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Outbreak of West Nile-Like Viral Encephalitis — New York, 1999

An outbreak of arboviral encephalitis was first recognized in New York City in late August and has since been identified in neighboring counties in New York state. Although initially attributed to St. Louis encephalitis (SLE) virus based on positive serologic findings in cerebrospinal fluid (CSF) and serum samples using a virus-specific IgM-capture enzyme-linked immunosorbent assay (ELISA), the cause of the outbreak has been confirmed as a West Nile-like virus based on the identification of virus in human, avian, and mosquito samples.

On August 23, 1999, an infectious disease physician from a hospital in northern Queens contacted the New York City Department of Health (NYCDOH) to report two patients with encephalitis. On investigation, NYCDOH initially identified a cluster of six patients with encephalitis, five of whom had profound muscle weakness (with axonal neuropathy by electromyelogram and requiring respiratory support [n=four]). Testing of these initial cases by IgM-capture ELISA for antibodies to the common North American arboviruses was positive for SLE virus on September 3 at CDC. Eight of the earliest case-patients were residents of a 2-by-2-mile area in northern Queens. On the basis of these findings, aerial and ground applications of mosquito adulticides and larvacides were instituted in northern Queens and South Bronx on September 3.

To define the geographic extent of the outbreak, NYCDOH initiated active surveillance on August 30, and the Westchester County Department of Health and the Nassau County Department of Health initiated active surveillance on September 3. Surveillance is also ongoing in surrounding areas. A clinical case is defined as a presumptive diagnosis of viral encephalitis with or without muscle weakness or acute flaccid paralysis, Guillain-Barré syndrome, aseptic meningitis, or presence of the clinical syndrome characterizing the initial cluster of cases in a patient presenting after August 1.

Before and concurrent with this outbreak, local health officials observed increased fatalities among New York City birds, especially crows. During September 7–9, officials of the Bronx Zoo noted the deaths of a cormorant, two captive-bred Chilean flamingoes, and an Asian pheasant. Necropsies performed on these birds at the zoo revealed varying degrees of meningo-encephalitis and severe myocarditis. Tissue specimens from these birds and a crow with pathologic evidence of encephalitis from New York state were sent to the U.S. Department of Agriculture National Veterinary Services Laboratories (NVSL) in Ames, Iowa, on September 10 to be tested for com-

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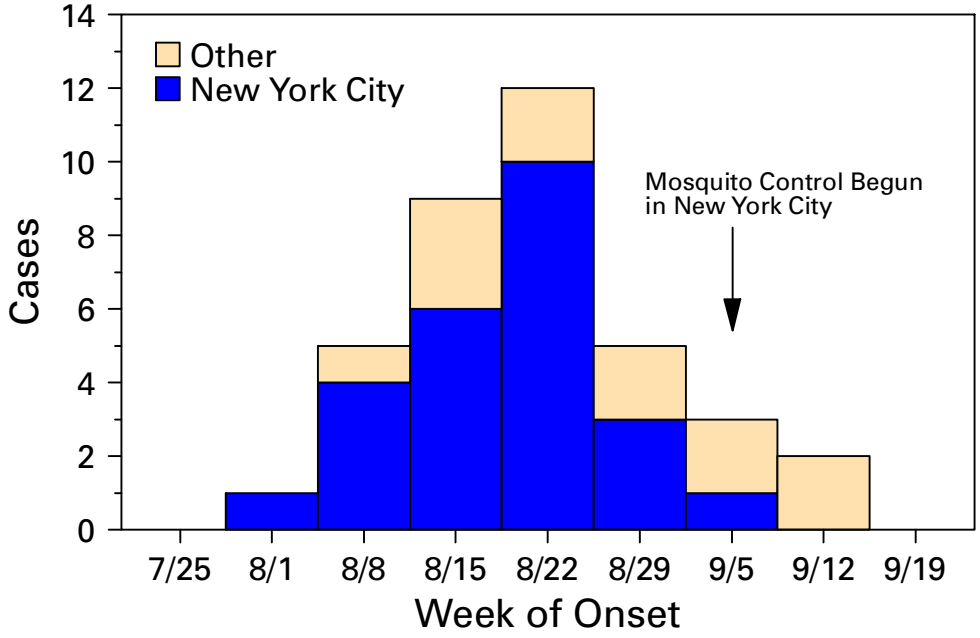
mon avian pathogens and the equine encephalitis viruses; all tests were negative. NVSL isolated viruses from the birds' tissues and forwarded them to CDC on September 20 for identification and characterization.

Testing at CDC on September 23 by polymerase chain reaction (PCR) and DNA sequencing of these isolates indicated that they were closely related to West Nile virus (WNV), which has never been isolated in the western hemisphere. In other tests at CDC, flavivirus antigen was detected in one of the autopsy specimens by immunohistochemistry, and a West Nile-like virus genomic sequence identical to that derived from the bird isolates was observed in a human brain specimen from an encephalitis case. Concurrently, specimens of brain tissue from three human encephalitis cases, forwarded by the New York State Department of Health to the University of California, Irvine, were reported as positive for West Nile-like virus sequence by genomic analysis. All serum/CSF specimens reactive to SLE by IgM ELISA were positive by WNV ELISA with higher positive/negative ratios than to SLE, and an additional 10 borderline and eight negative samples were positive for antibody to WNV.

As of September 28, a total of 17 confirmed and 20 probable human cases (*1*) and four deaths have been reported from New York City (25 cases) and the surrounding counties of Westchester (eight) and Nassau (four). The four deaths occurred among persons aged ≥68 years. One case-patient with onset in late August reported a history of travel to Africa completed in June 1999; none of the remaining case-patients had traveled during the incubation period to areas where WNV is known to be endemic. Two of the Westchester County case-patients had no reported travel history to New York City or other areas in which WNV previously had been detected.

Onset dates ranged from August 5 to September 16 (Figure 1), although no cases had onset in New York City after control measures were extended to the entire city on September 11. The median age of case-patients was 71 years (range: 15–87 years), with the most severe clinical cases and all fatalities occurring among older persons.

FIGURE 1. Seropositive cases of West Nile-like virus, by week of onset — New York, 1999



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Vector control measures initiated in northern Queens and South Bronx on September 3 were followed by a city-wide pesticide application after laboratory confirmation of encephalitis in a Brooklyn resident with no travel history to Queens and confirmation of an additional two cases in South Bronx. According to the latest ongoing population estimates from a city-wide mosquito surveillance program, the host-seeking adult *Culex pipiens* mosquito population has been reduced substantially by the control operation. Following the confirmation of human cases in Westchester and Nassau counties and detection of virus in adult *Culex pipiens* and *Aedes vexans* mosquitoes and in a deceased bird from a nearby area in Connecticut, insecticide application has been initiated in these areas to reduce the mosquito population. Surveillance of wild birds and/or sentinel chickens was instituted to assess WNV distribution in the region.

Emergency telephone hotlines were established in New York City on September 3 and in Westchester County on September 21 to address public inquiries about the encephalitis outbreak and pesticide application. As of September 28, approximately 130,000 calls have been received by the New York City hotline and 12,000 by the WCDH hotline. Approximately 300,000 cans of DEET-based mosquito repellant were distributed citywide through local firehouses, and 750,000 public health leaflets were distributed with information about personal protection against mosquito bites. Recurring public messages were announced on radio, television, on the New York City and WCDH World-Wide Web sites, and in newspapers, urging personal protection against mosquito bites, including limiting outdoor activity during peak hours of mosquito activity, wearing long-sleeved shirts and long pants, using DEET-based insect repellents, and eliminating any potential mosquito breeding niches. Spraying schedules also were publicized with recommendations for persons to remain indoors while spraying occurred to reduce pesticide exposure. Mosquito surveillance will continue until the first frost in New York City; Westchester, Nassau, Rockland, and Suffolk counties; and Connecticut. Surveillance for new human WNV cases will be conducted until several weeks after the first frost, when mosquito activity is expected to subside.

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Editorial Note: WNV is a flavivirus belonging taxonomically to the Japanese encephalitis subgroup that includes the serologically closely related SLE virus, Kunjin virus,

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Murray Valley encephalitis virus, and others. WNV was first isolated in the West Nile Province of Uganda in 1937 (*2*). The first recorded epidemics occurred in Israel during 1950–1954 and in 1957. Epidemics have been reported in Europe in the Rhone delta of France in 1962 and in Romania in 1996 (*3–5*). The largest recorded epidemic occurred in South Africa in 1974 (*6*). It is unclear whether the virus that caused this outbreak is a previously identified strain of WNV or a new variant.

The genomic sequences identified to date from a human brain, virus isolates from zoo birds, and viruses isolated from a dead crow and two mosquito pools from Connecticut appear identical. Based on preliminary serologic testing, this outbreak was originally believed to be caused by the SLE virus. SLE and West Nile viruses are antigenically related, and cross reactions are observed with some serologic tests. Results of PCR-based sequencing that identified WNV prompted more specific testing. The IgM-capture ELISA used in testing serum/CSF samples in this outbreak is rapid, sensitive, and quantitative. The limitations of some serologic assays emphasize the importance of isolating the flavivirus from entomologic, clinical, or veterinary material. The availability of virus isolates and genomic sequences from birds and human brain tissue permitted the discovery of this West Nile-like virus in North America. Although it is not known when and how a West Nile-like virus was introduced into North America, international travel of infected persons to New York or transport by imported infected birds may have played a role.

WNV can infect a wide range of vertebrates, but in humans it usually produces either asymptomatic infection or mild febrile disease. Within its normal geographic distribution of Africa, the Middle East, western Asia, and Europe, WNV has not been documented to cause epizootics in birds; crows with antibodies to WNV are common, suggesting that asymptomatic or mild infection usually occurs among crows in those regions. Similarly, substantial bird virulence of SLE virus has not been reported. Therefore, an epizootic producing high mortality in crows and other bird species is unusual for either WNV or SLE virus and may represent introduction to a native bird population or a new virulent strain. For both viruses, migratory birds may play an important role in the natural transmission cycles.

Like SLE virus, WNV is transmitted principally by *Culex* species mosquitoes, but also can be transmitted by *Aedes, Anopheles,* and other species. The predominance of urban *Culex* mosquitoes trapped during this outbreak suggests an important role for this species. Enhanced monitoring through surveillance for early detection of this virus outside of the affected area will be crucial to guide extension of control measures.

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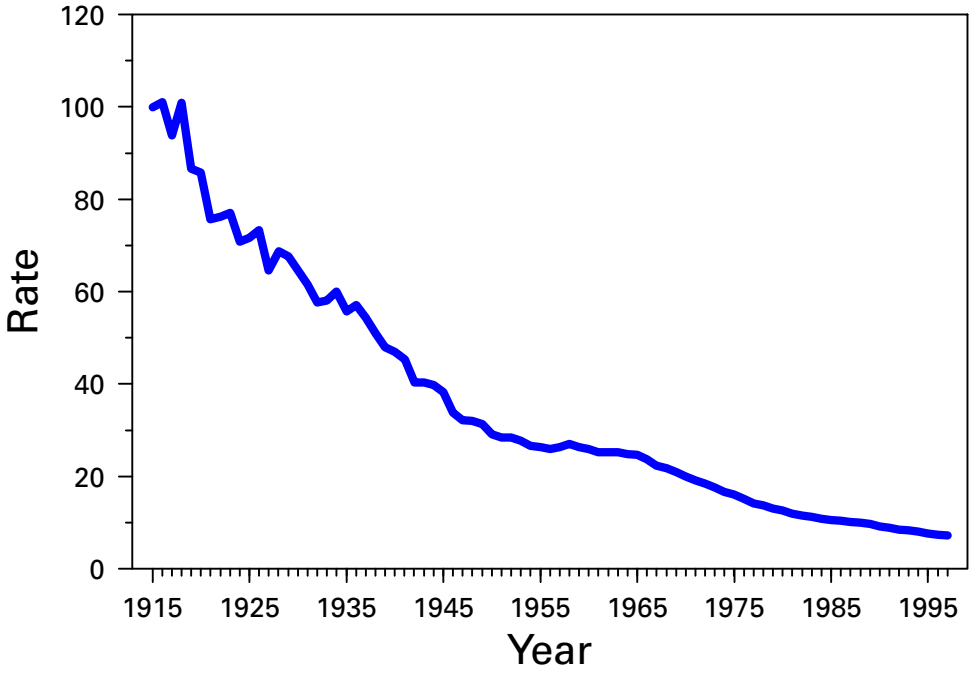
Achievements in Public Health, 1900–1999

Healthier Mothers and Babies

At the beginning of the 20th century, for every 1000 live births, six to nine women in the United States died of pregnancy-related complications, and approximately 100 infants died before age 1 year (*1,2*). From 1915 through 1997, the infant mortality rate declined >90% to 7.2 per 1000 live births, and from 1900 through 1997, the maternal mortality rate declined almost 99% to <0.1 reported death per 1000 live births (7.7 deaths per 100,000 live births in 1997) (*3*) (Figures 1 and 2). Environmental interventions, improvements in nutrition, advances in clinical medicine, improvements in access to health care, improvements in surveillance and monitoring of disease, increases in education levels, and improvements in standards of living contributed to this remarkable decline (*1*). Despite these improvements in maternal and infant mortality rates, significant disparities by race and ethnicity persist. This report summarizes trends in reducing infant and maternal mortality in the United States, factors contributing to these trends, challenges in reducing infant and maternal mortality, and provides suggestions for public health action for the 21st century.

FIGURE 1. Infant mortality rate,* by year — United States, 1915–1997



*Per 1000 live births.

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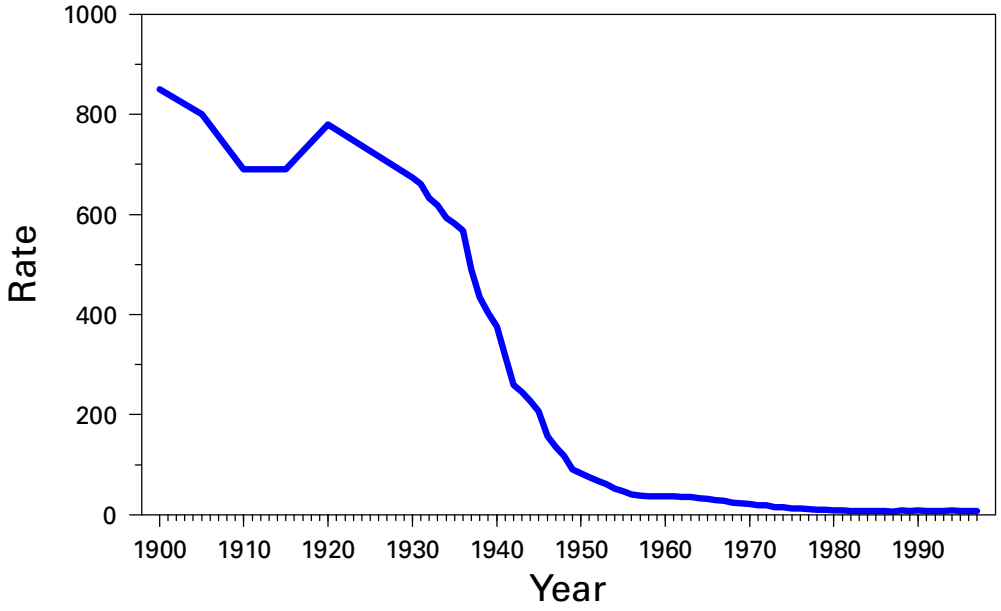
FIGURE 2. Maternal mortality rate,* by year — United States, 1900–1997



*Per 100,000 live births.

Infant Mortality

The decline in infant mortality is unparalleled by other mortality reduction this century. If turn-of-the-century infant death rates had continued, then an estimated 500,000 live-born infants during 1997 would have died before age 1 year; instead, 28,045 infants died (*3*).

In 1900 in some U.S. cities, up to 30% of infants died before reaching their first birthday (*1*). Efforts to reduce infant mortality focused on improving environmental and living conditions in urban areas (*1*). Urban environmental interventions (e.g., sewage and refuse disposal and safe drinking water) played key roles in reducing infant mortality. Rising standards of living, including improvements in economic and education levels of families, helped to promote health. Declining fertility rates also contributed to reductions in infant mortality through longer spacing of children, smaller family size, and better nutritional status of mothers and infants (*1*). Milk pasteurization, first adopted in Chicago in 1908, contributed to the control of milkborne diseases (e.g., gastrointestinal infections) from contaminated milk supplies.

During the first three decades of the century, public health, social welfare, and clinical medicine (pediatrics and obstetrics) collaborated to combat infant mortality (*1*). This partnership began with milk hygiene but later included other public health issues. In 1912, the Children's Bureau was formed and became the primary government agency to work toward improving maternal and infant welfare until 1946, when its role in maternal and child health diminished; the bureau was eliminated in 1969 (*1*). A proponent of the Children's Bureau was Martha May Eliot (see box, page 851). The Children's Bureau defined the problem of infant mortality and shaped the debate over programs to ameliorate the problem. The bureau also advocated comprehensive maternal and infant welfare services, including prenatal, natal, and postpartum home vis-

Martha May Eliot, M.D.

Martha May Eliot (April 7, 1891–February 14, 1978), a pioneer in maternal and child health, was a leading pediatrician and an important architect of postwar programs for maternal and child health. Born into a prominent family in Dorchester, Massachusetts, Eliot graduated from Radcliffe College and afterward worked for 1 year in the Social Service Department at Massachusetts General Hospital. In 1918, she graduated from medical school at Johns Hopkins University. She taught at Yale University's department of pediatrics from 1921 to 1935. For most of these years, Dr. Eliot also directed the National Children's Bureau Division of Child and Maternal Health (1924–1934). She later accepted a full-time position at the bureau, becoming bureau chief in 1951. In 1956, she left the bureau to become department chairman of child and maternal health at Harvard University School of Public Health.

As early as her second year of medical school, Dr. Eliot hoped to become "some kind of social doctor" (*1*). Her first important research—community studies of rickets in New Haven, Connecticut, and Puerto Rico—explored issues at the heart of social medicine. The studies, undertaken with Edwards A. Park, M.D., and funded by the Children's Bureau, sought to prevent a disease with potentially fatal consequences for both child development and maternal safety. Drs. Eliot and Park established that public health measures (dietary supplementation with vitamin D) could prevent and reverse the early onset of rickets (*2–4*).

During her tenure at the Children's Bureau, Dr. Eliot helped establish government programs that implemented her ideas about social medicine. In 1934, Dr. Eliot and the Children's Bureau drafted most of the Social Security Act's language dealing with maternal and child health. During World War II, she administered the Emergency Maternity and Infant Care program, which provided maternity care for >1 million servicemen's wives. After the war, she held influential positions in both the World Health Organization and United Nations Children's Fund (UNICEF).

Dr. Eliot's service to public health earned her many honors. She was one of the first women admitted into the American Pediatric Society; she received that organization's top honor, the Howland Medal. In 1947, she became the first woman elected president of the American Public Health Association (APHA); she also was the first woman to receive APHA's Sedgwick Memorial Medal; and in 1964, APHA established the Martha May Eliot Award, an annual prize recognizing achievements in maternal and child health.

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its by health-care providers. By the 1920s, the integration of these services changed the approach to infant mortality from one that addressed infant health problems to an approach that included infant and mother and prenatal-care programs to educate, monitor, and care for pregnant women.

The discovery and widespread use of antimicrobial agents (e.g., sulfonamide in 1937 and penicillin in the 1940s) and the development of fluid and electrolyte replacement therapy and safe blood transfusions accelerated the declines in infant mortality; from 1930 through 1949, mortality rates declined 52% (*4*). The percentage decline in postneonatal (age 28–364 days) mortality (66%) was greater than the decline in neonatal (age 0–27 days) mortality (40%). From 1950 through 1964, infant mortality declined more slowly (*1*). An increasing proportion of infant deaths were attributed to perinatal causes and occurred among high-risk neonates, especially low birth weight (LBW) and preterm babies. Although no reliable data exist, the rapid decline in infant mortality during earlier decades probably was not influenced by decreases in LBW rates because the decrease in mortality was primarily in postneonatal deaths that are less influenced by birthweight. Inadequate programs during the 1950s–1960s to reduce deaths among high-risk neonates led to renewed efforts to improve access to prenatal care, especially for the poor, and to a concentrated effort to establish neonatal intensive-care units and to promote research in maternal and infant health, including research into technologies to improve the survival of LBW and preterm babies.

During the late 1960s, after Medicaid and other federal programs were implemented, infant mortality (primarily postneonatal mortality) declined substantially (*5*). From 1970 to 1979, neonatal mortality plummeted 41% (Table 1) because of technologic advances in neonatal medicine and in the regionalization of perinatal services; postneonatal mortality declined 14%. During the early to mid-1980s, the downward trend in U.S. infant mortality slowed (*6*). However, during 1989–1991, infant mortality declined slightly faster, probably because of the use of artificial pulmonary surfactant to prevent and treat respiratory distress syndrome in premature infants (*7*). During 1991–1997, infant mortality continued to decline primarily because of decreases in sudden infant death syndrome (SIDS) and other causes.

TABLE 1. Percentage reduction in infant, neonatal, and postneonatal mortality, by year — United States, 1915–1997*

Year	Percentage reduction in mortality		
	Infant (aged 0–364 days)	Neonatal (aged 0–27 days)	Postneonatal (aged 28–364 days)
1915–1919	13%	7%	19%
1920–1929	21%	11%	31%
1930–1939	26%	18%	35%
1940–1949	33%	26%	46%
1950–1959	10%	7%	15%
1960–1969	20%	17%	27%
1970–1979	35%	41%	14%
1980–1989	22%	27%	12%
1990–1997	22%	17%	29%
1915–1997	**93%**	**89%**	**96%**

*Percentage reduction is calculated as the reduction from the first year of the time period to the last year of the time period.

Healthier Mothers and Babies — Continued

Although improvements in medical care were the main force for declines in infant mortality during the second half of the century, public health actions played a role. During the 1990s, a >50% decline in SIDS rates (attributed to the recommendation that infants be placed to sleep on their backs) has helped to reduce the overall infant mortality rate (*8*). The reduction in vaccine-preventable diseases (e.g., diphtheria, tetanus, measles, poliomyelitis, and *Haemophilus influenzae* type b meningitis) has reduced infant morbidity and has had a modest effect on infant mortality (*9*). Advances in prenatal diagnosis of severe central nervous system defects, selective termination of affected pregnancies, and improved surgical treatment and management of other structural anomalies have helped reduce infant mortality attributed to these birth defects (*10,11*). National efforts to encourage reproductive-aged women to consume foods or supplements containing folic acid could reduce the incidence of neural tube defects by half (*12*).

Maternal Mortality

Maternal mortality rates were highest in this century during 1900–1930 (*2*). Poor obstetric education and delivery practices were mainly responsible for the high numbers of maternal deaths, most of which were preventable (*2*). Obstetrics as a speciality was shunned by many physicians, and obstetric care was provided by poorly trained or untrained medical practitioners. Most births occurred at home with the assistance of midwives or general practitioners. Inappropriate and excessive surgical and obstetric interventions (e.g., induction of labor, use of forceps, episiotomy, and cesarean deliveries) were common and increased during the 1920s. Deliveries, including some surgical interventions, were performed without following the principles of asepsis. As a result, 40% of maternal deaths were caused by sepsis (half following delivery and half associated with illegally induced abortion) with the remaining deaths primarily attributed to hemorrhage and toxemia (*2*).

The 1933 White House Conference on Child Health Protection, Fetal, Newborn, and Maternal Mortality and Morbidity report (*13*) demonstrated the link between poor aseptic practice, excessive operative deliveries, and high maternal mortality. This and earlier reports focused attention on the state of maternal health and led to calls for action by state medical associations (*13*). During the 1930s–1940s, hospital and state maternal mortality review committees were established. During the ensuing years, institutional practice guidelines and guidelines defining physician qualifications needed for hospital delivery privileges were developed. At the same time, a shift from home to hospital deliveries was occurring throughout the country; during 1938–1948, the proportion of infants born in hospitals increased from 55% to 90% (*14*). However, this shift was slow in rural areas and southern states. Safer deliveries in hospitals under aseptic conditions and improved provision of maternal care for the poor by states or voluntary organizations led to decreases in maternal mortality after 1930. Medical advances (including the use of antibiotics, oxytocin to induce labor, and safe blood transfusion and better management of hypertensive conditions during pregnancy) accelerated declines in maternal mortality. During 1939–1948, maternal mortality decreased by 71% (*14*). The legalization of induced abortion beginning in the 1960s contributed to an 89% decline in deaths from septic illegal abortions (*15*) during 1950–1973.

Healthier Mothers and Babies — Continued

Since 1982, maternal mortality has not declined (*16*). However, more than half of maternal deaths can be prevented with existing interventions (*17*). In 1997, 327 maternal deaths were reported based on information on death certificates; however, death certificate data underestimate these deaths, and the actual numbers are two to three times greater. The leading causes of maternal death are hemorrhage, including hemorrhage associated with ectopic pregnancy, pregnancy-induced hypertension (toxemia), and embolism (*17*).

Challenges for the 21st Century

Despite the dramatic decline in infant and maternal mortality during the 20th century, challenges remain. Perhaps the greatest is the persistent difference in maternal and infant health among various racial/ethnic groups, particularly between black and white women and infants. Although overall rates have plummeted, black infants are more than twice as likely to die as white infants; this ratio has increased in recent decades. The higher risk for infant mortality among blacks compared with whites is attributed to higher LBW incidence and preterm births and to a higher risk for death among normal birthweight infants (≥5 lbs, 8 oz [≥2500 g]) (*18*). American Indian/Alaska Native infants have higher death rates than white infants because of higher SIDS rates. Hispanics of Puerto Rican origin have higher death rates than white infants because of higher LBW rates (*19*). The gap in maternal mortality between black and white women has increased since the early 1900s. During the first decades of the 20th century, black women were twice as likely to die of pregnancy-related complications as white women. Today, black women are more than three times as likely to die as white women.

During the last few decades, the key reason for the decline in neonatal mortality has been the improved rates of survival among LBW babies, not the reduction in the incidence of LBW. The long-term effects of LBW include neurologic disorders, learning disabilities, and delayed development (*20*). During the 1990s, the increased use of assisted reproductive technology has led to an increase in multiple gestations and a concomitant increase in the preterm delivery and LBW rates (*21*). Therefore, in the coming decades, public health programs will need to address the two leading causes of infant mortality: deaths related to LBW and preterm births and congenital anomalies. Additional substantial decline in neonatal mortality will require effective strategies to reduce LBW and preterm births. This will be especially important in reducing racial/ethnic disparities in the health of infants.

Approximately half of all pregnancies in the United States are unintended, including approximately three quarters among women aged <20 years. Unintended pregnancy is associated with increased morbidity and mortality for the mother and infant. Lifestyle factors (e.g., smoking, drinking alcohol, unsafe sex practices, and poor nutrition) and inadequate intake of foods containing folic acid pose serious health hazards to the mother and fetus and are more common among women with unintended pregnancies. In addition, one fifth of all pregnant women and approximately half of women with unintended pregnancies do not start prenatal care during the first trimester. Effective strategies to reduce unintended pregnancy, to eliminate exposure to unhealthy lifestyle factors, and to ensure that all women begin prenatal care early are important challenges for the next century.

Healthier Mothers and Babies — Continued

Compared with the 1970s, the 1980s and 1990s have seen a lack of decline in maternal mortality and a slower rate of decline in infant mortality. Some experts consider that the United States may be approaching an irreducible minimum in these areas. However, three factors indicate that this is unlikely. First, scientists have believed that infant and maternal mortality was as low as possible at other times during the century, when the rates were much higher than they are now. Second, the United States has higher maternal and infant mortality rates than other developed countries; it ranks 25th in infant mortality (*22*) and 21st in maternal mortality (*23*). Third, most of the U.S. population has infant and maternal mortality rates substantially lower than some racial/ethnic subgroups, and no definable biologic reason has been found to indicate that a minimum has been reached.

To develop effective strategies for the 21st century, studies of the underlying factors that contribute to morbidity and mortality should be conducted. These studies should include efforts to understand not only the biologic factors but also the social, economic, psychological, and environmental factors that contribute to maternal and infant deaths. Researchers are examining "fetal programming"—the effect of uterine environment (e.g., maternal stress, nutrition, and infection) on fetal development and its effect on health from childhood to adulthood. Because reproductive tract infections (e.g., bacterial vaginosis) are associated with preterm birth, development of effective screening and treatment strategies may reduce preterm births. Case reviews or audits are being used increasingly to investigate fetal, infant, and maternal deaths; they focus on identifying preventable deaths such as those resulting from health-care system failures and gaps in quality of care and in access to care. Another strategy is to study cases of severe morbidity in which the woman or infant did not die. More clinically focused than reviews or audits, such "near miss" studies may explain why one woman or infant with a serious problem died while another survived.

A thorough review of the quality of health care and access to care for all women and infants is needed to avoid preventable mortality and morbidity and to develop public health programs that can eliminate racial/ethnic disparities in health. Preconception health services for all women of childbearing age, including healthy women who intend to become pregnant, and quality care during pregnancy, delivery, and the postpartum period are critical elements needed to improve maternal and infant outcomes (see box, page 856).

Reported by: Division of Reproductive Health, National Center for Chronic Disease Prevention and Health Promotion, CDC.

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Opportunities to Reduce Maternal and Infant Mortality

Prevention measures to reduce maternal and infant mortality and to promote the health of all childbearing-aged women and their newborns should start before conception and continue through the postpartum period. Some of these prevention measures include the following:

Before conception

- Screen women for health risks and pre-existing chronic conditions such as diabetes, hypertension, and sexually transmitted diseases.
- Counsel women about contraception and provide access to effective family planning services (to prevent unintended pregnancies and unnecessary abortions).
- Counsel women about the benefits of good nutrition; encourage women especially to consume adequate amounts of folic acid supplements (to prevent neural tube defects) and iron.
- Advise women to avoid alcohol, tobacco, and illicit drugs.
- Advise women about the value of regular physical exercise.

During pregnancy

- Provide women with early access to high-quality care throughout pregnancy, labor, and delivery. Such care includes risk-appropriate care, treatment for complications, and the use of antenatal corticosteroids when appropriate.
- Monitor and, when appropriate, treat pre-existing chronic conditions.
- Screen for and, when appropriate, treat reproductive tract infections including bacterial vaginosis, group B streptococcus infections, and human immunodeficiency virus.
- Vaccinate women against influenza, if appropriate.
- Continue counseling against use of tobacco, alcohol, and illicit drugs.
- Continue counseling about nutrition and physical exercise.
- Educate women about the early signs of pregnancy-related problems.

During postpartum period

- Vaccinate newborns at age-appropriate times.
- Provide information about well-baby care and benefits of breastfeeding.
- Warn parents about exposing infants to secondhand smoke.
- Counsel parents about placing infants to sleep on their backs.
- Educate parents about how to protect their infants from exposure to infectious diseases and harmful substances.

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National Child Health Month — October 1999

Since 1992, the American Academy of Pediatrics (AAP) has designated October as Child Health Month to increase public awareness of the value of preventive health care for children. This year, Child Health Day is October 4. To promote the health of the approximately 78 million children and teenagers in the United States, CDC recommends the following for children and parents. Children should 1) learn to wash their hands to prevent infections; 2) eat breakfast before going to school; 3) not smoke and avoid the smoke of others; and 4) exercise and play safely and appropriately use protective gear. Parents should 1) read to and be actively involved with their children; 2) get their children vaccinated; 3) get their children health-care insurance; 4) check for health hazards in their home and eliminate them; 5) place children weighing <40 lbs in child safety seats and all others in safety belts in rear seats of automobiles; 6) seek medical advice if their child is slow to learn; and 7) avoid tobacco use and limit alcohol use. In addition, women of childbearing age should take vitamins with folic acid to prevent certain birth defects.

Additional information about Child Health Month is available from AAP, telephone (847) 981-7871, or on the World-Wide Web at http://www.aap.org; http://www.salud.unm.edu/asthma/chm/Childmo.html; http://www.census.gov/population/www/estimates/USpop.html; and http://www.hrsa.dhhs.gov/childhealth/outreach.html.*

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Healthier Mothers and Babies — Continued

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Public Health Dispatch

Outbreak of Poliomyelitis — Iraq, 1999

Since May 1999, 86 cases of acute flaccid paralysis (AFP) have been reported in Iraq. Sixteen cases with onset during May–July have been confirmed as paralytic poliomyelitis by isolation of wild poliovirus type 1; the remaining cases are either negative, pending virus isolation (n=10), or positive for type 1 poliovirus with intratypic differentiation pending (n=nine). The first confirmed case occurred in a person residing in Ninevah governorate in the northern part of the country; subsequently, confirmed cases were reported from nine of the 18 governorates in Iraq, suggesting widespread transmission of poliovirus. Before this outbreak, the last confirmed cases of wild polioviruses occurred in Iraq during April–May 1997.

Nine of the 16 case-patients with confirmed wild poliovirus were members of nomadic cattle-herding families; most cases reported since August occurred among children of resident families. Fourteen case-patients were aged ≤2 years, and 11 had not received oral poliovirus vaccine or were incompletely vaccinated.

To ensure prompt reporting of all AFP cases, surveillance has been enhanced at major hospitals and other health facilities most likely to see children with acute paralysis. To control the outbreak and to interrupt poliovirus transmission, Iraq will conduct two rounds of National Immunization Days (NIDs)* in October and November 1999. In addition, two rounds of NIDs will be conducted in the spring of 2000. To assure that all children in high-risk populations are covered, existing NIDs planned at governorate and district levels will be strengthened.

Factors contributing to the outbreak include declining routine vaccination coverage in many areas and insufficient NID coverage in southern and central governorates, especially among high-risk populations. The outbreak presents a challenge to the polio eradication initiative in Iraq and threatens reintroduction of virus into neighboring countries, especially Iran, Jordan, Syria, and Turkey. Iraq is part of a region that in-

*Mass campaigns over a short period (days to weeks) in which two doses of oral poliovirus vaccine are administered to all children in the target group (usually aged 0–4 years) regardless of previous vaccination history, with an interval of 4–6 weeks between doses.

Poliomyelitis — Continued

cludes border areas of Turkey, Syria, and Iran, where poliovirus transmission has been maintained until recently because of civil unrest, insufficient routine health services, and migration of minority populations across national boundaries. Preliminary genomic sequencing results indicate that the polioviruses in Iraq are similar to polioviruses in southeastern Turkey in 1998 and are not related to contemporary polioviruses from Pakistan and southern Asia. These findings indicate that the reason for the outbreak may have been continued undetected wild poliovirus transmission in the border areas of northwest Iraq.

Reported by: Ministry of Health; Country Office, Baghdad, Iraq; Eastern Mediterranean Regional Office, Alexandria, Egypt; Vaccine and Biologicals Dept, World Health Organization, Geneva, Switzerland. National Public Health Institute, Bilthoven, Netherlands. Vaccine Preventable Disease Eradication Div, National Immunization Program, CDC.

National Adult Immunization Awareness Week — October 10–16, 1999

National Adult Immunization Awareness Week (NAIAW) is October 10–16 this year. NAIAW highlights the influenza vaccination season, which typically begins in early fall of each year. NAIAW emphasizes the need for health-care providers and public health officials to intensify their efforts to vaccinate adults according to recommendations of the Advisory Committee on Immunization Practices. In addition to specifying the appropriate use of influenza and pneumococcal vaccines for adults, the recommendations cover adult vaccination against diphtheria, hepatitis A and B, measles, mumps, rubella, tetanus, and varicella.

Information about NAIAW is available from the National Coalition for Adult Immunization, 4733 Bethesda Ave., Suite 750, Bethesda, MD 20814; telephone (301) 656-0003; fax (301) 907-0878; e-mail adultimm@aol.com; and World-Wide Web site http://www.nfid.org/ncai*.

*References to sites of non-CDC 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

World's Population to Reach Six Billion

The United Nations (UN) estimates that the world's population will reach six billion on October 12, 1999 (*1*). The world's population reached one billion in 1804; subsequently, one billion increases came at intervals of 123, 33, 14, 13, and 12 years. Population growth rates increased over time because of high fertility rates and declines in mortality rates, especially since the early to mid-1900s. The UN projects that it will take 14 years for the world's population to reach 7 billion and another 15 years to reach 8 billion.

During 1995–2000, the world's population has grown at an annual rate of 1.3%. If this rate remains the same, the population will double in 52 years (*2*). This growth rate

Notice to Readers — Continued

is substantially less than the peak growth rate of 2.0% during 1965–1970 and less than the rate of 1.5% during 1990–1995.

The decline in world population growth rates is a result of substantial declines in fertility in less-developed countries during the past 25 years. Overall, in developing countries, fertility declined by approximately one third between the 1960s and late 1980s, from an average of six children per woman to four per woman. This decline has continued into the 1990s.

Although other factors, such as the age of women at first marriage and induced abortion, help explain the fertility decline, the most important determinant of declining fertility in less developed countries is the increased use of effective contraception (*3*). An estimated 53% of all women of reproductive age in developed countries who are married or living in a consensual union are using some form of contraception; this rate is referred to as the contraceptive prevalence rate (CPR). In Latin America and the Caribbean, the CPR is 58%. In eastern Asia, excluding Japan but including China, the CPR is 79%. CPR is lowest in sub-Saharan Africa at 12%; however, in Botswana, Kenya, and Zimbabwe, CPR is 25%.

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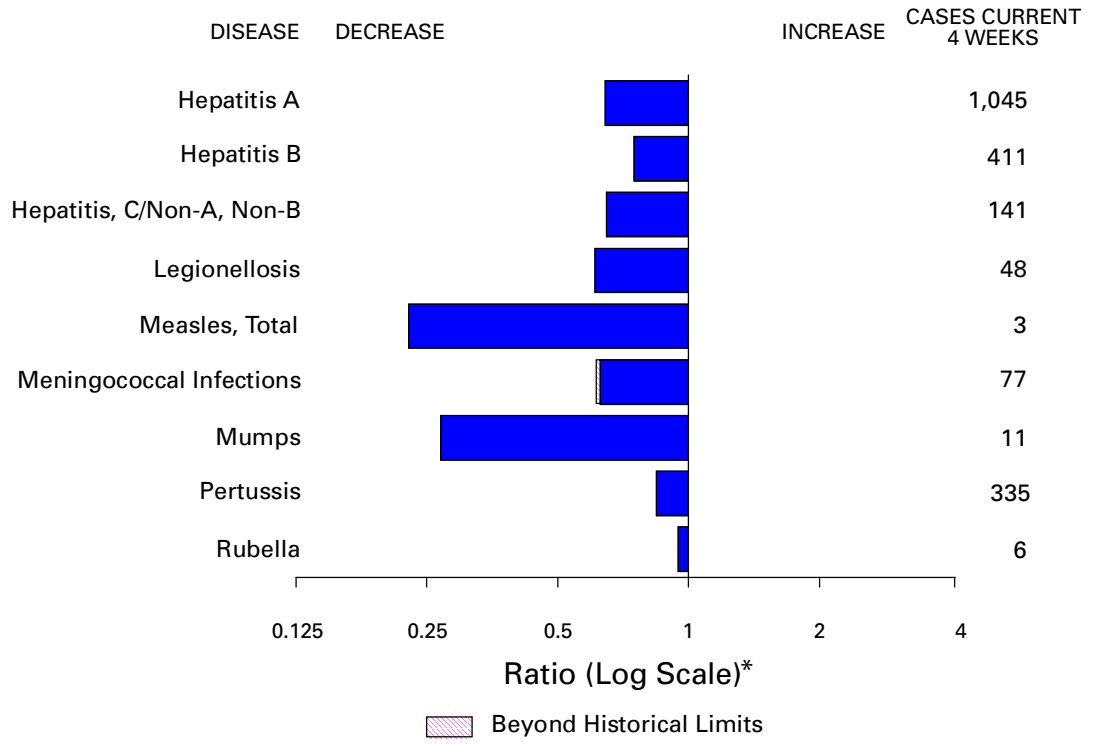
FIGURE I. Selected notifiable disease reports, comparison of provisional 4-week totals ending September 25, 1999, with historical data — United States



*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 September 25, 1999 (38th Week)

	Cum. 1999		Cum. 1999
Anthrax	-	HIV infection, pediatric*§	100
Brucellosis*	33	Plague	5
Cholera	4	Poliomyelitis, paralytic	-
Congenital rubella syndrome	4	Psittacosis*	15
Cyclosporiasis*	47	Rabies, human	-
Diphtheria	3	Rocky Mountain spotted fever (RMSF)	399
Encephalitis: California*	23	Streptococcal disease, invasive Group A	1,598
eastern equine*	5	Streptococcal toxic-shock syndrome*	29
St. Louis*	1	Syphilis, congenital¶	146
western equine*	-	Tetanus	27
Ehrlichiosis human granulocytic (HGE)*	112	Toxic-shock syndrome	89
human monocytic (HME)*	31	Trichinosis	8
Hansen Disease*	67	Typhoid fever	235
Hantavirus pulmonary syndrome*†	16	Yellow fever	-
Hemolytic uremic syndrome, post-diarrheal*	68		

-: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 August 29, 1999.
¶ Updated from reports to the Division of STD Prevention, NCHSTP.

TABLE II. Provisional cases of selected notifiable diseases, United States, weeks ending September 25, 1999, and September 26, 1998 (38th Week)

Reporting Area	AIDS		Chlamydia		Cryptosporidiosis		*Escherichia coli* O157:H7*			
							NETSS		PHLIS	
	Cum. 1999†	Cum. 1998	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998
UNITED STATES	30,285	33,478	426,595	427,583	1,525	2,891	2,234	2,147	1,438	1,728
NEW ENGLAND	1,532	1,281	14,545	14,948	97	122	242	267	228	226
Maine	51	24	738	721	19	25	31	31	-	-
N.H.	36	25	684	714	10	12	25	38	26	40
Vt.	11	17	349	307	29	21	23	14	14	12
Mass.	1,005	684	6,714	6,083	37	58	138	127	115	131
R.I.	73	98	1,670	1,667	2	6	25	11	6	1
Conn.	356	433	4,390	5,456	-	-	U	46	67	42
MID. ATLANTIC	7,780	9,331	48,388	44,246	245	437	188	235	60	80
Upstate N.Y.	890	1,100	N	N	106	260	140	168	-	-
N.Y. City	4,062	5,232	21,963	19,200	107	160	6	11	15	12
N.J.	1,476	1,685	7,198	8,523	22	17	42	56	32	47
Pa.	1,352	1,314	19,092	16,523	10	N	N	N	13	21
E.N. CENTRAL	1,980	2,518	59,708	72,348	320	569	425	347	322	293
Ohio	291	509	17,240	19,157	33	55	139	91	112	56
Ind.	247	412	7,243	7,873	29	46	68	77	36	40
Ill.	933	986	20,697	19,538	17	63	136	96	81	68
Mich.	405	466	14,528	15,736	39	32	82	83	54	56
Wis.	104	145	U	10,044	202	373	N	N	39	73
W.N. CENTRAL	678	604	24,788	25,294	167	228	479	346	265	331
Minn.	114	118	5,060	5,109	63	79	189	147	137	182
Iowa	62	51	2,934	3,222	48	59	94	75	57	48
Mo.	340	281	8,595	9,107	21	20	34	37	48	49
N. Dak.	4	4	325	728	14	27	15	10	1	14
S. Dak.	13	13	1,152	1,121	6	19	38	22	13	28
Nebr.	45	56	2,496	1,956	14	20	88	30	-	-
Kans.	100	81	4,226	4,051	1	4	21	25	9	10
S. ATLANTIC	8,314	8,575	98,438	82,255	272	224	244	177	130	139
Del.	112	104	1,968	1,851	-	3	6	-	3	2
Md.	889	1,176	7,552	5,487	11	15	17	31	-	14
D.C.	321	635	N	N	8	6	-	1	U	U
Va.	508	685	10,513	10,125	19	13	58	N	42	47
W. Va.	46	65	1,204	1,749	2	1	9	8	5	8
N.C.	552	636	16,375	16,030	11	N	51	43	46	39
S.C.	764	504	17,649	13,146	-	-	19	9	14	8
Ga.	1,235	858	21,374	16,946	111	77	27	60	-	-
Fla.	3,887	3,912	21,803	16,921	110	109	57	25	20	21
E.S. CENTRAL	1,363	1,407	33,530	29,517	21	19	94	96	50	53
Ky.	201	219	5,230	4,659	5	8	27	28	-	-
Tenn.	540	489	10,305	9,804	6	6	43	43	30	34
Ala.	337	394	9,356	7,178	8	N	20	20	16	17
Miss.	285	305	8,639	7,876	2	5	4	5	4	2
W.S. CENTRAL	3,201	4,187	61,181	65,121	64	848	70	75	76	79
Ark.	123	159	4,195	2,881	1	6	9	8	8	9
La.	596	704	10,879	10,721	22	14	9	4	11	4
Okla.	94	238	5,853	7,298	8	N	18	12	12	6
Tex.	2,388	3,086	40,254	44,221	33	828	34	51	45	60
MOUNTAIN	1,174	1,116	23,443	23,758	76	109	207	276	87	205
Mont.	7	23	1,099	962	10	9	14	14	-	5
Idaho	16	19	1,233	1,445	7	16	26	31	8	22
Wyo.	6	1	524	500	1	1	11	51	5	54
Colo.	208	230	4,656	5,882	11	15	80	59	40	47
N. Mex.	67	178	2,853	2,508	32	43	9	17	4	16
Ariz.	607	398	9,238	8,402	9	16	24	33	16	25
Utah	102	91	1,580	1,564	N	N	30	58	12	21
Nev.	161	176	2,260	2,495	6	9	13	13	2	15
PACIFIC	4,263	4,459	62,574	70,096	263	335	285	328	220	322
Wash.	250	300	8,517	8,222	N	N	114	66	104	95
Oreg.	136	129	4,100	4,004	84	55	60	N	55	87
Calif.	3,803	3,882	46,569	54,663	179	277	104	166	52	127
Alaska	13	17	1,402	1,380	-	-	1	4	-	-
Hawaii	61	131	1,986	1,827	-	3	6	-	9	13
Guam	5	-	226	298	-	-	N	N	U	U
P.R.	936	1,243	U	U	-	N	5	5	U	U
V.I.	25	24	U	U	U	U	U	U	U	U
Amer. Samoa	-	-	U	U	U	U	U	U	U	U
C.N.M.I.	-	-	U	U	U	U	U	U	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 August 29, 1999.

TABLE II. (Cont'd.) Provisional cases of selected notifiable diseases, United States, weeks ending September 25, 1999, and September 26, 1998 (38th 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	234,734	254,653	2,418	2,363	614	942	8,086	11,933
NEW ENGLAND	4,343	4,424	57	51	49	57	2,830	3,798
Maine	42	49	2	-	4	1	22	65
N.H.	82	70	-	-	5	3	9	34
Vt.	36	27	4	2	11	5	15	10
Mass.	1,861	1,573	48	46	13	26	850	630
R.I.	419	272	3	3	6	13	350	382
Conn.	1,903	2,433	-	-	10	9	1,584	2,677
MID. ATLANTIC	27,738	27,340	105	155	120	237	3,964	6,418
Upstate N.Y.	4,751	5,092	70	80	41	76	2,833	3,141
N.Y. City	9,463	8,637	-	-	9	32	27	184
N.J.	4,391	5,741	-	U	12	14	390	1,266
Pa.	9,133	7,870	35	75	58	115	714	1,827
E.N. CENTRAL	40,388	49,815	1,243	534	170	315	92	627
Ohio	10,421	12,254	1	7	55	99	58	32
Ind.	3,952	4,661	1	5	26	57	18	27
Ill.	15,616	16,241	31	36	10	40	10	12
Mich.	10,399	12,115	620	366	50	65	1	12
Wis.	U	4,544	590	120	29	54	5	544
W.N. CENTRAL	10,156	12,493	92	30	38	52	139	170
Minn.	1,938	1,927	6	9	6	5	83	129
Iowa	672	1,084	-	7	14	7	16	22
Mo.	4,448	6,580	76	10	12	14	17	11
N. Dak.	31	60	-	-	-	-	1	-
S. Dak.	131	176	-	-	2	3	-	-
Nebr.	1,110	818	4	2	4	16	10	3
Kans.	1,826	1,848	6	2	-	7	12	5
S. ATLANTIC	71,570	68,787	170	77	95	106	821	692
Del.	1,229	1,046	1	-	10	11	25	55
Md.	6,153	6,411	37	9	17	27	577	504
D.C.	2,822	3,278	1	-	3	6	3	4
Va.	6,890	6,894	10	11	24	16	94	50
W. Va.	363	645	16	6	-	N	14	9
N.C.	14,444	13,968	32	18	13	8	61	42
S.C.	9,935	8,442	21	3	7	8	5	3
Ga.	14,359	14,769	1	9	-	8	-	5
Fla.	15,375	13,334	51	21	21	22	42	20
E.S. CENTRAL	26,827	28,342	198	230	34	54	66	88
Ky.	2,313	2,686	15	18	17	26	8	20
Tenn.	8,280	8,555	83	137	14	16	30	40
Ala.	8,364	9,313	2	4	3	5	17	15
Miss.	7,870	7,788	98	71	-	7	11	13
W.S. CENTRAL	34,543	40,026	175	369	6	16	25	18
Ark.	2,113	3,024	8	14	-	1	4	6
La.	8,653	9,139	102	33	2	2	-	3
Okla.	2,877	3,958	14	12	3	8	4	2
Tex.	20,900	23,905	51	310	1	5	17	7
MOUNTAIN	6,791	6,582	113	303	37	56	13	12
Mont.	33	31	5	7	-	2	-	-
Idaho	61	131	6	86	1	2	3	3
Wyo.	20	24	34	70	-	1	3	1
Colo.	1,684	1,516	19	21	10	13	-	-
N. Mex.	589	623	7	75	1	2	1	4
Ariz.	3,330	3,016	28	6	5	14	-	-
Utah	156	167	6	19	14	18	4	-
Nev.	918	1,074	8	19	6	4	2	4
PACIFIC	12,378	16,844	265	614	65	49	136	110
Wash.	1,461	1,415	13	15	11	9	6	6
Oreg.	582	584	15	15	N	N	11	17
Calif.	9,826	14,239	237	530	53	38	119	86
Alaska	226	238	-	-	1	1	-	1
Hawaii	283	368	-	54	-	1	N	N
Guam	32	44	-	1	-	2	-	1
P.R.	215	284	-	-	-	-	N	N
V.I.	U	U	U	U	U	U	U	U
Amer. Samoa	U	U	U	U	U	U	U	U
C.N.M.I.	U	U	U	U	U	U	U	U

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

TABLE II. (Cont'd.) Provisional cases of selected notifiable diseases, United States, weeks ending September 25, 1999, and September 26, 1998 (38th 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	913	1,073	4,298	5,600	25,403	29,663	20,240	25,434
NEW ENGLAND	48	46	659	1,118	1,232	1,841	1,361	1,760
Maine	3	3	121	186	108	132	75	49
N.H.	2	5	44	54	102	145	110	179
Vt.	4	-	81	50	71	99	66	76
Mass.	15	16	153	395	871	1,028	718	1,043
R.I.	4	4	73	71	80	106	52	33
Conn.	20	18	187	362	U	331	340	380
MID. ATLANTIC	207	324	801	1,208	2,953	4,857	2,887	4,623
Upstate N.Y.	54	69	592	849	941	1,157	860	1,093
N.Y. City	88	185	U	U	977	1,489	785	1,252
N.J.	44	45	136	151	508	1,061	535	1,040
Pa.	21	25	73	208	527	1,150	707	1,238
E.N. CENTRAL	87	118	122	92	3,678	4,773	2,448	3,631
Ohio	18	11	29	50	838	1,131	702	905
Ind.	14	10	12	9	376	523	299	419
Ill.	20	50	9	N	1,189	1,483	399	1,109
Mich.	30	38	69	30	712	870	687	797
Wis.	5	9	3	3	563	766	361	401
W.N. CENTRAL	49	71	563	564	1,668	1,737	1,630	1,782
Minn.	21	39	83	94	484	410	545	480
Iowa	12	7	131	122	200	297	158	236
Mo.	12	14	12	31	489	487	688	658
N. Dak.	-	2	119	108	38	48	4	62
S. Dak.	-	-	129	129	72	92	58	97
Nebr.	-	1	2	6	166	128	-	30
Kans.	4	8	87	74	219	275	177	219
S. ATLANTIC	264	211	1,544	1,865	6,002	5,663	3,879	4,392
Del.	1	3	34	34	107	63	120	100
Md.	73	63	298	357	638	677	662	668
D.C.	15	14	-	-	59	56	U	U
Va.	55	41	406	439	987	775	739	688
W. Va.	1	2	87	62	117	116	113	115
N.C.	23	18	310	471	905	788	947	993
S.C.	12	5	117	111	450	400	323	386
Ga.	21	30	145	242	933	1,133	651	1,039
Fla.	63	35	147	149	1,806	1,655	324	403
E.S. CENTRAL	18	25	206	221	1,297	1,623	747	1,202
Ky.	6	5	31	27	304	285	-	124
Tenn.	7	13	75	119	326	431	386	531
Ala.	4	5	100	73	420	498	308	447
Miss.	1	2	-	2	247	409	53	100
W.S. CENTRAL	14	29	82	26	2,310	3,155	2,333	2,290
Ark.	1	1	14	26	388	381	120	277
La.	10	11	-	-	334	424	438	552
Okla.	2	3	68	N	287	340	212	160
Tex.	1	14	-	-	1,301	2,010	1,563	1,301
MOUNTAIN	37	52	151	205	2,258	1,846	1,473	1,630
Mont.	4	1	50	46	47	67	1	39
Idaho	3	7	-	N	71	85	56	75
Wyo.	1	-	36	54	41	52	22	48
Colo.	14	15	1	32	580	434	537	404
N. Mex.	2	12	8	5	265	235	202	204
Ariz.	7	8	45	37	719	551	577	571
Utah	3	1	6	25	389	267	25	122
Nev.	3	8	5	6	146	155	53	167
PACIFIC	189	197	170	301	4,005	4,168	3,482	4,124
Wash.	18	17	-	-	464	369	617	498
Oreg.	16	14	1	4	345	230	402	256
Calif.	147	160	162	274	2,890	3,325	2,233	3,133
Alaska	1	2	7	23	35	48	6	29
Hawaii	7	4	-	-	271	196	224	208
Guam	-	2	-	-	20	26	U	U
P.R.	-	-	47	37	255	542	U	U
V.I.	U	U	U	U	U	U	U	U
Amer. Samoa	U	U	U	U	U	U	U	U
C.N.M.I.	U	U	U	U	U	U	U	U

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 September 25, 1999, and September 26, 1998 (38th Week)

Reporting Area	Shigellosis*				Syphilis (Primary & Secondary)		Tuberculosis	
	NETSS		PHLIS					
	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998	Cum. 1999†	Cum. 1998†
UNITED STATES	10,634	14,906	5,179	8,389	4,743	5,210	10,314	11,872
NEW ENGLAND	456	341	383	305	40	56	296	325
Maine	4	11	-	-	-	1	13	6
N.H.	13	14	12	18	-	1	10	-
Vt.	5	6	3	-	3	4	1	4
Mass.	416	227	315	217	24	34	176	186
R.I.	18	27	9	13	2	1	30	40
Conn.	U	56	44	57	11	15	66	89
MID. ATLANTIC	640	1,868	370	1,448	194	227	1,862	2,137
Upstate N.Y.	211	405	45	141	24	29	224	268
N.Y. City	213	578	82	538	67	52	1,016	1,051
N.J.	144	577	121	543	44	73	375	450
Pa.	72	308	122	226	59	73	247	368
E.N. CENTRAL	1,854	2,128	1,015	1,103	830	757	933	1,189
Ohio	326	406	92	98	68	104	179	172
Ind.	199	132	54	34	301	147	61	121
Ill.	733	1,149	592	919	309	313	412	565
Mich.	311	207	210	4	152	141	209	258
Wis.	285	234	67	48	U	52	72	73
W.N. CENTRAL	851	806	552	465	93	102	333	324
Minn.	193	252	190	282	7	6	114	106
Iowa	28	57	23	38	9	1	33	28
Mo.	518	94	300	69	60	79	134	120
N. Dak.	2	7	-	3	-	-	6	7
S. Dak.	11	30	5	21	-	1	12	16
Nebr.	62	326	-	18	7	4	15	11
Kans.	37	40	34	34	10	11	19	36
S. ATLANTIC	1,808	3,120	364	978	1,623	1,918	2,193	2,052
Del.	12	23	7	21	6	18	12	27
Md.	116	156	38	55	272	509	200	230
D.C.	44	21	U	U	52	62	34	84
Va.	94	144	43	72	117	116	168	222
W. Va.	7	11	3	7	2	2	32	30
N.C.	161	227	71	108	376	571	330	298
S.C.	100	129	50	59	320	232	201	217
Ga.	173	852	37	198	248	204	447	377
Fla.	1,101	1,557	115	458	230	204	769	567
E.S. CENTRAL	859	656	429	445	858	897	665	859
Ky.	202	96	-	45	72	81	133	125
Tenn.	509	149	374	210	477	419	245	274
Ala.	89	366	47	183	175	213	231	289
Miss.	59	45	8	7	134	184	56	171
W.S. CENTRAL	1,626	2,913	1,502	911	719	771	1,140	1,728
Ark.	61	147	21	47	45	84	126	98
La.	118	231	83	209	200	309	U	127
Okla.	405	294	128	81	145	56	96	134
Tex.	1,042	2,241	1,270	574	329	322	918	1,369
MOUNTAIN	758	889	409	567	178	195	302	398
Mont.	7	8	-	3	1	-	10	15
Idaho	17	17	7	12	1	2	14	7
Wyo.	3	2	1	1	-	1	2	4
Colo.	127	152	80	115	2	9	U	47
N. Mex.	94	218	55	120	9	22	48	47
Ariz.	394	428	255	281	157	145	163	152
Utah	50	35	5	26	2	3	30	45
Nev.	66	29	6	9	6	13	35	81
PACIFIC	1,782	2,185	155	2,167	208	287	2,590	2,860
Wash.	76	143	69	133	48	24	140	187
Oreg.	64	109	62	102	7	4	78	99
Calif.	1,616	1,896	-	1,896	149	256	2,207	2,403
Alaska	-	4	-	2	1	1	41	36
Hawaii	26	33	24	34	3	2	124	135
Guam	7	29	U	U	1	1	-	68
P.R.	62	46	U	U	121	143	41	108
V.I.	U	U	U	U	U	U	U	U
Amer. Samoa	U	U	U	U	U	U	U	U
C.N.M.I.	U	U	U	U	U	U	U	U

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 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 September 25, 1999, and September 26, 1998 (38th Week)

Reporting Area	*H. influenzae*, invasive		Hepatitis (Viral), by type				Measles (Rubeola)					
			A		B		Indigenous		Imported*		Total	
	Cum. 1999†	Cum. 1998	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998	1999	Cum. 1999	1999	Cum. 1999	Cum. 1999	Cum. 1998
UNITED STATES	857	818	11,215	16,504	4,717	7,122	1	42	1	21	63	69
NEW ENGLAND	65	54	179	218	72	158	-	6	-	4	10	3
Maine	5	2	7	16	1	2	-	-	-	-	-	-
N.H.	16	8	12	9	12	14	-	-	-	1	1	-
Vt.	5	5	11	14	2	7	-	-	-	-	-	1
Mass.	23	33	60	91	30	57	-	5	-	2	7	2
R.I.	1	5	14	14	27	52	-	-	-	-	-	-
Conn.	15	1	75	74	-	26	-	1	-	1	2	-
MID. ATLANTIC	134	133	690	1,271	500	926	-	-	-	2	2	14
Upstate N.Y.	65	44	189	263	144	179	-	-	-	2	2	2
N.Y. City	29	36	195	441	154	326	-	-	-	-	-	-
N.J.	39	46	57	256	40	165	-	-	-	-	-	8
Pa.	1	7	249	311	162	256	-	-	-	-	-	4
E.N. CENTRAL	136	143	2,065	2,613	466	1,065	-	1	-	1	2	15
Ohio	47	43	473	247	70	57	U	-	U	-	-	1
Ind.	20	36	85	115	35	81	-	1	-	-	1	3
Ill.	58	50	442	603	1	186	-	-	-	-	-	-
Mich.	11	8	1,039	1,490	359	344	-	-	-	1	1	10
Wis.	-	6	26	158	1	397	-	-	-	-	-	1
W.N. CENTRAL	74	73	590	1,130	231	300	-	-	-	-	-	-
Minn.	36	57	58	95	38	33	-	-	-	-	-	-
Iowa	7	2	111	376	28	46	-	-	-	-	-	-
Mo.	22	8	323	531	123	182	-	-	-	-	-	-
N. Dak.	1	-	2	3	-	4	-	-	-	-	-	-
S. Dak.	1	-	8	21	1	2	-	-	-	-	-	-
Nebr.	3	-	48	22	14	13	-	-	-	-	-	-
Kans.	4	6	40	82	27	20	U	-	U	-	-	-
S. ATLANTIC	198	149	1,486	1,399	914	751	-	1	1	5	6	8
Del.	-	-	2	3	1	1	-	-	-	-	-	1
Md.	51	45	274	306	132	108	-	-	-	-	-	1
D.C.	4	-	54	47	20	10	-	-	-	-	-	-
Va.	15	15	119	163	69	79	-	1	-	2	3	2
W. Va.	6	5	29	4	22	5	-	-	-	-	-	-
N.C.	28	23	118	90	185	168	-	-	1	1	1	-
S.C.	5	3	31	27	59	29	-	-	-	-	-	-
Ga.	53	33	358	425	122	127	-	-	-	-	-	2
Fla.	36	25	501	334	304	224	-	-	-	2	2	2
E.S. CENTRAL	51	43	288	304	329	363	-	2	-	-	2	2
Ky.	6	7	53	24	31	36	-	2	-	-	2	-
Tenn.	28	24	142	178	172	204	-	-	-	-	-	1
Ala.	15	10	44	53	68	51	-	-	-	-	-	1
Miss.	2	2	49	49	58	72	-	-	-	-	-	-
W.S. CENTRAL	42	41	2,231	2,936	666	1,605	-	5	-	4	9	-
Ark.	2	-	42	71	35	84	U	-	U	-	-	-
La.	7	19	73	57	77	74	U	-	U	-	-	-
Okla.	29	20	355	438	101	70	-	-	-	-	-	-
Tex.	4	2	1,761	2,370	453	1,377	-	5	-	4	9	-
MOUNTAIN	74	90	1,003	2,509	453	624	-	3	-	-	3	-
Mont.	2	-	17	79	17	5	-	-	-	-	-	-
Idaho	1	-	33	205	22	27	U	-	U	-	-	-
Wyo.	1	1	6	33	12	5	-	-	-	-	-	-
Colo.	10	19	176	231	71	78	-	-	-	-	-	-
N. Mex.	18	5	39	110	144	244	-	-	-	-	-	-
Ariz.	32	44	587	1,523	120	141	-	1	-	-	1	-
Utah	7	3	37	154	27	56	-	2	-	-	2	-
Nev.	3	18	108	174	40	68	-	-	-	-	-	-
PACIFIC	83	92	2,683	4,124	1,086	1,330	1	24	-	5	29	27
Wash.	3	6	242	801	53	69	-	-	-	-	-	1
Oreg.	31	36	195	317	63	142	-	9	-	-	9	-
Calif.	38	40	2,229	2,945	948	1,098	1	15	-	4	19	7
Alaska	5	3	6	16	12	10	-	-	-	-	-	19
Hawaii	6	7	11	45	10	11	-	-	-	1	1	-
Guam	-	-	2	1	2	2	U	1	U	-	1	-
P.R.	1	2	112	50	102	189	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.	U	U	U	U	U	U	U	U	U	U	U	U

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

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

†Of 161 cases among children aged <5 years, serotype was reported for 83 and of those, 22 were type b.

TABLE III. (Cont'd.) Provisional cases of selected notifiable diseases preventable by vaccination, United States, weeks ending September 25, 1999, and September 26, 1998 (38th 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	1,770	2,008	3	240	522	100	3,977	4,504	1	218	333
NEW ENGLAND	85	86	-	4	6	12	464	752	-	7	38
Maine	5	5	-	-	-	-	-	5	-	-	-
N.H.	12	11	-	1	-	1	74	76	-	-	-
Vt.	4	2	-	1	-	3	49	66	-	-	-
Mass.	48	40	-	2	4	5	303	560	-	7	8
R.I.	4	3	-	-	-	-	24	9	-	-	1
Conn.	12	25	-	-	2	3	14	36	-	-	29
MID. ATLANTIC	160	207	1	28	172	23	667	469	-	22	145
Upstate N.Y.	45	52	1	9	3	23	581	236	-	18	114
N.Y. City	43	24	-	3	153	-	10	30	-	-	17
N.J.	39	50	-	-	6	-	12	15	-	1	13
Pa.	33	81	-	16	10	-	64	188	-	3	1
E.N. CENTRAL	300	310	-	30	63	3	339	555	-	2	-
Ohio	114	112	U	11	23	U	156	191	U	-	-
Ind.	42	53	-	4	6	2	51	98	-	1	-
Ill.	84	84	-	8	9	-	49	66	-	1	-
Mich.	36	37	-	7	23	1	40	50	-	-	-
Wis.	24	24	-	-	2	-	43	150	-	-	-
W.N. CENTRAL	194	174	1	11	26	1	266	382	-	123	32
Minn.	41	29	-	1	12	-	132	201	-	5	-
Iowa	36	29	1	5	9	1	46	59	-	29	-
Mo.	74	65	-	2	3	-	41	28	-	2	2
N. Dak.	3	5	-	-	1	-	4	3	-	-	-
S. Dak.	11	7	-	-	-	-	5	8	-	-	-
Nebr.	11	12	-	-	-	-	3	14	-	87	-
Kans.	18	27	U	3	1	U	35	69	U	-	30
S. ATLANTIC	315	333	1	41	41	24	313	242	1	36	15
Del.	7	2	-	-	-	-	4	3	-	-	-
Md.	44	24	-	3	-	6	83	49	-	1	1
D.C.	1	1	-	2	-	-	-	1	-	-	-
Va.	40	28	-	8	6	-	13	19	-	-	-
W. Va.	5	13	-	-	-	-	2	1	-	-	-
N.C.	35	46	-	8	10	10	83	81	1	35	11
S.C.	38	49	1	4	6	1	15	24	-	-	-
Ga.	51	76	-	4	1	3	33	21	-	-	-
Fla.	94	94	-	12	18	4	80	43	-	-	3
E.S. CENTRAL	115	154	-	11	13	1	66	96	-	1	1
Ky.	24	27	-	-	-	-	17	39	-	-	-
Tenn.	45	55	-	-	1	-	28	30	-	-	1
Ala.	27	41	-	8	7	1	17	23	-	1	-
Miss.	19	31	-	3	5	-	4	4	-	-	-
W.S. CENTRAL	148	239	-	29	52	2	136	292	-	7	87
Ark.	31	26	U	-	10	U	17	58	U	-	-
La.	34	47	U	3	6	U	3	6	U	-	-
Okla.	25	32	-	1	-	-	12	22	-	-	-
Tex.	58	134	-	25	36	2	104	206	-	7	87
MOUNTAIN	106	112	-	15	34	6	447	799	-	16	5
Mont.	2	4	-	-	-	-	2	9	-	-	-
Idaho	8	9	U	1	4	U	127	198	U	-	-
Wyo.	4	5	-	-	1	-	2	8	-	-	-
Colo.	29	21	-	4	6	-	129	186	-	1	-
N. Mex.	13	20	N	N	N	3	97	80	-	-	1
Ariz.	30	37	-	-	6	3	33	163	-	13	1
Utah	13	10	-	5	5	-	53	120	-	1	2
Nev.	7	6	-	5	12	-	4	35	-	1	1
PACIFIC	347	393	-	71	115	28	1,279	917	-	4	10
Wash.	56	54	-	2	7	14	571	238	-	-	5
Oreg.	60	65	N	N	N	8	41	70	-	-	-
Calif.	222	266	-	57	83	6	638	581	-	4	3
Alaska	5	3	-	1	2	-	4	14	-	-	-
Hawaii	4	5	-	11	23	-	25	14	-	-	2
Guam	1	2	U	1	2	U	1	1	U	-	-
P.R.	5	9	U	-	2	U	16	4	U	-	8
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	U	U	U	U	U	U	U	U	U	U

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

TABLE IV. Deaths in 122 U.S. cities,* week ending September 25, 1999 (38th Week)

Reporting Area	All Causes, By Age (Years)						P&I† Total
	All Ages	>65	45-64	25-44	1-24	<1	
NEW ENGLAND	487	358	90	29	5	5	41
Boston, Mass.	160	110	32	14	2	2	13
Bridgeport, Conn.	29	25	4	-	-	-	3
Cambridge, Mass.	9	8	1	-	-	-	-
Fall River, Mass.	25	22	3	-	-	-	2
Hartford, Conn.	U	U	U	U	U	U	U
Lowell, Mass.	30	23	5	2	-	-	-
Lynn, Mass.	12	10	1	1	-	-	-
New Bedford, Mass.	30	26	3	1	-	-	-
New Haven, Conn.	50	34	11	2	1	2	5
Providence, R.I.	41	23	14	2	2	-	4
Somerville, Mass.	3	1	-	2	-	-	-
Springfield, Mass.	26	19	6	-	-	1	3
Waterbury, Conn.	25	19	4	2	-	-	2
Worcester, Mass.	47	38	6	3	-	-	9
MID. ATLANTIC	2,196	1,512	438	167	47	31	91
Albany, N.Y.	49	34	8	5	1	1	3
Allentown, Pa.	U	U	U	U	U	U	U
Buffalo, N.Y.	73	49	14	8	1	1	2
Camden, N.J.	31	22	6	2	-	1	-
Elizabeth, N.J.	12	8	3	1	-	-	-
Erie, Pa.	53	46	4	1	1	1	3
Jersey City, N.J.	40	25	9	4	1	1	-
New York City, N.Y.	1,031	706	217	79	20	9	19
Newark, N.J.	65	25	21	15	-	4	4
Paterson, N.J.	27	14	9	4	-	-	1
Philadelphia, Pa.	406	275	80	30	15	6	24
Pittsburgh, Pa.§	52	35	10	4	-	2	7
Reading, Pa.	28	24	3	-	-	1	2
Rochester, N.Y.	135	104	25	3	2	1	11
Schenectady, N.Y.	18	14	2	-	1	1	3
Scranton, Pa.	27	23	2	1	1	-	1
Syracuse, N.Y.	105	78	17	5	3	2	7
Trenton, N.J.	25	16	6	2	1	-	3
Utica, N.Y.	19	14	2	3	-	-	1
Yonkers, N.Y.	U	U	U	U	U	U	U
E.N. CENTRAL	1,855	1,259	349	142	46	56	101
Akron, Ohio	42	30	7	4	1	-	3
Canton, Ohio	41	34	6	1	-	-	-
Chicago, Ill.	396	241	85	42	12	13	28
Cincinnati, Ohio	66	37	20	5	1	3	4
Cleveland, Ohio	148	91	32	18	3	4	3
Columbus, Ohio	186	120	39	10	8	9	10
Dayton, Ohio	115	82	20	9	2	2	4
Detroit, Mich.	U	U	U	U	U	U	U
Evansville, Ind.	47	37	5	4	1	-	1
Fort Wayne, Ind.	45	32	6	2	1	4	5
Gary, Ind.	21	10	5	4	2	-	2
Grand Rapids, Mich.	62	43	10	5	1	3	2
Indianapolis, Ind.	223	150	46	17	4	6	9
Lansing, Mich.	37	27	4	2	3	1	2
Milwaukee, Wis.	120	91	21	2	1	5	9
Peoria, Ill.	35	30	4	1	-	-	1
Rockford, Ill.	70	53	8	6	1	2	6
South Bend, Ind.	54	38	12	3	1	-	1
Toledo, Ohio	88	64	12	5	4	3	9
Youngstown, Ohio	59	49	7	2	-	1	2
W.N. CENTRAL	699	488	131	40	18	22	51
Des Moines, Iowa	52	38	8	4	-	2	7
Duluth, Minn.	39	31	6	2	-	-	7
Kansas City, Kans.	U	U	U	U	U	U	U
Kansas City, Mo.	130	89	27	7	5	2	11
Lincoln, Nebr.	34	27	7	-	-	-	3
Minneapolis, Minn.	170	126	27	9	1	7	10
Omaha, Nebr.	92	66	19	2	1	4	4
St. Louis, Mo.	92	44	22	14	8	4	4
St. Paul, Minn.	90	67	15	2	3	3	5
Wichita, Kans.	U	U	U	U	U	U	U
S. ATLANTIC	1,185	742	260	111	48	21	76
Atlanta, Ga.	U	U	U	U	U	U	U
Baltimore, Md.	304	174	70	36	16	8	22
Charlotte, N.C.	95	63	19	6	2	5	6
Jacksonville, Fla.	177	114	39	14	7	3	5
Miami, Fla.	101	59	24	12	6	-	-
Norfolk, Va.	52	32	11	6	2	1	3
Richmond, Va.	87	45	27	10	5	-	10
Savannah, Ga.	35	25	5	3	1	1	2
St. Petersburg, Fla.	45	35	8	1	1	-	5
Tampa, Fla.	176	126	28	15	7	-	22
Washington, D.C.	96	57	27	8	1	3	1
Wilmington, Del.	17	12	2	-	-	-	-
E.S. CENTRAL	794	528	166	54	25	21	41
Birmingham, Ala.	201	131	37	12	7	14	12
Chattanooga, Tenn.	53	36	7	5	2	3	-
Knoxville, Tenn.	82	50	22	7	3	-	-
Lexington, Ky.	74	51	13	5	4	1	6
Memphis, Tenn.	165	114	34	13	3	1	13
Mobile, Ala.	36	25	9	2	-	-	-
Montgomery, Ala.	49	34	13	1	1	-	5
Nashville, Tenn.	134	87	31	9	5	2	5
W.S. CENTRAL	1,447	920	309	136	55	27	127
Austin, Tex.	74	45	15	10	4	-	-
Baton Rouge, La.	44	33	4	6	-	1	1
Corpus Christi, Tex.	57	31	18	4	2	2	9
Dallas, Tex.	159	94	38	16	9	2	2
El Paso, Tex.	95	63	22	5	4	1	5
Ft. Worth, Tex.	117	73	27	9	2	6	8
Houston, Tex.	454	265	105	55	22	7	71
Little Rock, Ark.	54	39	8	3	3	1	1
New Orleans, La.	155	100	35	16	4	-	15
San Antonio, Tex.	U	U	U	U	U	U	U
Shreveport, La.	96	66	19	4	4	3	7
Tulsa, Okla.	142	111	18	8	1	4	8
MOUNTAIN	931	628	170	86	24	23	64
Albuquerque, N.M.	123	80	24	13	5	1	3
Boise, Idaho	38	29	6	1	1	1	3
Colo. Springs, Colo.	61	45	7	6	1	2	3
Denver, Colo.	157	95	36	17	2	7	17
Las Vegas, Nev.	179	121	33	19	5	1	6
Ogden, Utah	27	22	1	2	2	-	2
Phoenix, Ariz.	71	48	11	9	1	2	7
Pueblo, Colo.	25	20	5	-	-	-	1
Salt Lake City, Utah	113	69	19	11	5	9	14
Tucson, Ariz.	137	99	28	8	2	-	8
PACIFIC	1,555	1,125	274	99	25	29	122
Berkeley, Calif.	12	7	3	2	-	-	-
Fresno, Calif.	150	114	25	7	3	1	20
Glendale, Calif.	15	12	2	1	-	-	2
Honolulu, Hawaii	72	59	8	3	-	1	5
Long Beach, Calif.	72	53	14	3	1	1	5
Los Angeles, Calif.	241	177	43	16	1	4	10
Pasadena, Calif.	20	16	4	-	-	-	-
Portland, Oreg.	137	94	24	8	6	5	10
Sacramento, Calif.	206	146	45	9	2	4	25
San Diego, Calif.	165	111	29	15	7	1	24
San Francisco, Calif.	U	U	U	U	U	U	U
San Jose, Calif.	175	135	26	9	1	4	8
Santa Cruz, Calif.	25	18	4	3	-	-	2
Seattle, Wash.	117	74	26	9	-	8	4
Spokane, Wash.	52	41	5	5	1	-	3
Tacoma, Wash.	96	68	16	9	3	-	4
TOTAL	11,149¶	7,560	2,187	864	293	235	714

U: Unavailable -: no reported cases

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

†Pneumonia and influenza.

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

¶Total includes unknown ages.

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