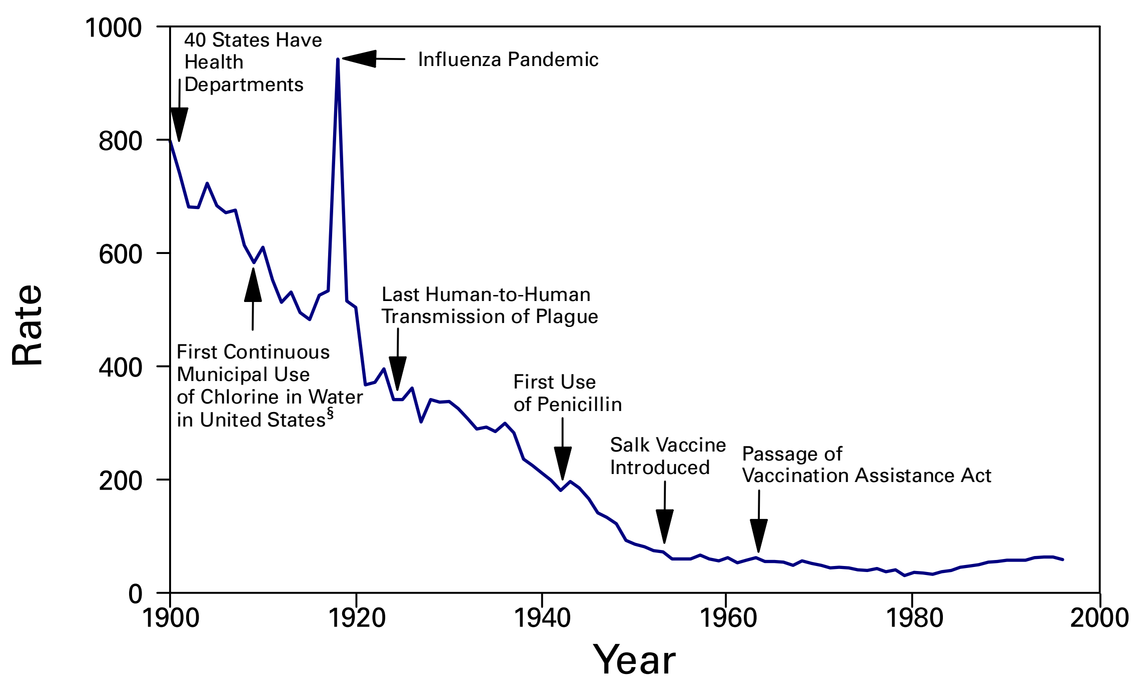
Achievements in Public Health, 1900–1999

Control of Infectious Diseases

Deaths from infectious diseases have declined markedly in the United States during the 20th century (Figure 1). This decline contributed to a sharp drop in infant and child mortality (*1,2*) and to the 29.2-year increase in life expectancy (*2*). In 1900, 30.4% of all deaths occurred among children aged <5 years; in 1997, that percentage was only 1.4%. In 1900, the three leading causes of death were pneumonia, tuberculosis

FIGURE 1. Crude death rate* for infectious diseases — United States, 1900–1996†



*Per 100,000 population per year.
†Adapted from Armstrong GL, Conn LA, Pinner RW. Trends in infectious disease mortality in the United States during the 20th century. JAMA 1999:281;61–6.
§American Water Works Association. Water chlorination principles and practices: AWWA manual M20. Denver, Colorado: American Water Works Association, 1973.

Control of Infectious Diseases — Continued

(TB), and diarrhea and enteritis, which (together with diphtheria) caused one third of all deaths (Figure 2). Of these deaths, 40% were among children aged <5 years (*1*). In 1997, heart disease and cancers accounted for 54.7% of all deaths, with 4.5% attributable to pneumonia, influenza, and human immunodeficiency virus (HIV) infection (*2*). Despite this overall progress, one of the most devastating epidemics in human history occurred during the 20th century: the 1918 influenza pandemic that resulted in 20 million deaths, including 500,000 in the United States, in <1 year—more than have died in as short a time during any war or famine in the world (*3*). HIV infection, first recognized in 1981, has caused a pandemic that is still in progress, affecting 33 million people and causing an estimated 13.9 million deaths (*4*). These episodes illustrate the volatility of infectious disease death rates and the unpredictability of disease emergence.

Public health action to control infectious diseases in the 20th century is based on the 19th century discovery of microorganisms as the cause of many serious diseases (e.g., cholera and TB). Disease control resulted from improvements in sanitation and hygiene, the discovery of antibiotics, and the implementation of universal childhood vaccination programs. Scientific and technologic advances played a major role in each of these areas and are the foundation for today's disease surveillance and control systems. Scientific findings also have contributed to a new understanding of the evolving relation between humans and microbes (*5*).

CONTROL OF INFECTIOUS DISEASES

Sanitation and Hygiene

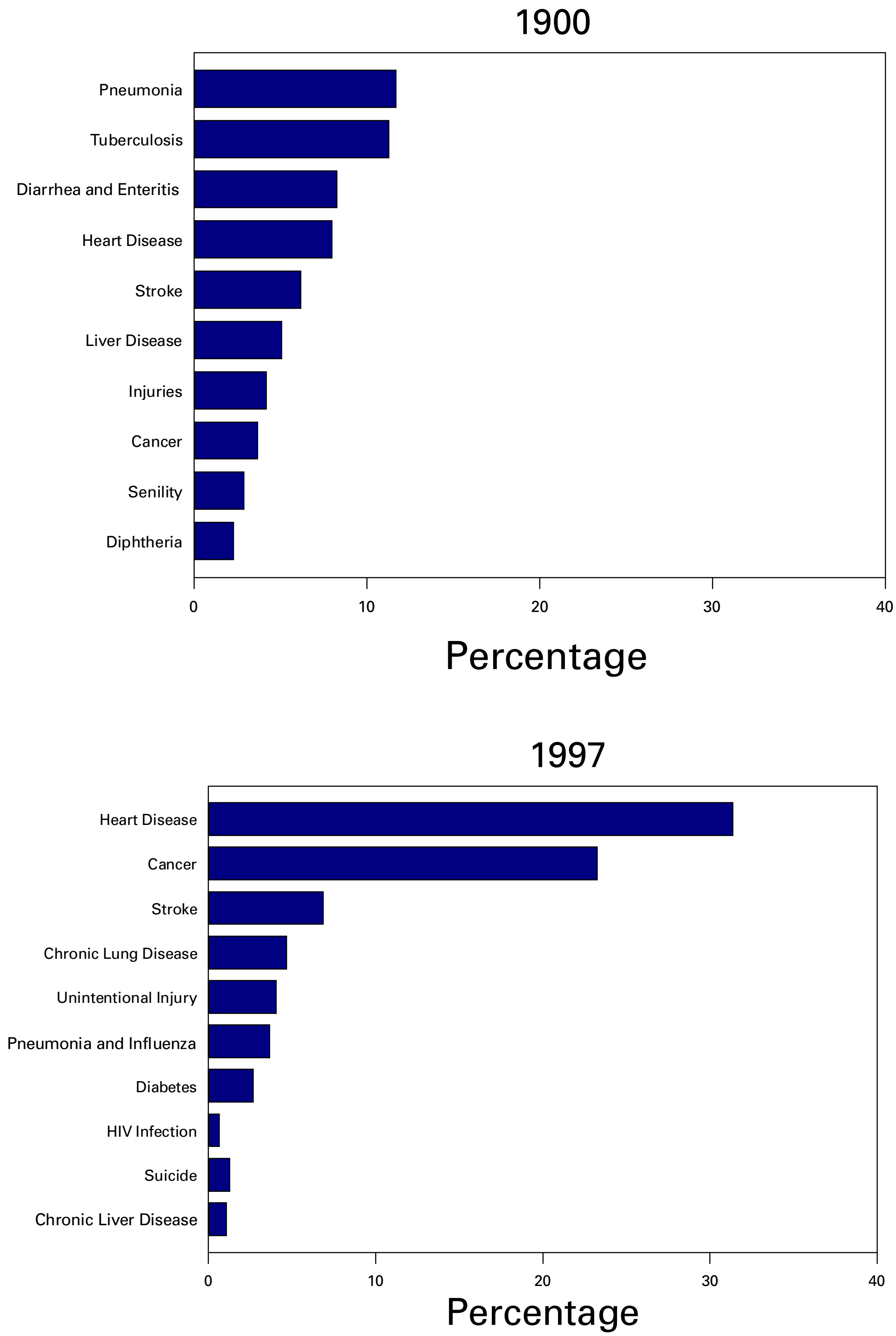
The 19th century shift in population from country to city that accompanied industrialization and immigration led to overcrowding in poor housing served by inadequate or nonexistent public water supplies and waste-disposal systems. These conditions resulted in repeated outbreaks of cholera, dysentery, TB, typhoid fever, influenza, yellow fever, and malaria.

By 1900, however, the incidence of many of these diseases had begun to decline because of public health improvements, implementation of which continued into the 20th century. Local, state, and federal efforts to improve sanitation and hygiene reinforced the concept of collective "public health" action (e.g., to prevent infection by providing clean drinking water). By 1900, 40 of the 45 states had established health departments. The first county health departments were established in 1908 (*6*). From the 1930s through the 1950s, state and local health departments made substantial progress in disease prevention activities, including sewage disposal, water treatment, food safety, organized solid waste disposal, and public education about hygienic practices (e.g., foodhandling and handwashing). Chlorination and other treatments of drinking water began in the early 1900s and became widespread public health practices, further decreasing the incidence of waterborne diseases. The incidence of TB also declined as improvements in housing reduced crowding and TB-control programs were initiated. In 1900, 194 of every 100,000 U.S. residents died from TB; most were residents of urban areas. In 1940 (before the introduction of antibiotic therapy), TB remained a leading cause of death, but the crude death rate had decreased to 46 per 100,000 persons (*7*).

Animal and pest control also contributed to disease reduction. Nationally sponsored, state-coordinated vaccination and animal-control programs eliminated

Control of Infectious Diseases — Continued

FIGURE 2. The 10 leading causes of death as a percentage of all deaths — United States, 1900 and 1997



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dog-to-dog transmission of rabies. Malaria, once endemic throughout the southeastern United States, was reduced to negligible levels by the late 1940s; regional mosquito-control programs played an important role in these efforts. Plague also diminished; the U.S. Marine Hospital Service (which later became the Public Health Service) led quarantine and ship inspection activities and rodent and vector-control operations. The last major rat-associated outbreak of plague in the United States occurred during 1924–1925 in Los Angeles. This outbreak included the last identified instance of human-to-human transmission of plague (through inhalation of infectious respiratory droplets from coughing patients) in this country.

Vaccination

Strategic vaccination campaigns have virtually eliminated diseases that previously were common in the United States, including diphtheria, tetanus, poliomyelitis, smallpox, measles, mumps, rubella, and *Haemophilus influenzae* type b meningitis (*8*). With the licensure of the combined diphtheria and tetanus toxoids and pertussis vaccine in 1949, state and local health departments instituted vaccination programs, aimed primarily at poor children. In 1955, the introduction of the Salk poliovirus vaccine led to federal funding of state and local childhood vaccination programs. In 1962, a federally coordinated vaccination program was established through the passage of the Vaccination Assistance Act—landmark legislation that has been renewed continuously and now supports the purchase and administration of a full range of childhood vaccines.

The success of vaccination programs in the United States and Europe inspired the 20th-century concept of "disease eradication"—the idea that a selected disease could be eradicated from all human populations through global cooperation. In 1977, after a decade-long campaign involving 33 nations, smallpox was eradicated worldwide—approximately a decade after it had been eliminated from the United States and the rest of the Western Hemisphere. Polio and dracunculiasis may be eradicated by 2000.

Antibiotics and Other Antimicrobial Medicines

Penicillin was developed into a widely available medical product that provided quick and complete treatment of previously incurable bacterial illnesses, with a wider range of targets and fewer side effects than sulfa drugs. Discovered fortuitously in 1928, penicillin was not developed for medical use until the 1940s, when it was produced in substantial quantities and used by the U.S. military to treat sick and wounded soldiers.

Antibiotics have been in civilian use for 57 years (see box 1) and have saved the lives of persons with streptococcal and staphylococcal infections, gonorrhea, syphilis, and other infections. Drugs also have been developed to treat viral diseases (e.g., herpes and HIV infection); fungal diseases (e.g., candidiasis and histoplasmosis); and parasitic diseases (e.g., malaria). The microbiologist Selman Waksman led much of the early research in discovering antibiotics (see box 2). However, the emergence of drug resistance in many organisms is reversing some of the therapeutic miracles of the last 50 years and underscores the importance of disease prevention.

1. The First American Civilian Saved by Penicillin

The first U.S. civilian whose life was saved by penicillin died in June 1999 at the age of 90 years. In March 1942, a 33-year-old woman was hospitalized for a month with a life-threatening streptococcal infection at a New Haven, Connecticut, hospital. She was delirious, and her temperature reached almost 107 F (41.6 C). Treatments with sulfa drugs, blood transfusions, and surgery had no effect.

As a last resort, her doctors injected her with a tiny amount of an obscure experimental drug called penicillin. Her hospital chart, now at the Smithsonian Institution, indicates a sharp overnight drop in temperature; by the next day she was no longer delirious. She survived to marry, raise a family, and meet Sir Alexander Fleming, the scientist who discovered penicillin. In 1945, Fleming was awarded the Nobel Prize in Physiology and Medicine, along with Ernst Chain and Howard Florey, who helped develop penicillin into a widely available medical product.

TECHNOLOGIC ADVANCES IN DETECTING AND MONITORING INFECTIOUS DISEASES

Technologic changes that increased capacity for detecting, diagnosing, and monitoring infectious diseases included development early in the century of serologic testing and more recently the development of molecular assays based on nucleic acid and antibody probes. The use of computers and electronic forms of communication enhanced the ability to gather, analyze, and disseminate disease surveillance data.

Serologic Testing

Serologic testing came into use in the 1910s and has become a basic tool to diagnose and control many infectious diseases. Syphilis and gonorrhea, for example, were widespread early in the century and were difficult to diagnose, especially during the latent stages. The advent of serologic testing for syphilis helped provide a more accurate description of this public health problem and facilitated diagnosis of infection. For example, in New York City, serologic testing in 1901 indicated that 5%–19% of all men had syphilitic infections (*9*).

Viral Isolation and Tissue Culture

The first virus isolation techniques came into use at the turn of the century. They involved straining infected material through successively smaller sieves and inoculating test animals or plants to show the purified substance retained disease-causing activity. The first “filtered” viruses were tobacco mosaic virus (1882) and foot-and-mouth disease virus of cattle (1898). The U.S. Army Command under Walter Reed filtered yellow fever virus in 1900. The subsequent development of cell culture in the 1930s paved the way for large-scale production of live or heat-killed viral vaccines. Negative staining techniques for visualizing viruses under the electron microscope were available by the early 1960s.

Molecular Techniques

During the last quarter of the 20th century, molecular biology has provided powerful new tools to detect and characterize infectious pathogens. The use of nucleic acid hybridization and sequencing techniques has made it possible to characterize the

Control of Infectious Diseases — Continued

2. Selman Abraham Waksman, Ph.D.

In 1943, Selman Abraham Waksman (July 22, 1888–August 16, 1973) led a team of Rutgers University researchers that isolated streptomycin, the first antibiotic effective against tuberculosis (TB) in humans. In 1952, Waksman received the Nobel Prize for this discovery.

Waksman grew up in the small Russian village of Novaya Priluka. In 1910, he settled in New Jersey, where a cousin operated a small farm. An interest in scientific farming brought him to nearby Rutgers College of Agriculture, where he earned a bachelor's degree in science in 1915 and a master's degree a year later. He completed his doctorate at the University of California, Berkeley, in 2 years, and returned to Rutgers to take a position as lecturer in soil microbiology.

Waksman preferred the term "microbiology" to the conventional "bacteriology" because "not the bacteria but the fungi and the actinomycetes formed my major interests among the microorganisms" (*1*). By the 1930s, he was a leading figure in microbiology, attracting talented graduate students, including René Dubos, whose work led to the discovery in 1939 of gramicidin, the first clinically useful topical antibiotic.

Dubos' success and the introduction of penicillin prompted Waksman to put his graduate students and assistants to work looking for antibiotics. In 1943, a Waksman student, Albert Schatz, isolated streptomycin. In 1944, clinical trials demonstrated the drug's effectiveness against gram-negative bacteria including *Mycobacterium tuberculosis*. Despite substantial problems with toxicity and drug resistance, streptomycin soon formed the foundation of multidrug therapies for TB.

With the introduction and use of antibiotics, mortality of TB was reduced drastically. In the United States, from 1945 to 1955, TB mortality decreased from 39.9 deaths per 100,000 population (*2*) to 9.1. Around the world, TB remained (and remains) a substantial health problem, but until the emergence of multidrug-resistant TB, many in the United States shared Waksman's optimism, expressed in 1964, that "the final chapter of the battle against tuberculosis appears to be at hand" (*3*).

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causative agents of previously unknown diseases (e.g., hepatitis C, human ehrlichiosis, hantavirus pulmonary syndrome, acquired immunodeficiency syndrome [AIDS], and Nipah virus disease).

Molecular tools have enhanced capacity to track the transmission of new threats and find new ways to prevent and treat them. Had AIDS emerged 100 years ago, when laboratory-based diagnostic methods were in their infancy, the disease might have remained a mysterious syndrome for many decades. Moreover, the drugs used to treat HIV-infected persons and prevent perinatal transmission (e.g., replication analogs and protease inhibitors) were developed based on a modern understanding of retroviral replication at the molecular level.

CHALLENGES FOR THE 21ST CENTURY

Success in reducing morbidity and mortality from infectious diseases during the first three quarters of the 20th century led to complacency about the need for continued research into treatment and control of infectious microbes (*10*). However, the appearance of AIDS, the re-emergence of TB (including multidrug-resistant strains), and an overall increase in infectious disease mortality during the 1980s and early 1990s (Figure 1) provide additional evidence that as long as microbes can evolve, new diseases will appear. The emergence of new diseases underscores the importance of disease prevention through continual monitoring of underlying factors that may encourage the emergence or re-emergence of diseases.

Molecular genetics has provided a new appreciation of the remarkable ability of microbes to evolve, adapt, and develop drug resistance in an unpredictable and dynamic fashion (see box 3). Resistance genes are transmitted from one bacterium to another on plasmids, and viruses evolve through replication errors and reassortment of gene segments and by jumping species barriers. Recent examples of microbial evolution include the emergence of a virulent strain of avian influenza in Hong Kong (1997–98); the multidrug-resistant W strain of *M. tuberculosis* in the United States in 1991 (*11*); and *Staphylococcus aureus* with reduced susceptibility to vancomycin in Japan in 1996 (*12*) and the United States in 1997 (*13,14*).

For continued success in controlling infectious diseases, the U.S. public health system must prepare to address diverse challenges, including the emergence of new infectious diseases, the re-emergence of old diseases (sometimes in drug-resistant forms), large foodborne outbreaks, and acts of bioterrorism. Ongoing research on the possible role of infectious agents in causing or intensifying certain chronic diseases (including diabetes mellitus type 1, some cancers [*15–17*], and heart conditions [*18,19*]) also is imperative. Continued protection of health requires improved capacity for disease surveillance and outbreak response at the local, state, federal, and global levels; the development and dissemination of new laboratory and epidemiologic methods; continued antimicrobial and vaccine development; and ongoing research into environmental factors that facilitate disease emergence (*20*).

Reported by: National Center for Environmental Health; National Center for Health Statistics; National Center for Infectious Diseases, CDC.

Control of Infectious Diseases — Continued

3. New Modes of Disease Transmission Created by 20th-Century Technology

- The bacteria that cause legionnaires disease have been spread through modern ventilation systems.
- Human immunodeficiency virus and hepatitis C virus have been spread through transfusions of unscreened blood.
- Foodborne diseases, such as salmonellosis and *Escherichia coli* O157 infection, have been spread on centrally processed foods distributed simultaneously to many states or countries.
- Airplanes have replaced ships as major vehicles of international disease spread.
- More people are traveling to tropical rain forests and other wilderness habitats that are reservoirs for insects and animals that harbor unknown infectious agents. This incursion is due to economic development (e.g., mining, forestry, and agriculture) and an expanded tourist trade that caters to persons who wish to visit undeveloped areas.
- In the United States, increasing suburbanization and the reversion of agricultural land to secondary growth forest has brought people into contact with deer that carry ticks infected with *Borrelia burgdorferi*, the causative agent of Lyme disease, and has brought household pets into contact with rabies-infected raccoons.
- The increased development and use of antimicrobial agents has hastened the development of drug resistance.
- People whose immunologic and other host defenses have been impaired by modern medical treatments (e.g., bone marrow or solid organ transplants, chemotherapy, chronic corticosteroid therapy, renal dialysis, or indwelling medical devices) are more likely to acquire opportunistic infections.

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Meningococcal Disease — New England, 1993–1998

Neisseria meningitidis, a leading cause of bacterial meningitis and sepsis in children and young adults in the United States, causes both sporadic disease and outbreaks (*1*). Preventing and controlling meningococcal disease remains a public health challenge because of the multiple serogroups and the limitations of available vaccines (*1,2*). Vaccination with the polysaccharide meningococcal vaccine, which protects against serogroups A, C, Y, and W135 of *N. meningitidis*, is recommended by the Advisory Committee on Immunization Practices (ACIP) for controlling outbreaks but routine vaccination is not recommended for control of sporadic cases (*1*). During 1998, a cluster of meningococcal disease cases occurred in Rhode Island, and although the situation did not meet ACIP criteria for an outbreak (*1*), the Rhode Island Department of Health recommended vaccination of all residents aged 2–22 years. This action stimulated controversy in Rhode Island and the rest of New England (Connecticut, Maine, Massachusetts, New Hampshire, and Vermont) and prompted a review of the epidemiology of meningococcal disease in the region. This report describes meningococcal disease data reported to the region's state health departments during 1993–1998 and discusses the situation in Rhode Island.

Surveillance. Connecticut and Massachusetts conducted prospective enhanced surveillance for meningococcal disease beginning in 1995 and 1996, respectively. In Rhode Island, additional case ascertainment was done in 1998 by reviewing hospital inpatient discharge data and hospital records for all confirmed and probable cases from 1992 through 1998. Surveillance in Maine, New Hampshire, and Vermont consisted of routine reporting for meningococcal disease. To calculate incidence, census data for 1996 were used.

Meningococcal Disease — Continued

Case Definition and Detection Method. A confirmed case of meningococcal disease was defined as isolation of *N. meningitidis* from a normally sterile site (e.g., blood or cerebrospinal fluid [CSF]) from a person with clinically compatible illness. A probable case of meningococcal disease was defined as purpura fulminans or detection of meningococcal polysaccharide antigen in CSF in the absence of a diagnostic culture from a person with clinically compatible illness.

Case Characteristics. During 1993–1998 in New England, 937 cases of meningococcal disease were reported. Of these, 899 (96%) met the definition for confirmed or probable meningococcal disease; 863 (96%) were confirmed by culture and 36 (4%) were probable cases. The proportion of confirmed cases varied by state from 100% (Vermont) to 84% (Rhode Island). Of the probable cases, 22 (61%) were reported as detection of meningococcal antigen in CSF, and 14 (39%) as purpura fulminans; 12 of 14 purpura fulminans cases were reported from Rhode Island. Of the 899 cases, 888 (99%) were considered primary (i.e., occurred in the absence of known close contact with another case-patient) (*1*). The median age of all case-patients was 17 years (range: 3 days–98 years); 455 (51%) were female, and 88 case-patients died (case fatality rate [CFR]=10%). The distributions of cases by age, sex, and serogroup were similar by state (Table 1). Rhode Island had a significantly higher CFR (21%) (p=0.001) than the other five states (Table 1). Ten (<1%) cases were associated with outbreaks; the remainder was classified as sporadic disease.

Serogroups. Of the 758 (89%) cases with serogroup reported, 308 (41%) were serogroup C, 217 (29%) were serogroup Y, and 200 (26%) were serogroup B. Among case-patients with known serogroups, the proportion with serogroup Y meningococcal disease increased from 15% in 1993 to 43% in 1998 (p<0.005).

Incidence. During 1993–1998, the average annual reported incidence of meningococcal disease was 1.1 cases per 100,000 population. Annual incidence increased significantly from 0.9 cases per 100,000 population in 1993 to 1.4 cases per 100,000 population in 1997 (chi square for linear trend, p<0.001) and declined from 1.4 to 0.9 cases per 100,000 population from 1997 to 1998 (p<0.001) (Figure 1). Excluding any state did not alter this trend. The lowest disease rate reported was 0.4 cases per 100,000 population (New Hampshire and Rhode Island in 1993) and the highest rate was 2.5 cases per 100,000 population (Rhode Island in 1997). Age groups with the highest incidence were children aged ≤2 years (6.4 cases per 100,000) and young adults aged 15–19 years (3.0 cases per 100,000).

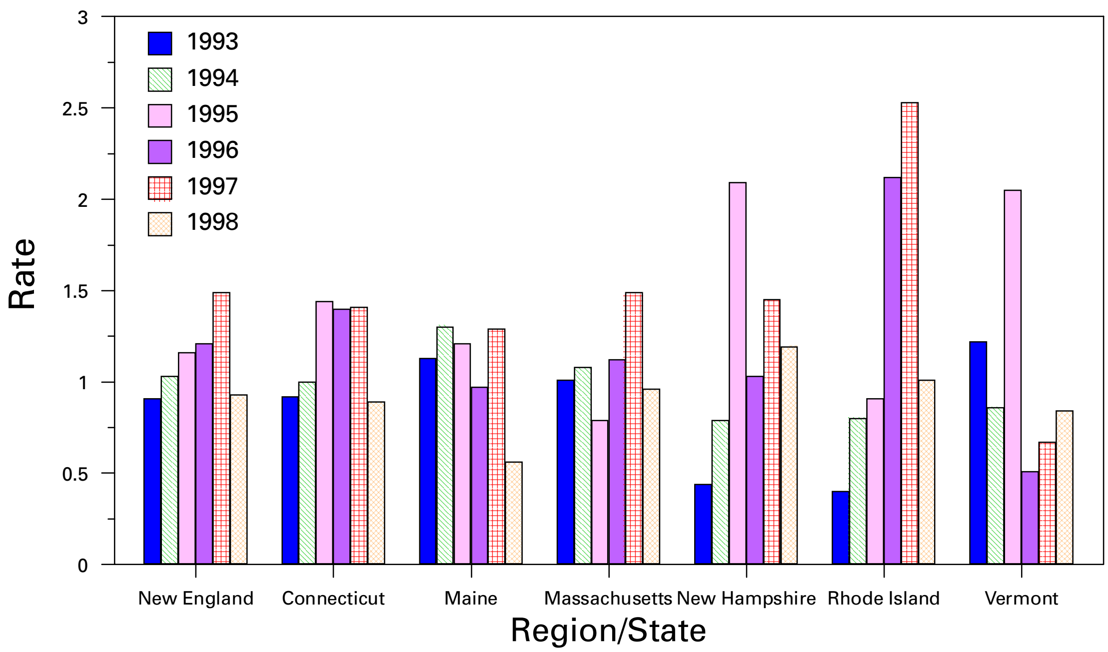
TABLE 1. Cases of meningococcal disease, by number of cases, demographic characteristics of patients, number and percentage of deaths, and serogroup — New England, 1993–1998

State	Median age (yrs)	Male		Died		Serogroup* B		Serogroup* C		Serogroup* Y	
		No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Connecticut (n=231)	18.0	111	(48%)	19	(8%)	37	(18%)	81	(39%)	76	(37%)
Maine (n=80)	13.0	39	(49%)	6	(8%)	20	(30%)	32	(49%)	9	(13%)
Massachusetts (n=394)	17.0	199	(51%)	35	(9%)	97	(29%)	132	(40%)	94	(28%)
New Hampshire (n=81)	18.0	41	(51%)	9	(11%)	18	(28%)	29	(45%)	16	(25%)
Rhode Island (n=77)	15.0	36	(47%)	16	(21%)	17	(30%)	25	(45%)	13	(23%)
Vermont (n=36)	17.0	17	(47%)	3	(8%)	11	(32%)	9	(27%)	9	(27%)
New England (n=899)	**17.0**	**417**	**(49%)**	**88**	**(10%)**	**200**	**(26%)**	**308**	**(41%)**	**217**	**(29%)**

*Culture-confirmed cases. The proportion with other serogroups are included in the denominator.

Meningococcal Disease — Continued

FIGURE 1. Incidence* of meningococcal disease, by region and year of onset — New England, 1993–1998



*Includes probable and confirmed cases per 100,000 population.

Reported by: RS Nelson, DVM, CA Morin, MPH, ML Cartter, MD, P Mshar, JL Hadler, MD, State Epidemiologist, Connecticut Dept of Public Health. G Beckett, MPH, K Gensheimer, MD, State Epidemiologist, Maine Dept of Human Services. J Isadore, MPH, P Kludt, MPH, BT Matyas, MD, A DeMaria, Jr, MD, State Epidemiologist, Massachusetts Dept of Public Health. M Johnson, J Greenblatt, MD, State Epidemiologist, New Hampshire Dept of Health and Human Services. L Mouradjian, P Nolan, MD, U Bandy, MD, State Epidemiologist, Rhode Island Dept of Health. JK Carney, MD, CJ Greene, MPH, PD Galbraith, DMD, State Epidemiologist, Vermont Dept of Health. Meningitis and Special Pathogens Br, Div of Bacterial and Mycotic Diseases, National Center for Infectious Diseases; Div of Applied Public Health Training, Epidemiology Program Office; and an EIS Officer, CDC.

Editorial Note: Data in this report indicate that rates of meningococcal disease in New England increased during 1993–1997, then declined in 1998. The average annual rate in Rhode Island during this period was similar to rates in neighboring states. The rates also were similar to those reported in the United States during the same period (*3,4*). These changes in incidence probably represent natural fluctuations in disease incidence, changes in circulating strains of *N. meningitidis,* the population's susceptibility to disease, or some combination of these variables.

Surveillance data indicated that the CFR among case-patients from Rhode Island were significantly higher than the CFR among case-patients from other states in the region. Twelve of 14 cases of purpura fulminans were reported from Rhode Island, and these case-patients had a higher CFR. However, when patients with purpura fulminans were eliminated from the analysis, the CFR in Rhode Island still remained elevated (20% versus 10%; $p<0.003$). Possible explanations for this difference in CFR include timing of antibiotic use and strain virulence. Some studies have reported that early antibiotic intervention is associated with reduced mortality (*5*); other studies have

Meningococcal Disease — Continued

suggested that the finding may be attributable to confounding by variables such as host factors and severity of illness on presentation (*6,7*). In Rhode Island, case investigations have found that antibiotics were appropriately given, suggesting that other factors contributed to the high CFR.

Between November 26, 1997, and February 23, 1998, Rhode Island reported nine confirmed cases (four serogroup C, three serogroup Y, and two serogroup B) and three probable cases of meningococcal disease, with three deaths. Although this cluster did not constitute an outbreak as defined by ACIP guidelines (*1*), a statewide vaccination program for residents aged 2–22 years was initiated. Approximately 60%–70% of the targeted population received the vaccine. The precedent of an earlier vaccination campaign in Woonsocket in 1996 and an increased reported incidence in disease and CFR generated public and medical concern and social and political pressure that influenced the decision to vaccinate (P.A. Nolan, MD, Rhode Island Department of Health, personal communication, 1998). Information on meningococcal disease in Rhode Island is available on the World-Wide Web at http://www.health.state.ri.us/meningoc.htm.*

Although some cases may be prevented by this approach, its overall impact may be limited for several reasons: it will not protect children aged <2 years, in whom rates of disease are highest; it does not protect against serogroup B disease, which accounts for 26% of disease in the region; and, because the vaccine does not affect carriage, it will not affect disease among the 30%–40% of the target population who chose not to be vaccinated. Monitoring of disease in Rhode Island over the next few years will allow further evaluation of this strategy.

During 1993–1998, <1% of cases in New England were classified as outbreak associated. Most cases of meningococcal disease were sporadic and therefore not preventable with strategies that target outbreaks. For efficacious protection of meningococcal disease in infants and young children, conjugate serogroup A, C, Y, and W135 meningococcal vaccines have been developed through methods similar to those used for *Haemophilus influenzae* type b conjugate vaccines (*8,9*). These vaccines will be used routinely in the United Kingdom within the next year (*10*) and should be available in the United States within 2–4 years. Until they become available, strategies to control meningococcal disease should continue to focus on antimicrobial chemoprophylaxis of close contacts and use of meningococcal polysaccharide vaccines as recommended by ACIP (*1*).

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Progress Toward Poliomyelitis Eradication During Armed Conflict — Somalia and Southern Sudan, January 1998–June 1999

In 1988, the Regional Committee of the World Health Organization (WHO) for the Eastern Mediterranean Region* adopted a resolution to eliminate poliomyelitis from the region by 2000 (*1*). Somalia and parts of southern Sudan have persons living in areas where there is ongoing armed conflict and poor infrastructure (e.g., health-care facilities, schools, roads, and power plants). Under these conditions, conducting National Immunization Days† (NIDs) and acute flaccid paralysis (AFP) surveillance is difficult. This report summarizes NIDs in Somalia during 1997 and 1998 and in southern Sudan§ during 1998 and 1999 and establishment of AFP surveillance in northern Somalia and southern Sudan.

SOMALIA

Health-Care Delivery and Routine Vaccination Coverage

Health-care services to the estimated 5.8 millions persons residing in Somalia are delivered through national and international nongovernmental organizations (NGOs), supported by United Nations Children's Fund (UNICEF), WHO, and other United Nations (UN) agencies. Somalia is divided into four zones: south, central, northeast, and northwest. At the end of 1996 and in early 1997, in the northeast and northwest zones, routine vaccination coverage with three doses of oral poliovirus vaccine (OPV) among children aged 12–23 months was 27% and 28%, respectively. Estimated coverage was lower in the southern and central zones (UNICEF, unpublished data, 1999).

National Immunization Days

In 1997, the first Subnational Immunization Days¶ (SNIDs) were conducted in the two northern zones of Somalia. The first and second round of SNIDs reached an estimated 330,000 children aged 0–59 months.

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*Member countries are Djibouti, Egypt, Libya, Morocco, Somalia, Sudan, and Tunisia in northern and eastern Africa; the Arab Gulf states of Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, United Arab Emirates, and Yemen; Iraq, Jordan, Lebanon, Syria, and the Palestinian people in the Middle East; Afghanistan, Iran, and Pakistan in Asia; and Cyprus.

†Nationwide mass campaigns over a short period (days to weeks) in which two doses of OPV are administered to all children in the target age group (usually aged <5 years), regardless of previous vaccination history, with and interval of 4–6 weeks between doses.

§NIDs in Somalia and southern Sudan were implemented with the cooperation of local health authorities and the government of Sudan, and supported by national and international non-government organizations, Rotary International, the United Nations Foundation, the United Nations Children's Fund (UNICEF), the UNICEF national committees of the United States and the United Kingdom, WHO, and CDC.

¶Focal mass campaigns in high-risk areas over a short period (days to weeks) in which two doses of OPV are administered to all children in the target age group, regardless of vaccination history, with an interval of 4–6 weeks between doses.

Poliomyelitis Eradication — Continued

In 1998, the first round of NIDs covering the entire country was planned. Partnerships were developed between local and international NGOs and Somali nationals, who were then trained to conduct NIDs in all areas of the country. This was the first nationwide activity carried out by Somali communities since civil war began in 1991.

In August and September 1998, southern Somalia held its first NIDs, followed by northern Somalia in November and December. Three thousand Somali workers administered OPV throughout Somalia and reached almost all settlements.

AFP Surveillance

In April 1998, AFP surveillance began in northern Somalia at 65 reporting sites selected for regular surveillance through active case detection visits. By February 1999, AFP surveillance had expanded to 117 sites. During May 1998–May 1999, 32 AFP cases were reported (Table 1); of these, 10 (31%) were confirmed** as polio (Figure 1). The nonpolio AFP rate for both northern zones was 2.3 per 100,000 children aged <15 years. Adequate[††] stool specimens were collected from all 10 case-patients. Eighty-six percent of case-patients had a 60-day follow-up examination. AFP surveillance is planned to begin in the southern and central zones in late 1999.

SOUTHERN SUDAN

Health-Care Delivery and Routine Vaccination Coverage

The regions of Bahr El Ghazal, Equatoria, and Upper Nile have experienced continuous armed conflict since 1984. Health-care services to the estimated 5.4 million persons affected are implemented through the southern sector of Operation Lifeline Sudan (OLS)[§§], with the Sudanese government also providing services in some areas. Many persons do not have access to any health-care services. Reported routine vaccination coverage with three doses of OPV was <20%, although specific coverage statistics are not available for most areas (Operation Lifeline Sudan, southern sector, unpublished data, 1999).

National Immunization Days

In 1998, the first round of NIDs that included all of southern Sudan began in February. The second round took place in March in Equatoria and Upper Nile. NIDs occurred 1 month later in Bahr El Ghazal.

The 1999 NIDs were held in February (first round) and March (second round). Eighty-three Sudanese workers who were recruited and trained to assist in NIDs coordinated with local leaders and NGOs to develop a plan of action. Vaccine vial monitors (VVMs) were used to confirm that OPV remained potent in remote areas. Five thousand Sudanese volunteers administered OPV to persons in every county and district served by OLS.

**A confirmed case of polio is defined as AFP and at least one of the following: 1) laboratory-confirmed wild poliovirus infection, 2) residual paralysis at 60 days, 3) death, or 4) no follow-up investigation at 60 days.

††Two stool specimens collected at an interval of at least 24 hours within 14 days of onset of paralysis.

§§OLS is a consortium led by UNICEF that includes several UN agencies and more than 40 nongovernmental agencies.

Poliomyelitis Eradication — Continued

TABLE 1. Number of children aged 0–59 months*, number receiving oral poliovirus vaccine (OPV) during National Immunization Days† (NIDs), number of reported cases of acute flaccid paralysis (AFP), and nonpolio AFP rate§ — southern Sudan and northern Somalia, 1998–1999

		National Immunization Days				AFP Surveillance		
		1998		1999				
Country/Region	No. children aged <5 years	Round 1	Round 2	Round 1	Round 2	No. reported AFP cases	Nonpolio AFP rate	% persons with AFP with adequate¶ specimens
Somalia								
Northwest	247,320	217,666	212,616	Planned for		14	1.4	38
Northeast	168,104	120,572	124,831	November/ December 1999		18	3.6	22
Central	931,245	873,378	989,716	Planned for		NA	NA	NA
South	176,462	190,081	206,192	August/ September 1999		NA	NA	NA
Total	**1,523,131**	**1,401,697**	**1,533,355**			**NA**	**NA**	**NA**
Southern Sudan**								
Bahr El Ghazal	378,668	330,899	315,023	441,610	484,922	10	0.6	20
Upper Nile	284,183	207,857	244,723	362,861	394,914	4	1.1	25
Equatoria	261,546	177,438	218,224	196,660	260,816	3	0.6	0
Total	**924,397**	**716,194**	**777,970**	**1,001,131**	**1,140,652**	**17**	**0.7**	**18**

*Population denominator data varied widely depending on the source and cannot be used to calculate coverage or total population. The numbers shown were used for planning purposes only and do not reflect an endorsement of any estimate.

† Nationwide mass campaigns over a short period (days to weeks), in which two doses of OPV are administered to all children in the target age group (usually aged <5 years), regardless of previous vaccination history, with an interval of 4–6 weeks between doses.

§ Per 100,000 children aged <15 years.

¶ Two stool specimens collected 24 hours apart and <14 days after the onset of paralysis.

**Does not include areas covered by the government of Sudan.

AFP Surveillance

UNICEF, WHO, NGOs, and local staff selected 25 sentinel sites for AFP surveillance throughout Bahr El Ghazal, Equatoria, and Upper Nile. Sites were chosen on the basis of a functioning health-care facility, a large catchment population, a health NGO, and reliable access by air or road. In November 1998, AFP surveillance began at 19 (76%) of the 25 selected sites. Implementation in the remaining sites is ongoing.

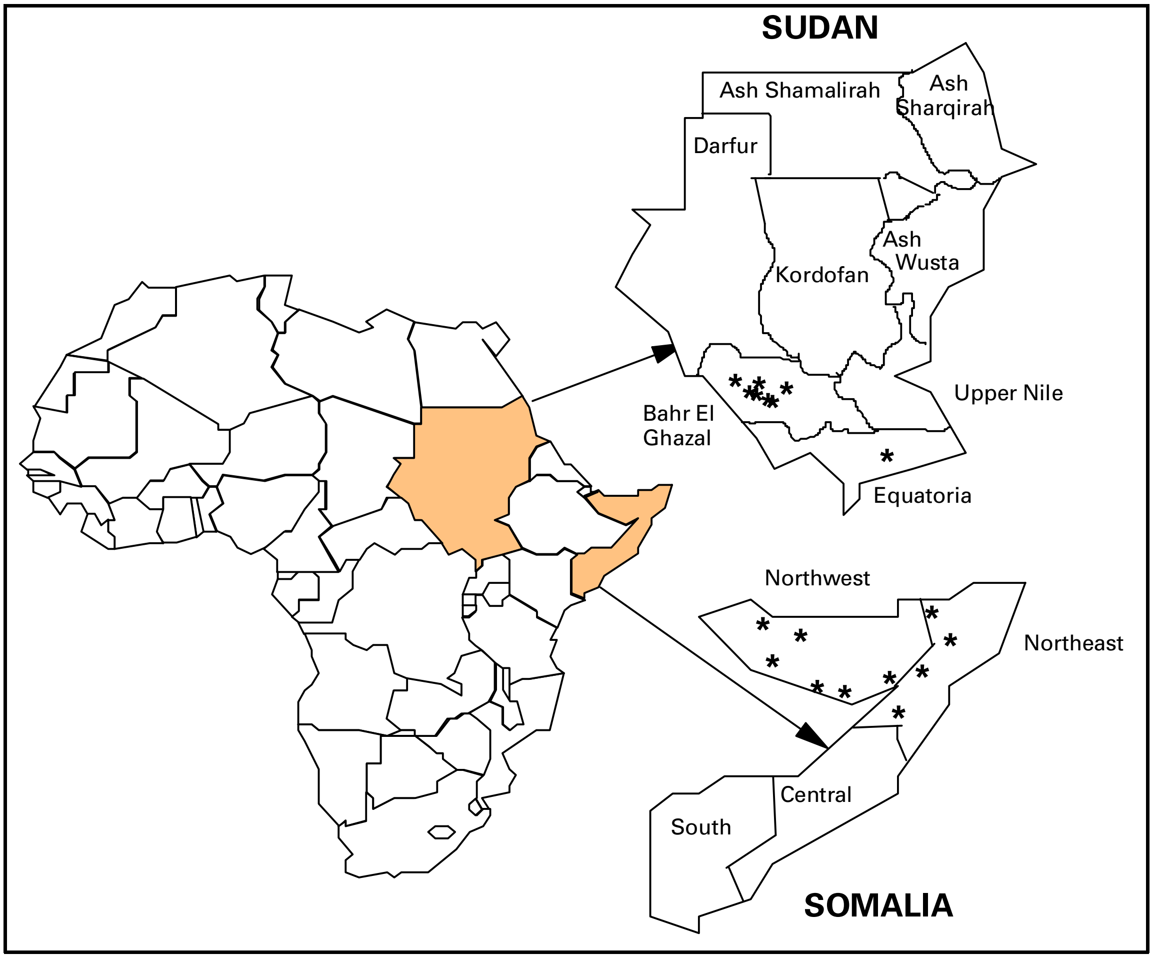
During November 1998–April 1999, 17 AFP cases were reported (Table 1); eight (47%) were confirmed as polio (Figure 1)—one by isolation of wild virus from a stool specimen and seven by clinical classification. Of the remaining nine cases, two were classified as nonpolio, and classification of seven cases is pending. Pending cases are classified as nonpolio (*2*), resulting in an annualized AFP nonpolio rate of 0.67 per 100,000 children aged <15 years.

Adequate stool specimens were collected for three (18%) case-patients. Wild poliovirus type 3 was isolated from a stool specimen from a patient in Mapel, Wau County, and vaccine virus was isolated from the two other stool specimens. Forty-one percent of all case-patients had a 60-day follow-up examination.

Reported by: Operation Lifeline Sudan, southern sector; United Nations Children's Fund Country Program for Somalia, Nairobi, Kenya. Offices of the World Health Organization for the Eastern

Poliomyelitis Eradication — Continued

FIGURE 1. Reported cases of poliomyelitis* — northern Somalia, April 1998–April 1999, and southern Sudan, November 1998–May 1999



*A confirmed case of polio is defined as AFP and at least one of the following: 1) laboratory-confirmed wild poliovirus infection, 2) residual paralysis at 60 days, 3) death, or 4) no follow-up investigation at 60 days.

Mediterranean; Offices of the United Nations Children Fund for East and Southern Africa Region. United Nations Children's Fund, New York. Vaccines and Other Biologicals Dept, World Health Organization, Geneva, Switzerland. Respiratory and Enteric Viruses Br, Div of Viral and Rickettsial Diseases, National Center for Infectious Diseases; Vaccine Preventable Disease Eradication Div, National Immunization Program, CDC.

Editorial Note: At the end of 1998, poliovirus was suspected or known to circulate in 10 countries in civil conflict[¶¶], eight of which are on the African continent. Recognizing that these countries are essential to reaching the polio eradication goal, the UN is advocating for days of tranquility during vaccination activities. In addition, the findings in this report demonstrate that even in the absence of formally negotiated ceasefires, polio eradication activities can be conducted effectively.

In both Somalia and southern Sudan, the following factors made achieving high coverage during NIDs possible: 1) strong partnerships between UN agencies, NGOs,

¶¶Afghanistan, Angola, Democratic Republic of the Congo, Eritrea, Ethiopia, Liberia, Sierra Leone, Somalia, Sudan, and Tajikistan.

Poliomyelitis Eradication — Continued

and local leaders and communities; 2) involvement of Sudanese and Somali nationals in administering vaccine and widespread campaign coverage, compared with health activities limited to selected areas or agencies; and 3) commitment of funds and other resources necessary to overcome existing infrastructure limitations.

In Somalia, extensive social mobilization efforts were conducted by district and local leaders to develop a plan of action for vaccination campaigns. In southern Sudan, coordination with the Sudanese government and with Sudanese workers, local leaders, and NGOs to plan and implement NIDs also were effective. Use of VVMs minimized dependence on freezing capacity and maximized the mobility of vaccination teams.

In southern Sudan, the experience gained during NIDs of how to reach successfully those persons who were not reached previously by routine vaccination presents an opportunity for the Expanded Program on Immunization (EPI) to develop other strategies. In addition, resources (e.g., vaccine carriers, cold boxes, freezers, bicycles, and vehicles) left with the routine EPI programs also can help to improve routine coverage.

AFP surveillance was implemented in northern Somalia and southern Sudan, and these data are being used to target supplementary vaccination strategies. The late presentation of cases to sentinel sites in southern Sudan presented a challenge, and expansion beyond existing sentinel sites is needed. Establishing AFP surveillance in southern and central Somalia is a priority.

Progress toward polio eradication in countries with civil unrest, insecurity, and low routine coverage with OPV is critical for the success of the global polio eradication initiative. Reaching almost all areas and settlements in Somalia and southern Sudan during NIDs and the ability of newly established AFP surveillance systems to successfully detect and investigate AFP cases demonstrate that global polio eradication is achievable, even in adverse circumstances. These findings should encourage other countries to implement the key programs that will lead to global polio eradication.

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Notice to Readers

Availability of Curricular Materials About Vaccines, Vaccine-Preventable Diseases, and Vaccination Practices

CDC and the Association of Teachers of Preventive Medicine (ATPM) announce the availability of curricular materials for teaching students and practitioners about vaccines, vaccine-preventable diseases, and vaccination practices. Materials for medical students, residents, and practicing physicians have been created through the *Teaching Immunization for Medical Education (TIME)* project, a collaborative initiative between ATPM, CDC, and the Department of Family Medicine, University of Pittsburgh. These materials are available in two teaching formats, multistation clinical

Notices to Readers — Continued

teaching scenarios (MCTS) and problem-based learning (PBL) modules. Also available are continuing medical education (CME) self-study and traditional lecture materials with accompanying slides.

Curricular materials for nurses have been developed through a collaborative initiative for nursing education between ATPM, CDC, and the American Nurses Association. *Teaching Immunization Practices (TIP): A Comprehensive Curriculum for Nurses* is a modular program designed for use in schools of nursing. A computer-based, self-study program called *Immunization: You Call the Shots* is also available. This software program has been approved for nursing continuing education credits.

Additional information is available from ATPM, telephone (800) 789-6737, World-Wide Web site, http://www.atpm.org.* The CME modules are available on the University of Pittsburgh Medical Center web site, http://www.upmc.edu/CCEHS. Information about the computer-based program for nursing education is available from HealthSoft, Inc., telephone (800) 235-0882.

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*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.

Notice to Readers

Epidemiology in Action

CDC and Emory University's Rollins School of Public Health will co-sponsor a course, "Epidemiology in Action," during November 8–19, 1999, in Atlanta. The course is designed for state and local public health professionals.

The course emphasizes the practical application of epidemiology to public health problems and will consist of lectures, workshops, classroom exercises (including actual epidemiologic problems), and roundtable discussions. Topics covered include descriptive epidemiology and biostatistics, analytic epidemiology, epidemic investigations, public health surveillance, surveys and sampling, Epi Info software training, and discussions of selected prevalent diseases. There is a tuition charge.

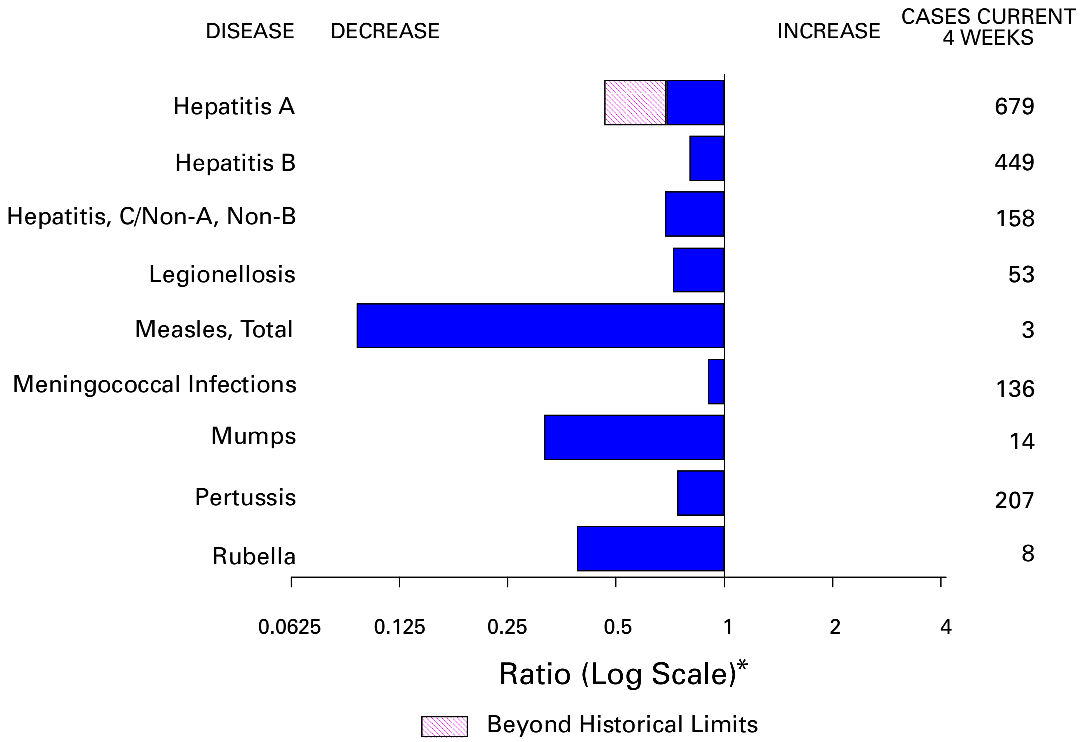
Deadline for application is October 8, 1999. Additional information and applications are available from Emory University, International Health, Dept. (PIA), 1518 Clifton Rd., N.E., Room 742, Atlanta, GA 30322; telephone (404) 727-3485; fax (404) 727-4590; or on the World-Wide Web, http://www.sph.emory.edu/EPICOURSES/; or e-mail pvaleri@sph.emory.edu.

Erratum: Vol. 48, Nos. 22, 23, and 24

In Table II, "Provisional cases of selected notifiable diseases, United States," data from two pairs of columns were transposed in issue numbers 22, 23, and 24: data from the two columns titled "Salmonellosis, PHLIS, (Cum. 1999 and Cum. 1998)" were placed in the columns titled "Shigellosis, NETSS (Cum. 1999 and Cum. 1998)," and data from the two columns titled "Shigellosis, NETSS (Cum. 1999 and Cum. 1998)" were placed in the columns titled "Salmonellosis, PHLIS, (Cum. 1999 and Cum. 1998)." Corrected versions of Table II for weeks 22, 23, and 24 are available on the

(Continued on page 647)

FIGURE I. Selected notifiable disease reports, comparison of provisional 4-week totals ending July 24, 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 July 24, 1999 (29th Week)

	Cum. 1999		Cum. 1999
Anthrax	-	HIV infection, pediatric*§	81
Brucellosis*	21	Plague	2
Cholera	2	Poliomyelitis, paralytic	-
Congenital rubella syndrome	3	Psittacosis*	14
Cyclosporiasis*	13	Rabies, human	-
Diphtheria	1	Rocky Mountain spotted fever (RMSF)	224
Encephalitis: California*	4	Streptococcal disease, invasive Group A	1,278
eastern equine*	2	Streptococcal toxic-shock syndrome*	26
St. Louis*	-	Syphilis, congenital¶	109
western equine*	1	Tetanus	14
Ehrlichiosis human granulocytic (HGE)*	68	Toxic-shock syndrome	69
human monocytic (HME)*	16	Trichinosis	5
Hansen Disease*	42	Typhoid fever	160
Hantavirus pulmonary syndrome*†	7	Yellow fever	-
Hemolytic uremic syndrome, post-diarrheal*	27		

-: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 June 27, 1999.
¶ Updated from reports to the Division of STD Prevention, NCHSTP.

TABLE II. Provisional cases of selected notifiable diseases, United States, weeks ending July 24, 1999, and July 25, 1998 (29th Week)

							Escherichia coli O157:H7*			
	AIDS		Chlamydia		Cryptosporidiosis		NETSS		PHLIS	
Reporting Area	Cum. 1999†	Cum. 1998	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998
UNITED STATES	23,194	25,867	319,013	315,791	754	1,119	1,032	1,149	595	989
NEW ENGLAND	1,120	870	10,503	11,325	38	84	120	155	96	139
Maine	29	18	193	562	12	19	14	20	-	-
N.H.	26	23	507	537	7	9	18	21	15	25
Vt.	6	14	264	224	6	13	16	8	7	6
Mass.	716	372	5,132	4,596	13	39	63	80	39	80
R.I.	61	81	1,300	1,346	-	4	9	5	6	1
Conn.	282	362	3,107	4,060	-	-	U	21	29	27
MID. ATLANTIC	5,913	7,470	38,378	33,301	106	320	66	119	14	46
Upstate N.Y.	725	966	N	N	65	191	58	78	-	-
N.Y. City	3,003	4,052	20,416	14,731	22	117	2	7	4	9
N.J.	1,158	1,387	6,070	6,432	9	12	6	34	10	27
Pa.	1,027	1,065	11,892	12,138	10	-	N	N	-	10
E.N. CENTRAL	1,502	2,029	46,401	54,832	73	139	187	213	119	173
Ohio	241	407	13,057	14,875	21	44	71	49	43	28
Ind.	191	353	6,367	5,949	14	30	27	55	16	29
Ill.	682	817	15,475	14,512	14	37	57	60	18	37
Mich.	308	350	11,502	12,004	24	18	32	49	17	32
Wis.	80	102	U	7,492	-	10	N	N	25	47
W.N. CENTRAL	537	477	17,695	18,639	57	149	222	148	96	161
Minn.	82	64	3,264	3,860	14	46	82	50	53	77
Iowa	50	49	1,334	2,127	14	34	35	42	12	32
Mo.	261	243	7,811	6,649	12	12	23	17	24	27
N. Dak.	4	4	325	545	4	18	3	2	1	10
S. Dak.	11	11	832	895	3	17	15	8	4	11
Nebr.	39	38	1,338	1,552	9	18	53	18	-	-
Kans.	90	68	2,791	3,011	1	4	11	11	2	4
S. ATLANTIC	6,366	6,417	72,629	56,639	185	110	140	81	65	85
Del.	80	75	1,522	1,404	-	-	2	-	-	1
Md.	720	824	6,397	3	9	10	10	14	-	9
D.C.	242	483	N	N	7	4	-	1	-	-
Va.	340	501	8,209	6,780	10	1	35	-	20	29
W. Va.	31	57	1,088	1,318	-	1	5	5	1	3
N.C.	390	459	12,664	11,752	5	-	26	15	25	29
S.C.	588	414	8,635	10,272	-	-	12	4	10	3
Ga.	958	618	17,615	13,043	91	34	11	33	-	-
Fla.	3,017	2,986	16,499	12,067	63	60	39	9	9	11
E.S. CENTRAL	1,034	1,055	21,720	22,014	11	15	63	70	33	41
Ky.	152	155	3,333	3,438	2	5	15	24	-	-
Tenn.	405	352	7,554	7,221	4	6	28	28	17	25
Ala.	257	329	6,132	5,640	3	-	16	15	13	15
Miss.	220	219	4,701	5,715	2	4	4	3	3	1
W.S. CENTRAL	2,491	3,269	47,028	48,050	33	18	33	49	43	55
Ark.	90	123	3,331	2,027	-	3	5	6	5	6
La.	463	532	7,726	7,863	21	8	3	3	6	2
Okla.	70	184	4,531	5,436	2	3	8	10	5	4
Tex.	1,868	2,430	31,440	32,724	10	4	17	30	27	43
MOUNTAIN	860	915	18,161	17,828	47	73	84	156	50	128
Mont.	4	18	755	696	8	6	4	8	-	2
Idaho	12	19	665	1,078	3	14	4	15	6	7
Wyo.	3	1	408	364	-	-	3	47	5	51
Colo.	172	186	3,892	4,477	4	5	31	31	19	27
N. Mex.	46	153	2,521	2,083	19	31	6	12	1	11
Ariz.	427	327	7,241	6,020	9	10	14	17	9	13
Utah	80	70	1,054	1,276	-	-	17	19	8	10
Nev.	116	141	1,625	1,834	4	7	5	7	2	7
PACIFIC	3,371	3,365	46,498	53,163	204	211	117	158	79	161
Wash.	188	231	6,532	6,167	-	-	34	28	26	47
Oreg.	88	94	3,264	2,901	79	22	27	37	22	41
Calif.	3,036	2,933	34,085	41,740	125	186	56	91	26	66
Alaska	13	12	1,011	1,049	-	-	-	2	-	-
Hawaii	46	95	1,606	1,306	-	3	-	-	5	7
Guam	5	-	149	211	-	-	N	N	-	-
P.R.	734	995	U	U	-	-	5	-	U	U
V.I.	15	17	N	N	-	-	N	N	U	U
Amer. Samoa	-	-	U	U	-	-	N	N	U	U
C.N.M.I.	-	-	N	N	-	-	N	N	U	U

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

*Individual cases may be reported through both the National Electronic Telecommunications System for Surveillance (NETSS) and the Public Health Laboratory Information System (PHLIS).

†Updated monthly from reports to the Division of HIV/AIDS Prevention–Surveillance and Epidemiology, National Center for HIV, STD, and TB Prevention, last update June 27, 1999.

TABLE II. (Cont'd.) Provisional cases of selected notifiable diseases, United States, weeks ending July 24, 1999, and July 25, 1998 (29th Week)

Reporting Area	Gonorrhea		Hepatitis C/NA,NB		Legionellosis		Lyme Disease	
	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998
UNITED STATES	172,234	181,662	2,029	1,758	508	661	3,901	5,961
NEW ENGLAND	3,179	3,209	58	45	32	43	1,007	2,178
Maine	15	36	2	-	4	1	-	29
N.H.	49	49	-	-	3	3	2	24
Vt.	31	19	4	2	7	3	3	6
Mass.	1,438	1,112	49	40	9	20	313	458
R.I.	336	194	3	3	3	8	178	143
Conn.	1,310	1,799	-	-	6	8	511	1,518
MID. ATLANTIC	21,275	20,073	90	124	99	151	2,166	2,868
Upstate N.Y.	3,435	3,664	55	63	29	40	1,316	1,380
N.Y. City	8,696	6,664	-	-	7	27	12	100
N.J.	3,421	4,111	-	-	5	7	124	561
Pa.	5,723	5,634	35	61	58	77	714	827
E.N. CENTRAL	30,622	36,845	1,061	410	135	230	68	346
Ohio	7,993	9,258	1	7	46	81	44	20
Ind.	3,750	3,414	1	4	42	43	21	13
Ill.	10,820	11,825	21	27	10	27	2	11
Mich.	8,059	9,110	456	273	34	43	1	11
Wis.	U	3,238	582	99	3	36	U	291
W.N. CENTRAL	7,419	9,249	77	24	29	34	54	50
Minn.	1,208	1,408	3	7	1	3	13	22
Iowa	331	686	-	7	13	5	11	14
Mo.	4,011	5,082	66	7	10	9	13	7
N. Dak.	31	49	-	-	-	-	1	-
S. Dak.	83	143	-	-	2	2	-	-
Nebr.	596	599	3	2	3	13	6	3
Kans.	1,159	1,282	5	1	-	2	10	4
S. ATLANTIC	52,740	44,868	131	63	67	74	415	398
Del.	930	762	-	-	6	8	13	35
Md.	5,625	10	30	8	12	21	293	285
D.C.	1,456	2,502	-	-	1	5	3	4
Va.	5,520	3,815	10	7	13	8	33	31
W. Va.	307	461	13	4	N	N	11	6
N.C.	10,857	10,086	27	14	12	6	40	20
S.C.	4,645	6,642	13	3	7	5	4	3
Ga.	11,704	10,880	1	9	-	2	-	2
Fla.	11,696	9,710	37	18	16	18	18	12
E.S. CENTRAL	17,299	20,765	174	93	61	39	66	42
Ky.	1,494	1,959	9	16	45	17	19	10
Tenn.	6,015	6,153	77	75	14	11	28	21
Ala.	5,354	7,118	1	2	2	4	12	11
Miss.	4,436	5,535	87	-	-	7	7	-
W.S. CENTRAL	25,953	29,038	138	296	3	13	16	9
Ark.	1,677	2,231	7	11	-	1	1	6
La.	6,054	6,485	100	17	1	2	-	-
Okla.	2,243	2,984	12	7	2	8	4	-
Tex.	15,979	17,338	19	261	-	2	11	3
MOUNTAIN	5,105	4,873	83	262	31	36	8	5
Mont.	22	26	4	5	-	1	-	-
Idaho	32	98	4	85	-	-	1	1
Wyo.	12	17	28	62	-	1	1	1
Colo.	1,214	1,143	15	14	9	7	1	-
N. Mex.	503	500	4	56	1	2	1	2
Ariz.	2,567	2,185	20	4	4	6	-	-
Utah	99	133	5	19	11	16	2	-
Nev.	656	771	3	17	6	3	2	1
PACIFIC	8,642	12,742	217	441	51	41	101	65
Wash.	1,146	1,056	10	11	9	7	3	2
Oreg.	446	412	14	10	N	N	6	10
Calif.	6,664	10,834	193	365	41	33	92	52
Alaska	169	174	-	1	1	-	-	1
Hawaii	217	266	-	54	-	1	-	-
Guam	22	26	-	-	-	2	-	-
P.R.	153	222	-	-	-	-	-	-
V.I.	U	U	U	U	U	U	U	U
Amer. Samoa	U	U	U	U	U	U	U	U
C.N.M.I.	-	22	-	-	-	-	-	-

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

TABLE II. (Cont'd.) Provisional cases of selected notifiable diseases, United States, weeks ending July 24, 1999, and July 25, 1998 (29th Week)

Reporting Area	Malaria		Rabies, Animal		Salmonellosis*			
					NETSS		PHLIS	
	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998
UNITED STATES	615	693	3,022	4,158	15,832	18,705	12,200	17,078
NEW ENGLAND	24	41	445	755	803	1,205	800	1,128
Maine	2	3	82	136	72	91	39	35
N.H.	2	3	27	42	65	89	62	119
Vt.	1	-	62	33	41	61	37	45
Mass.	8	15	95	239	569	677	407	671
R.I.	3	2	58	42	56	71	48	31
Conn.	8	18	121	263	U	216	207	227
MID. ATLANTIC	136	193	577	893	1,810	3,257	1,331	3,099
Upstate N.Y.	39	42	394	619	560	735	580	753
N.Y. City	47	111	U	U	391	1,060	442	904
N.J.	29	22	110	112	332	685	309	570
Pa.	21	18	73	162	527	777	-	872
E.N. CENTRAL	61	71	47	74	2,075	3,248	1,613	2,381
Ohio	12	3	17	41	539	750	365	676
Ind.	9	7	-	4	226	371	149	318
Ill.	19	29	2	8	795	998	399	592
Mich.	19	27	25	19	477	646	470	533
Wis.	2	5	3	2	38	483	230	262
W.N. CENTRAL	29	48	338	458	1,131	1,167	939	1,232
Minn.	5	24	62	76	306	283	308	330
Iowa	9	4	72	98	134	200	70	166
Mo.	11	11	9	23	361	337	442	453
N. Dak.	-	2	88	89	15	36	4	47
S. Dak.	-	-	44	105	52	41	26	62
Nebr.	-	1	2	3	111	98	-	23
Kans.	4	6	61	64	152	172	89	151
S. ATLANTIC	184	144	1,156	1,376	3,606	3,249	2,479	2,616
Del.	1	1	29	23	51	39	60	66
Md.	59	45	230	288	401	452	382	427
D.C.	11	12	-	-	51	45	-	-
Va.	39	26	295	357	608	519	421	451
W. Va.	1	1	67	49	74	77	64	83
N.C.	11	12	230	348	519	459	507	589
S.C.	2	4	84	92	205	201	176	197
Ga.	14	15	122	107	557	512	651	561
Fla.	46	28	99	112	1,140	945	218	242
E.S. CENTRAL	13	17	159	163	859	936	435	720
Ky.	4	2	24	20	188	207	-	91
Tenn.	5	9	56	91	240	282	199	361
Ala.	3	4	79	50	275	235	203	210
Miss.	1	2	-	2	156	212	33	58
W.S. CENTRAL	9	12	72	107	1,127	1,629	1,296	1,969
Ark.	-	1	14	19	209	175	76	129
La.	6	4	-	-	159	265	220	348
Okla.	2	1	58	88	172	191	107	59
Tex.	1	6	-	-	587	998	893	1,433
MOUNTAIN	24	33	111	110	1,553	1,127	1,041	1,100
Mont.	4	-	40	32	28	49	1	26
Idaho	1	3	-	-	48	57	45	53
Wyo.	1	-	31	43	23	33	22	29
Colo.	8	8	1	3	432	292	433	278
N. Mex.	2	11	4	3	195	123	110	115
Ariz.	5	5	30	23	474	299	377	367
Utah	2	1	4	6	249	169	-	119
Nev.	1	5	1	-	104	105	53	113
PACIFIC	135	134	117	222	2,868	2,887	2,266	2,833
Wash.	11	9	-	-	342	221	279	346
Oreg.	14	11	1	1	262	154	309	188
Calif.	103	111	109	201	2,016	2,372	1,504	2,157
Alaska	-	1	7	20	24	25	6	17
Hawaii	7	2	-	-	224	115	168	125
Guam	-	1	-	-	18	14	-	-
P.R.	-	-	42	30	207	360	-	-
V.I.	U	U	U	U	-	-	-	-
Amer. Samoa	U	U	U	U	-	-	-	-
C.N.M.I.	-	-	-	-	-	13	-	-

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

*Individual cases may be reported through both the National Electronic Telecommunications System for Surveillance (NETSS) and the Public Health Laboratory Information System (PHLIS).

TABLE II. (Cont'd.) Provisional cases of selected notifiable diseases, United States, weeks ending July 24, 1999, and July 25, 1998 (29th Week)

Reporting Area	Shigellosis* NETSS Cum. 1999	Shigellosis* NETSS Cum. 1998	Shigellosis* PHLIS Cum. 1999	Shigellosis* PHLIS Cum. 1998	Syphilis (Primary & Secondary) Cum. 1999	Syphilis (Primary & Secondary) Cum. 1998	Tuberculosis Cum. 1999†	Tuberculosis Cum. 1998†
UNITED STATES	6,650	9,890	2,808	5,494	3,437	3,828	7,304	8,724
NEW ENGLAND	140	238	130	210	32	39	222	232
Maine	4	8	-	-	-	1	12	5
N.H.	7	10	6	12	-	1	4	6
Vt.	4	4	3	-	3	4	-	2
Mass.	111	152	82	140	20	23	129	119
R.I.	14	18	9	12	1	-	24	31
Conn.	U	46	30	46	8	10	53	69
MID. ATLANTIC	415	1,420	192	1,167	142	158	1,348	1,564
Upstate N.Y.	140	275	34	95	19	20	146	187
N.Y. City	100	449	81	476	61	31	759	767
N.J.	103	441	77	404	25	58	283	337
Pa.	72	255	-	192	37	49	160	273
E.N. CENTRAL	1,036	1,460	479	746	632	564	632	894
Ohio	276	311	54	72	56	83	127	146
Ind.	93	100	16	27	184	101	U	97
Ill.	444	773	269	618	279	232	312	397
Mich.	175	141	99	4	113	104	154	192
Wis.	48	135	41	25	U	44	39	62
W.N. CENTRAL	592	507	359	223	75	85	260	227
Minn.	113	88	98	95	5	5	95	74
Iowa	13	40	10	31	7	-	26	9
Mo.	399	61	229	48	54	67	97	90
N. Dak.	2	4	-	3	-	-	2	3
S. Dak.	9	22	4	19	-	1	9	14
Nebr.	32	273	-	15	4	4	12	8
Kans.	24	19	18	12	5	8	19	29
S. ATLANTIC	1,286	2,004	273	691	1,134	1,455	1,563	1,484
Del.	7	9	3	9	6	15	12	20
Md.	71	106	20	34	230	409	146	161
D.C.	34	12	-	-	34	42	29	64
Va.	53	85	15	45	95	93	121	174
W. Va.	6	8	2	7	2	2	25	24
N.C.	123	178	57	89	281	425	223	216
S.C.	67	85	35	34	125	170	124	183
Ga.	120	534	37	153	194	159	350	260
Fla.	805	987	104	320	167	140	533	382
E.S. CENTRAL	705	471	351	287	608	656	305	664
Ky.	142	78	-	36	46	67	82	103
Tenn.	454	83	310	112	348	315	U	224
Ala.	63	276	37	137	136	145	167	211
Miss.	46	34	4	2	78	129	56	126
W.S. CENTRAL	966	2,000	721	615	524	516	822	1,267
Ark.	53	112	21	26	40	71	89	64
La.	76	146	53	176	121	191	U	65
Okla.	304	138	82	30	121	22	69	96
Tex.	533	1,604	565	383	242	232	664	1,042
MOUNTAIN	403	597	192	359	133	140	208	295
Mont.	6	4	-	3	-	-	5	12
Idaho	9	12	5	8	1	-	-	7
Wyo.	2	1	1	-	-	1	1	2
Colo.	64	81	50	61	1	8	U	34
N. Mex.	50	153	17	68	6	18	32	36
Ariz.	213	306	113	198	117	98	124	110
Utah	30	20	-	14	2	3	27	33
Nev.	29	20	6	7	6	12	19	61
PACIFIC	1,107	1,193	111	1,196	157	215	1,944	2,097
Wash.	57	62	51	65	39	12	87	141
Oreg.	39	70	39	69	2	2	57	66
Calif.	987	1,035	-	1,035	113	200	1,677	1,760
Alaska	-	4	-	2	1	-	33	30
Hawaii	24	22	21	25	2	1	90	100
Guam	3	21	-	-	-	1	-	45
P.R.	29	32	-	-	87	117	41	80
V.I.	-	-	-	-	U	U	U	U
Amer. Samoa	-	-	-	-	U	U	U	U
C.N.M.I.	-	13	-	-	-	142	-	65

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

*Individual cases may be reported through both the National Electronic Telecommunications System for Surveillance (NETSS) and the Public Health Laboratory Information System (PHLIS).

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

TABLE III. Provisional cases of selected notifiable diseases preventable by vaccination, United States, weeks ending July 24, 1999, and July 25, 1998 (29th Week)

	H. influenzae, invasive		Hepatitis (Viral), by type				Measles (Rubeola)					
			A		B		Indigenous		Imported*		Total	
Reporting Area	Cum. 1999†	Cum. 1998	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998	1999	Cum. 1999	1999	Cum. 1999	Cum. 1999	Cum. 1998
UNITED STATES	700	669	8,494	12,463	3,577	5,318	2	32	-	16	48	44
NEW ENGLAND	52	43	108	164	61	112	-	5	-	4	9	3
Maine	5	2	4	13	1	2	-	-	-	-	-	-
N.H.	12	7	8	8	8	10	-	-	-	1	1	-
Vt.	4	2	4	13	1	4	-	-	-	-	-	1
Mass.	18	30	31	58	28	42	-	4	-	2	6	2
R.I.	1	2	10	10	23	35	-	-	-	-	-	-
Conn.	12	-	51	62	-	19	-	1	-	1	2	-
MID. ATLANTIC	102	100	549	956	407	714	-	-	-	2	2	11
Upstate N.Y.	53	31	143	188	115	138	-	-	-	2	2	2
N.Y. City	18	30	100	338	90	243	-	-	-	-	-	-
N.J.	30	32	57	194	40	124	-	-	-	-	-	8
Pa.	1	7	249	236	162	209	U	-	U	-	-	1
E.N. CENTRAL	101	111	1,652	1,777	343	815	-	1	-	1	2	15
Ohio	39	35	410	194	51	43	-	-	-	-	-	1
Ind.	18	27	102	93	27	65	-	1	-	-	1	3
Ill.	37	43	287	439	-	144	-	-	-	-	-	-
Mich.	7	1	827	917	264	245	U	-	U	1	1	10
Wis.	-	5	26	134	1	318	U	-	U	-	-	1
W.N. CENTRAL	58	59	437	962	266	235	-	-	-	-	-	-
Minn.	17	45	42	78	25	21	-	-	-	-	-	-
Iowa	14	1	82	361	105	40	-	-	-	-	-	-
Mo.	20	8	233	422	104	143	-	-	-	-	-	-
N. Dak.	-	-	1	3	-	4	U	-	U	-	-	-
S. Dak.	1	-	8	17	1	1	-	-	-	-	-	-
Nebr.	3	-	38	16	11	10	-	-	-	-	-	-
Kans.	3	5	33	65	20	16	-	-	-	-	-	-
S. ATLANTIC	163	123	1,109	977	648	518	-	1	-	3	4	6
Del.	-	-	2	3	-	-	-	-	-	-	-	1
Md.	45	41	214	239	96	84	-	-	-	-	-	1
D.C.	4	-	37	30	14	6	-	-	-	-	-	-
Va.	12	13	90	137	51	56	-	1	-	2	3	2
W. Va.	4	4	20	1	15	3	-	-	-	-	-	-
N.C.	23	18	76	59	131	118	-	-	-	-	-	-
S.C.	2	3	22	18	39	22	U	-	U	-	-	-
Ga.	42	24	288	262	75	94	-	-	-	-	-	1
Fla.	31	20	360	228	227	135	-	-	-	1	1	1
E.S. CENTRAL	50	42	249	245	270	231	-	-	-	-	-	2
Ky.	6	7	39	15	26	28	-	-	-	-	-	-
Tenn.	28	23	130	140	141	161	-	-	-	-	-	1
Ala.	14	10	38	48	51	42	-	-	-	-	-	1
Miss.	2	2	42	42	52	-	U	-	U	-	-	-
W.S. CENTRAL	38	35	1,509	2,200	361	1,179	2	3	-	3	6	-
Ark.	2	-	30	55	30	56	-	-	-	-	-	-
La.	7	16	59	46	72	57	U	-	U	-	-	-
Okla.	26	17	295	329	81	48	-	-	-	-	-	-
Tex.	3	2	1,125	1,770	178	1,018	2	3	-	3	6	-
MOUNTAIN	65	81	808	1,880	368	490	-	2	-	-	2	-
Mont.	1	-	12	63	16	3	-	-	-	-	-	-
Idaho	1	-	27	157	16	19	U	-	U	-	-	-
Wyo.	1	1	4	24	8	2	-	-	-	-	-	-
Colo.	10	17	143	146	51	61	-	-	-	-	-	-
N. Mex.	15	4	31	88	125	195	-	-	-	-	-	-
Ariz.	30	39	484	1,146	98	114	-	1	-	-	1	-
Utah	5	3	30	124	20	42	-	1	-	-	1	-
Nev.	2	17	77	132	34	54	-	-	-	-	-	-
PACIFIC	71	75	2,073	3,302	853	1,024	-	20	-	3	23	7
Wash.	2	5	184	631	39	58	-	-	-	-	-	1
Oreg.	28	31	149	253	52	106	-	8	-	-	8	-
Calif.	33	31	1,728	2,372	743	845	-	11	-	3	14	6
Alaska	5	1	3	14	12	7	-	-	-	-	-	-
Hawaii	3	7	9	32	7	8	-	1	-	-	1	-
Guam	-	-	2	-	2	2	U	1	U	-	1	-
P.R.	1	2	100	32	88	149	U	-	U	-	-	-
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	-	41	U	-	U	-	-	-

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

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

†Of 140 cases among children aged <5 years, serotype was reported for 66 and of those, 16 were type b.

TABLE III. (Cont'd.) Provisional cases of selected notifiable diseases preventable by vaccination, United States, weeks ending July 24, 1999, and July 25, 1998 (29th 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	1,483	1,679	1	197	433	61	2,844	2,876	1	153	310
NEW ENGLAND	80	76	-	4	1	4	291	529	-	6	38
Maine	5	5	-	-	-	-	-	5	-	-	-
N.H.	11	9	-	1	-	-	53	39	-	-	-
Vt.	4	1	-	1	-	-	9	47	-	-	-
Mass.	47	33	-	2	1	-	203	408	-	6	8
R.I.	3	3	-	-	-	4	17	5	-	-	1
Conn.	10	25	-	-	-	-	9	25	-	-	29
MID. ATLANTIC	137	170	-	25	169	1	593	318	-	21	140
Upstate N.Y.	37	44	-	6	2	1	507	157	-	17	111
N.Y. City	31	21	-	3	153	-	10	17	-	-	15
N.J.	36	41	-	-	6	-	12	9	-	1	13
Pa.	33	64	U	16	8	U	64	135	U	3	1
E.N. CENTRAL	229	262	-	24	53	2	231	316	-	2	-
Ohio	103	91	-	8	20	2	122	79	-	-	-
Ind.	37	46	-	3	5	-	14	68	-	1	-
Ill.	58	72	-	6	9	-	42	30	-	1	-
Mich.	30	31	U	7	18	U	26	39	U	-	-
Wis.	1	22	U	-	1	U	27	100	U	-	-
W.N. CENTRAL	161	145	-	9	20	3	112	219	-	78	31
Minn.	33	25	-	1	10	-	35	130	-	-	-
Iowa	30	22	-	4	6	-	26	46	-	28	-
Mo.	61	56	-	1	3	3	26	16	-	2	2
N. Dak.	3	2	U	-	1	U	-	3	U	-	-
S. Dak.	9	6	-	-	-	-	5	6	-	-	-
Nebr.	9	10	-	-	-	-	1	7	-	48	-
Kans.	16	24	-	3	-	-	19	11	-	-	29
S. ATLANTIC	253	280	-	37	27	20	181	138	1	21	8
Del.	3	1	-	-	-	-	-	2	-	-	-
Md.	38	23	-	4	-	5	49	27	-	1	-
D.C.	1	-	-	2	-	-	-	1	-	-	-
Va.	30	24	-	8	5	-	13	7	-	-	-
W. Va.	4	10	-	-	-	-	1	1	-	-	-
N.C.	29	41	-	8	9	7	49	50	1	20	5
S.C.	31	41	U	3	4	U	8	17	U	-	-
Ga.	44	64	-	2	1	2	18	6	-	-	-
Fla.	73	76	-	10	8	6	43	27	-	-	3
E.S. CENTRAL	117	117	-	4	10	1	47	63	-	1	-
Ky.	30	18	-	-	-	1	5	26	-	-	-
Tenn.	43	44	-	-	1	-	27	18	-	-	-
Ala.	26	35	-	4	5	-	11	17	-	1	-
Miss.	18	20	U	-	4	U	4	2	U	-	-
W.S. CENTRAL	129	195	1	25	40	8	78	196	-	5	79
Ark.	26	24	-	-	-	-	9	24	-	-	-
La.	34	39	U	3	8	U	3	2	U	-	-
Okla.	21	28	-	1	-	-	7	20	-	-	-
Tex.	48	104	1	21	32	8	59	150	-	5	79
MOUNTAIN	96	90	-	12	26	8	286	555	-	15	5
Mont.	2	3	-	-	-	-	2	3	-	-	-
Idaho	8	4	U	1	3	U	93	165	U	-	-
Wyo.	3	4	-	-	1	-	2	7	-	-	-
Colo.	26	17	-	3	5	5	68	138	-	-	-
N. Mex.	12	16	N	N	N	2	50	69	-	-	1
Ariz.	29	32	-	-	5	-	29	125	-	13	1
Utah	11	9	-	5	3	-	39	29	-	1	2
Nev.	5	5	-	3	9	1	3	19	-	1	1
PACIFIC	281	344	-	57	87	14	1,025	542	-	4	9
Wash.	43	47	-	2	6	12	521	153	-	-	5
Oreg.	48	55	N	N	N	2	24	36	-	-	-
Calif.	181	237	-	47	63	-	468	339	-	4	2
Alaska	5	1	-	1	2	-	3	3	-	-	-
Hawaii	4	4	-	7	16	-	9	11	-	-	2
Guam	-	2	U	1	2	U	1	-	U	-	-
P.R.	5	6	U	-	2	U	13	3	U	-	-
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 July 24, 1999 (29th Week)

Reporting Area	All Causes, By Age (Years)						P&I† Total
	All Ages	>65	45-64	25-44	1-24	<1	
NEW ENGLAND	478	349	72	35	14	8	37
Boston, Mass.	136	86	22	15	7	6	12
Bridgeport, Conn.	34	24	4	4	1	1	2
Cambridge, Mass.	22	13	9	-	-	-	1
Fall River, Mass.	20	19	-	-	1	-	1
Hartford, Conn.	45	32	9	4	-	-	3
Lowell, Mass.	34	28	4	1	1	-	5
Lynn, Mass.	11	9	1	1	-	-	-
New Bedford, Mass.	29	25	2	1	1	-	1
New Haven, Conn.	35	24	6	4	1	-	4
Providence, R.I.	U	U	U	U	U	U	U
Somerville, Mass.	2	1	-	1	-	-	-
Springfield, Mass.	47	39	6	1	-	1	1
Waterbury, Conn.	19	16	2	-	1	-	2
Worcester, Mass.	44	33	7	3	1	-	5
MID. ATLANTIC	2,048	1,419	407	146	40	36	81
Albany, N.Y.	38	31	4	1	1	1	4
Allentown, Pa.	U	U	U	U	U	U	U
Buffalo, N.Y.	72	50	15	4	2	1	3
Camden, N.J.	15	12	1	-	-	2	1
Elizabeth, N.J.	14	9	5	-	-	-	-
Erie, Pa.	39	29	7	2	-	1	1
Jersey City, N.J.	41	26	8	6	1	-	-
New York City, N.Y.	1,100	741	239	87	15	18	30
Newark, N.J.	U	U	U	U	U	U	U
Paterson, N.J.	13	2	6	5	-	-	-
Philadelphia, Pa.	346	249	62	21	6	8	19
Pittsburgh, Pa.§	51	35	13	3	-	-	2
Reading, Pa.	23	18	3	1	1	-	2
Rochester, N.Y.	121	95	15	3	5	3	12
Schenectady, N.Y.	20	13	4	1	2	-	1
Scranton, Pa.	28	20	6	-	2	-	-
Syracuse, N.Y.	68	49	10	6	1	2	2
Trenton, N.J.	38	27	5	3	3	-	3
Utica, N.Y.	21	13	4	3	1	-	1
Yonkers, N.Y.	U	U	U	U	U	U	U
E.N. CENTRAL	1,915	1,313	368	135	54	43	121
Akron, Ohio	51	33	10	4	-	4	-
Canton, Ohio	34	26	6	1	1	-	3
Chicago, Ill.	470	292	99	47	18	12	29
Cincinnati, Ohio	U	U	U	U	U	U	U
Cleveland, Ohio	U	U	U	U	U	U	U
Columbus, Ohio	189	138	34	7	6	4	21
Dayton, Ohio	110	88	19	1	1	1	8
Detroit, Mich.	209	124	47	22	11	5	6
Evansville, Ind.	38	30	6	2	-	-	2
Fort Wayne, Ind.	52	42	7	2	-	1	1
Gary, Ind.	14	9	5	-	-	-	-
Grand Rapids, Mich.	55	36	9	7	1	2	6
Indianapolis, Ind.	163	111	30	10	8	4	10
Lansing, Mich.	54	38	10	5	-	1	3
Milwaukee, Wis.	133	92	24	11	2	4	14
Peoria, Ill.	54	37	11	3	1	2	3
Rockford, Ill.	54	39	8	5	1	1	3
South Bend, Ind.	50	41	5	4	-	-	3
Toledo, Ohio	121	86	26	4	3	2	5
Youngstown, Ohio	64	51	12	-	1	-	4
W.N. CENTRAL	665	472	124	42	15	11	43
Des Moines, Iowa	100	75	20	5	-	-	11
Duluth, Minn.	22	18	4	-	-	-	2
Kansas City, Kans.	U	U	U	U	U	U	U
Kansas City, Mo.	93	67	16	7	2	1	3
Lincoln, Nebr.	31	23	4	2	1	1	-
Minneapolis, Minn.	179	138	20	10	4	6	16
Omaha, Nebr.	91	61	20	5	5	-	4
St. Louis, Mo.	94	50	31	8	2	3	5
St. Paul, Minn.	55	40	9	5	1	-	2
Wichita, Kans.	U	U	U	U	U	U	U
S. ATLANTIC	1,009	663	199	104	28	14	57
Atlanta, Ga.	U	U	U	U	U	U	U
Baltimore, Md.	213	122	47	36	5	2	20
Charlotte, N.C.	97	63	21	8	3	2	8
Jacksonville, Fla.	156	105	31	11	6	3	4
Miami, Fla.	94	66	18	8	2	-	-
Norfolk, Va.	43	28	5	5	3	2	1
Richmond, Va.	U	U	U	U	U	U	U
Savannah, Ga.	54	33	12	6	1	2	3
St. Petersburg, Fla.	70	62	5	2	1	-	7
Tampa, Fla.	168	119	26	16	5	2	11
Washington, D.C.	96	63	21	9	2	1	3
Wilmington, Del.	18	2	13	3	-	-	-
E.S. CENTRAL	657	437	143	45	19	12	34
Birmingham, Ala.	153	109	26	7	4	6	16
Chattanooga, Tenn.	83	60	16	3	3	1	5
Knoxville, Tenn.	73	47	16	7	3	-	-
Lexington, Ky.	69	45	15	6	2	1	5
Memphis, Tenn.	U	U	U	U	U	U	U
Mobile, Ala.	91	61	16	9	4	1	1
Montgomery, Ala.	32	18	9	3	2	-	-
Nashville, Tenn.	156	97	45	10	1	3	7
W.S. CENTRAL	1,103	699	228	95	33	47	75
Austin, Tex.	66	47	19	-	-	-	5
Baton Rouge, La.	U	U	U	U	U	U	U
Corpus Christi, Tex.	53	39	10	2	-	2	2
Dallas, Tex.	197	114	40	27	10	6	6
El Paso, Tex.	85	52	21	10	1	1	4
Ft. Worth, Tex.	128	73	22	15	5	13	16
Houston, Tex.	U	U	U	U	U	U	U
Little Rock, Ark.	73	44	20	2	4	3	5
New Orleans, La.	107	57	25	15	4	6	-
San Antonio, Tex.	194	135	33	13	7	6	19
Shreveport, La.	80	55	13	5	1	6	8
Tulsa, Okla.	120	83	25	6	1	4	10
MOUNTAIN	824	574	142	74	20	14	45
Albuquerque, N.M.	111	75	21	11	3	1	1
Boise, Idaho	46	35	6	2	2	1	2
Colo. Springs, Colo.	50	35	9	4	1	1	4
Denver, Colo.	120	71	29	11	4	5	8
Las Vegas, Nev.	171	114	34	19	2	2	9
Ogden, Utah	30	25	3	1	1	-	-
Phoenix, Ariz.	49	37	6	5	1	-	2
Pueblo, Colo.	25	17	6	2	-	-	5
Salt Lake City, Utah	99	73	12	8	5	1	7
Tucson, Ariz.	123	92	16	11	1	3	7
PACIFIC	1,580	1,133	274	124	26	21	131
Berkeley, Calif.	12	8	4	-	-	-	1
Fresno, Calif.	56	36	13	5	1	1	3
Glendale, Calif.	21	17	3	1	-	-	4
Honolulu, Hawaii	67	49	11	4	2	1	4
Long Beach, Calif.	71	55	10	4	1	1	18
Los Angeles, Calif.	413	291	78	30	10	4	19
Pasadena, Calif.	20	17	2	1	-	-	2
Portland, Oreg.	114	80	17	14	2	1	8
Sacramento, Calif.	179	120	38	17	2	2	25
San Diego, Calif.	144	98	22	15	4	3	17
San Francisco, Calif.	U	U	U	U	U	U	U
San Jose, Calif.	203	150	31	16	1	5	17
Santa Cruz, Calif.	23	20	2	1	-	-	1
Seattle, Wash.	110	85	15	7	2	1	1
Spokane, Wash.	56	42	9	2	1	2	7
Tacoma, Wash.	91	65	19	7	-	-	4
TOTAL	10,279¶	7,059	1,957	800	249	206	624

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.

Erratum — Continued

World-Wide Web as part of the interactive *MMWR* tables (Morbidity) Table II (Part 3) and Table II (Part 4), http://wonder.cdc.gov/mmwr/mmwrmorb.htm. Paper copies of the corrected tables are available from the Surveillance Systems Branch, Division of Public Health Surveillance and Informatics, Epidemiology Program Office, CDC, Mailstop K-74, 4770 Buford Highway, Atlanta, GA 30341.

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