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## Ten Great Public Health Achievements - United States, 1900-1999

During the 20th century, the health and life expectancy of persons residing in the United States improved dramatically. Since 1900, the average lifespan of persons in the United States has lengthened by $>30$ years; 25 years of this gain are attributable to advances in public health (1). To highlight these advances, MMWR will profile 10 public health achievements (see box) in a series of reports published through December 1999.

Many notable public health achievements have occurred during the 1900s, and other accomplishments could have been selected for the list. The choices for topics for this list were based on the opportunity for prevention and the impact on death, illness, and disability in the United States and are not ranked by order of importance.

The first report in this series focuses on vaccination, which has resulted in the eradication of smallpox; elimination of poliomyelitis in the Americas; and control of measles, rubella, tetanus, diphtheria, Haemophilus influenzae type b, and other infectious diseases in the United States and other parts of the world.

## Ten Great Public Health Achievements — United States, 1900-1999

- Vaccination
- Motor-vehicle safety
- Safer workplaces
- Control of infectious diseases
- Decline in deaths from coronary heart disease and stroke
- Safer and healthier foods
- Healthier mothers and babies
- Family planning
- Fluoridation of drinking water
- Recognition of tobacco use as a health hazard


## Ten Great Achievements - Continued

Future reports that will appear in MMWR throughout the remainder of 1999 will focus on nine other achievements:

- Improvements in motor-vehicle safety have resulted from engineering efforts to make both vehicles and highways safer and from successful efforts to change personal behavior (e.g., increased use of safety belts, child safety seats, and motorcycle helmets and decreased drinking and driving). These efforts have contributed to large reductions in motor-vehicle-related deaths (2).
- Work-related health problems, such as coal workers' pneumoconiosis (black lung), and silicosis-common at the beginning of the century-have come under better control. Severe injuries and deaths related to mining, manufacturing, construction, and transportation also have decreased; since 1980, safer workplaces have resulted in a reduction of approximately $40 \%$ in the rate of fatal occupational injuries (3).
- Control of infectious diseases has resulted from clean water and improved sanitation. Infections such as typhoid and cholera transmitted by contaminated water, a major cause of illness and death early in the 20th century, have been reduced dramatically by improved sanitation. In addition, the discovery of antimicrobial therapy has been critical to successful public health efforts to control infections such as tuberculosis and sexually transmitted diseases (STDs).
- Decline in deaths from coronary heart disease and stroke have resulted from riskfactor modification, such as smoking cessation and blood pressure control coupled with improved access to early detection and better treatment. Since 1972, death rates for coronary heart disease have decreased 51\% (4).
- Since 1900, safer and healthier foods have resulted from decreases in microbial contamination and increases in nutritional content. Identifying essential micronutrients and establishing food-fortification programs have almost eliminated major nutritional deficiency diseases such as rickets, goiter, and pellagra in the United States.
- Healthier mothers and babies have resulted from better hygiene and nutrition, availability of antibiotics, greater access to health care, and technologic advances in maternal and neonatal medicine. Since 1900, infant mortality has decreased $90 \%$, and maternal mortality has decreased $99 \%$.
- Access to family planning and contraceptive services has altered social and economic roles of women. Family planning has provided health benefits such as smaller family size and longer interval between the birth of children; increased opportunities for preconceptional counseling and screening; fewer infant, child, and maternal deaths; and the use of barrier contraceptives to prevent pregnancy and transmission of human immunodeficiency virus and other STDs.
- Fluoridation of drinking water began in 1945 and in 1999 reaches an estimated 144 million persons in the United States. Fluoridation safely and inexpensively benefits both children and adults by effectively preventing tooth decay, regardless of socioeconomic status or access to care. Fluoridation has played an important role in the reductions in tooth decay ( $40 \%-70 \%$ in children) and of tooth loss in adults ( $40 \%-60 \%$ ) (5).


## Ten Great Achievements - Continued

- Recognition of tobacco use as a health hazard and subsequent public health antismoking campaigns have resulted in changes in social norms to prevent initiation of tobacco use, promote cessation of use, and reduce exposure to environmental tobacco smoke. Since the 1964 Surgeon General's report on the health risks of smoking, the prevalence of smoking among adults has decreased, and millions of smoking-related deaths have been prevented (6).
The list of achievements was developed to highlight the contributions of public health and to describe the impact of these contributions on the health and well being of persons in the United States. A final report in this series will review the national public health system, including local and state health departments and academic institutions whose activities on research, epidemiology, health education, and program implementation have made these achievements possible.
Reported by: CDC.


## References

1. Bunker JP, Frazier HS, Mosteller F. Improving health: measuring effects of medical care. Milbank Quarterly 1994;72:225-58.
2. Bolen JR, Sleet DA, Chorba T, et al. Overview of efforts to prevent motor vehicle-related injury. In: Prevention of motor vehicle-related injuries: a compendium of articles from the Morbidity and Mortality Weekly Report, 1985-1996. Atlanta, Georgia: US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, 1997.
3. CDC. Fatal occupational injuries—United States, 1980-1994. MMWR 1998;47:297-302.
4. Anonymous. The sixth report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. Arch Intern Med 1997;157:2413-46.
5. Burt BA, Eklund SA. Dentistry, dental practice, and the community. Philadelphia, Pennsylvania: WB Saunders Company, 1999:204-20.
6. Public Health Service. For a healthy nation: returns on investment in public health. Atlanta, Georgia: US Department of Health and Human Services, Public Health Service, Office of Disease Prevention and Health Promotion and CDC, 1994.

Achievements in Public Health, 1900-1999

## Impact of Vaccines Universally Recommended for Children United States, 1990-1998

At the beginning of the 20th century, infectious diseases were widely prevalent in the United States and exacted an enormous toll on the population. For example, in 1900, 21,064 smallpox cases were reported, and 894 patients died ( 1 ). In 1920, 469,924 measles cases were reported, and 7575 patients died; 147,991 diphtheria cases were reported, and 13,170 patients died. In 1922, 107,473 pertussis cases were reported, and 5099 patients died $(2,3)$.

In 1900, few effective treatment and preventive measures existed to prevent infectious diseases. Although the first vaccine against smallpox was developed in 1796, $>100$ years later its use had not been widespread enough to fully control the disease (4). Four other vaccines-against rabies, typhoid, cholera, and plague-had been developed late in the 19th century but were not used widely by 1900.

## Vaccines - Continued

Since 1900, vaccines have been developed or licensed against 21 other diseases (5) (Table 1). Ten of these vaccines have been recommended for use only in selected populations at high risk because of area of residence, age, medical condition, or risk behaviors. The other 11 have been recommended for use in all U.S. children (6).

During the 20th century, substantial achievements have been made in the control of many vaccine-preventable diseases. This report documents the decline in morbidity from nine vaccine-preventable diseases and their complications-smallpox, along with the eight diseases for which vaccines had been recommended for universal use in children as of 1990 (Table 2). Four of these diseases are detailed: smallpox has been eradicated, poliomyelitis caused by wild-type viruses has been eliminated, and measles and Haemophilus influenzae type b (Hib) invasive disease among children aged $<5$ years have been reduced to record low numbers of cases.

Information about disease and death during the 20th century was obtained from the MMWR annual summaries of notifiable diseases and reports by the U.S. Department of Health, Education, and Welfare. For smallpox, Hib, and congenital rubella syndrome (CRS), published studies were used (2,3,7-14).

## Current Delivery and Use of Vaccines

National efforts to promote vaccine use among all children began with the appropriation of federal funds for polio vaccination after introduction of the vaccine in 1955 (5). Since then, federal, state, and local governments and public and private healthcare providers have collaborated to develop and maintain the vaccine-delivery system in the United States.

Overall, U.S. vaccination coverage is at record high levels. In 1997, coverage among children aged 19-35 months (median age: 27 months) exceeded $90 \%$ for three or more doses of diphtheria and tetanus toxoids and pertussis vaccine (DTP), three or more doses of poliovirus vaccine, three or more doses of Hib vaccine, and one or more doses of measles-containing vaccine. Coverage with four doses of DTP was $81 \%$

TABLE 1. Vaccine-preventable diseases, by year of vaccine development or licensure — United States, 1798-1998

| Disease | Year | Disease | Year |
| :--- | :--- | :--- | :--- |
| Smallpox* | $1798^{\dagger}$ | Rubella* | $1969^{\S}$ |
| Rabies | $1885^{\dagger}$ | Anthrax | $1970^{\S}$ |
| Typhoid | $1896^{\dagger}$ | Meningitis | $1975^{\S}$ |
| Cholera | $1896^{\dagger}$ | Pneumonia | $1977^{\S}$ |
| Plague | $1897^{\dagger}$ | Adenovirus | $1980^{\S}$ |
| Diphtheria* | $1923^{\dagger}$ | Hepatitis B* | $1981^{\S}$ |
| Pertussis* | $1926^{\dagger}$ | Haemophilus |  |
| Tetanus* | $1927^{\dagger}$ | influenzae type b* | $1985^{\S}$ |
| Tuberculosis | $1927^{\dagger}$ | Japanese |  |
| Influenza | $1945^{\S}$ | encephalitis | $1992^{\S}$ |
| Yellow fever | $1953^{\S}$ | Hepatitis A | $1995^{\S}$ |
| Poliomyelitis* | $1955^{\S}$ | Varicella* | $1995^{\S}$ |
| Measles* | $1963^{\S}$ | Lyme disease | $1998^{\S}$ |
| Mumps* | $1967^{\S}$ | Rotavirus* | $1998^{\S}$ |

[^0]
## Vaccines - Continued

TABLE 2. Baseline 20th century annual morbidity and 1998 provisional morbidity from nine diseases with vaccines recommended before 1990 for universal use in children — United States

| Disease | Baseline 20th century annual morbidity | 1998 Provisional morbidity | \% Decrease |
| :---: | :---: | :---: | :---: |
| Smallpox | 48,164* | 0 | 100\% |
| Diphtheria | 175,885 ${ }^{\dagger}$ | 1 | 100\% § |
| Pertussis | 147,2719 | 6,279 | 95.7\% |
| Tetanus | 1,314** | 34 | 97.4\% |
| Poliomyelitis (paralytic) | 16,316 ${ }^{\text {t }}$ | $0^{\text {§§ }}$ | 100\% |
| Measles | 503,282 1 T | 89 | 100\% § |
| Mumps | 152,209*** | 606 | 99.6\% |
| Rubella | 47,745 $\dagger$ t† | 345 | 99.3\% |
| Congenital rubella syndrome | $8233^{\text {§§ }}$ | 5 | 99.4\% |
| Haemophilus influenzae type b | 20,000¢TMT | 54**** | 99.7\% |

* Average annual number of cases during 1900-1904 (1).
${ }^{\dagger}$ Average annual number of reported cases during 1920-1922, 3 years before vaccine development.
§ Rounded to nearest tenth.
§ Average annual number of reported cases during 1922-1925, 4 years before vaccine ** development.
**stimated number of cases based on reported number of deaths during 1922-1926 assuming a case-fatality rate of $90 \%$.
${ }^{\dagger \dagger}$ Average annual number of reported cases during 1951-1954, 4 years before vaccine licensure.
§§ Excludes one cases of vaccine-associated polio reported in 1998.
ITI Average annual number of reported cases during 1958-1962, 5 years before vaccine licensure.
*** Number of reported cases in 1968, the first year reporting began and the first year after vaccine licensure.
${ }^{\dagger \dagger \dagger}$ Average annual number of reported cases during 1966-1968, 3 years before vaccine licensure.
§§§ Estimated number of cases based on seroprevalence data in the population and on the risk that women infected during a childbearing year would have a fetus with congenital rubella syndrome (7).
आโा Estimated number of cases from population-based surveillance studies before vaccine licensure in 1985 (8).
**** Excludes 71 cases of Haemophilus influenzae disease of unknown serotype.
and for three doses of hepatitis B vaccine was $84 \%$. Coverage was substantially lower for the recently introduced varicella vaccine ( $26 \%$ ) and for the combined series of four DTP/three polio/one measles-containing vaccine/three Hib (76\%) (15). Coverage for rotavirus vaccine, licensed in December 1998, has not yet been measured among children aged 19-35 months. Coverage among children aged 5-6 years has exceeded 95\% each school year since 1980 for DTP; polio; and measles, mumps, and rubella vaccines (CDC, unpublished data, 1998).


## Vaccine Impact

Dramatic declines in morbidity have been reported for the nine vaccinepreventable diseases for which vaccination was universally recommended for use in children before 1990 (excluding hepatitis B, rotavirus, and varicella) (Table 2).

## Vaccines - Continued

Morbidity associated with smallpox and polio caused by wild-type viruses has declined $100 \%$ and nearly $100 \%$ for each of the other seven diseases.

Smallpox. Smallpox is the only disease that has been eradicated. During 19001904, an average of 48,164 cases and 1528 deaths caused by both the severe (variola major) and milder (variola minor) forms of smallpox were reported each year in the United States (1). The pattern in the decline of smallpox was sporadic. Outbreaks of variola major occurred periodically in the first quarter of the 1900s and then ceased abruptly in 1929. Outbreaks of variola minor declined in the 1940s, and the last case in the United States was reported in 1949. The eradication of smallpox in 1977 enabled the discontinuation of prevention and treatment efforts, including routine vaccination. As a result, in 1985 the United States recouped its investment in worldwide eradication every 26 days ( 1 ).

Polio. Polio vaccine was licensed in the United States in 1955. During 1951-1954, an average of 16,316 paralytic polio cases and 1879 deaths from polio were reported each year $(9,10)$. Polio incidence declined sharply following the introduction of vaccine to $<1000$ cases in 1962 and remained below 100 cases after that year. In 1994, every dollar spent to administer oral poliovirus vaccine saved $\$ 3.40$ in direct medical costs and $\$ 2.74$ in indirect societal costs ( 14 ). The last documented indigenous transmission of wild poliovirus in the United States occurred in 1979. Since then, reported cases have been either vaccine-associated or imported. As of 1991, polio caused by wild-type viruses has been eliminated from the Western Hemisphere (16). Enhanced use of the inactivated polio vaccine is expected to reduce the number of vaccineassociated cases, which averaged eight cases per year during 1980-1994 (17).

Measles. Measles vaccine was licensed in the United States in 1963. During 19581962, an average of 503,282 measles cases and 432 measles-associated deaths were reported each year (9-11). Measles incidence and deaths began to decline in 1965 and continued a 33 -year downward trend. This trend was interrupted by epidemics in 1970-1972, 1976-1978, and 1989-1991. In 1998, measles reached a provisional record low number of 89 cases with no measles-associated deaths (13). All cases in 1998 were either documented to be associated with international importations (69 cases) or believed to be associated with international importations (CDC, unpublished data, 1998). In 1994, every dollar spent to purchase measles-containing vaccine saved $\$ 10.30$ in direct medical costs and $\$ 3.20$ in indirect societal costs (7).

Hib. The first Hib vaccines were polysaccharide products licensed in 1985 for use in children aged 18-24 months. Polysaccharide-protein conjugate vaccines were licensed subsequently for use in children aged 18 months (in 1987) and later for use in children aged 2 months (in 1990). Before the first vaccine was licensed, an estimated 20,000 cases of Hib invasive disease occurred each year, and Hib was the leading cause of childhood bacterial meningitis and postnatal mental retardation ( 8,18 ). The incidence of disease declined slowly after licensure of the polysaccharide vaccine; the decline accelerated after the 1987 introduction of polysaccharide-protein conjugate vaccines for toddlers and the 1990 recommendation to vaccinate infants. In 1998, 125 cases of Hib disease and Haemophilis influenzae invasive disease of unknown serotype among children aged $<5$ years were provisionally reported: 54 were Hib and 71 were of unknown serotype (CDC, unpublished data, 1998). In less than a decade, the use of the Hib conjugate vaccines nearly eliminated Hib invasive disease among children.

## Vaccines - Continued

## Future Direction

Vaccines are one of the greatest achievements of biomedical science and public health. Despite remarkable progress, several challenges face the U.S. vaccine-delivery system. The infrastructure of the system must be capable of successfully implementing an increasingly complex vaccination schedule. An estimated 11,000 children are born each day in the United States, each requiring 15-19 doses of vaccine by age 18 months to be protected against 11 childhood diseases (6). In addition, licensure of new vaccines is anticipated against pneumococcal and meningococcal infections, influenza, parainfluenza, respiratory syncytial virus (RSV), and against chronic diseases (e.g., gastric ulcers, cancer caused by Helicobacter pylori, cervical cancer caused by human papilloma virus, and rheumatic heart disease that occurs as a sequela of group A streptococcal infection). Clinical trials are under way for vaccines to prevent human immunodeficiency virus infection, the cause of acquired immunodeficiency syndrome.

To achieve the full potential of vaccines, parents must recognize vaccines as a means of mobilizing the body's natural defenses and be better prepared to seek vaccinations for their children; health-care providers must be aware of the latest developments and recommendations; vaccine supplies and financing must be made more secure, especially for new vaccines; researchers must address increasingly complex questions about safety, efficacy, and vaccine delivery and pursue new approaches to vaccine administration more aggressively; and information technology to support timely vaccinations must be harnessed more effectively. In addition, the vaccinedelivery system must be extended to new populations of adolescents and adults. Each year, thousands of cases of potentially preventable influenza, pneumococcal disease, and hepatitis B occur in these populations. Many of the new vaccines will be targeted at these age groups. The U.S. vaccine-delivery system must routinely include these populations to optimally prevent disease, disability, and death.

Despite the dramatic declines in vaccine-preventable diseases, such diseases persist, particularly in developing countries. The United States has joined many international partners, including the World Health Organization and Rotary International, in seeking to eradicate polio by the end of 2000. Efforts to accelerate control of measles, which causes approximately one million deaths each year (5), and to expand rubella vaccination programs also are under way around the world. Efforts are needed to expand the use of existing vaccines in routine childhood vaccination programs worldwide and to successfully introduce new vaccines as they are developed. Such efforts can benefit the United States and other developed countries by decreasing disease importations from developing countries.
Reported by: National Immunization Program, CDC.

## References

1. Fenner F, Henderson DA, Arita I, Jezek Z, Ladnyi ID. Smallpox and its eradication. Geneva, Switzerland: World Health Organization, 1988.
2. US Department of Health, Education, and Welfare. Vital statistics-special report, national summaries: reported incidence of selected notifiable diseases, United States, each division and state, 1920-50. Washington, DC: US Department of Health, Education, and Welfare, Public Health Service, National Office of Vital Statistics, 1953:37.
3. US Department of Health, Education, and Welfare. Vital statistics rates in the United States, 1940-1960. Washington, DC: US Department of Health, Education, and Welfare, Public Health Service, National Center for Health Statistics, 1968.

## Vaccines - Continued

4. Duffy J. The sanitarians: a history of public health. Urbana, Illinois: University of Illinois Press, 1990.
5. Plotkin SA, Orenstein WA. Vaccines. 3rd ed. Philadelphia, Pennsylvania: WB Saunders Co., 1999.
6. CDC. Recommended childhood immunization schedule—United States, 1999. MMWR 1999; 48:12-6.
7. Batelle Medical Technology Assessment and Policy Reserach Program, Centers for Public Health Research and Evaluation. A cost benefit analysis of the measles-mumps-rubella (MMR) vaccine. Arlington, Virginia: Batelle, 1994.
8. Cochi SL, Ward JI. Haemophilus influenzae type b. In: Evans AS, Brachman PS, eds. Bacterial infections of humans. New York, New York: Plenum Medical Book Co., 1991
9. CDC. Annual summary 1980: reported morbidity and mortality in the United States. MMWR 1981;29.
10. CDC. Reported incidence of notifiable diseases in the United States, 1960. MMWR 1961;9.
11. CDC. Reported morbidity and mortality in the United States, 1970. MMWR 1971;19.
12. CDC. Provisional cases of selected notifiable diseases, United States, cumulative, week ending January 2, 1999 (52nd week). MMWR 1999;47:1125.
13. CDC. Provisional cases of selected notifiable diseases preventable by vaccination, United States, weeks ending January 2, 1999, and December 27, 1997 (52nd week). MMWR 1999; 47:1128-9.
14. Batelle Medical Technology Assessment and Policy Research Program, Centers for Public Health Research and Evaluation. A cost benefit analysis of the OPV vaccine. Arlington, Virginia: Batelle, 1994.
15. CDC. National, state, and urban area vaccination coverage levels among children aged 19-35 months-United States, 1997. MMWR 1998;47:547-54.
16. CDC. Certification of poliomyelitis eradication-the Americas, 1994. MMWR 1994;43:720-2.
17. CDC. Paralytic poliomyelitis—United States, 1980-1994. MMWR 1997;46:79-83.
18. Yeargin-Allsopp M, Murphy CC, Cordero JF, Decoufle P, Hollowell JG. Reported biomedical causes and associated medical conditions for mental retardation among 10-year-old children, metropolitan Atlanta, 1985-1987. Developmental Medicine and Neurology 1997;39:142-9.

## Tobacco Use Among Middle and High School Students Florida, 1998 and 1999

Tobacco use is the single leading preventable cause of death in the United States (1), and an estimated $\$ 2$ billion is spent annually in Florida to treat disease caused by smoking (2). Florida appropriated $\$ 23$ million in fiscal year 1997 and $\$ 70$ million in fiscal year 1998 to fund the Florida Pilot Program on Tobacco Control to prevent and reduce tobacco use among Florida youth. To determine the prevalence of cigarette, cigar, and smokeless tobacco (i.e., chewing tobacco and snuff) use among Florida middle and high school students in public schools, the Florida Department of Health conducted the Florida Youth Tobacco Survey (FYTS) in February 1998 and February 1999. The purpose of these surveys was to establish baseline parameters and monitor the progress of the pilot program, which began in April 1998. This report summarizes advance data from the surveys, which indicate that, from 1998 to 1999, the percentage of Florida public middle and high school students who smoked cigarettes decreased significantly and that the percentage of middle school students who smoked cigars and used smokeless tobacco products decreased significantly.

The 1998 FYTS used a two-stage cluster sample design within each of seven geographic regions (i.e., selecting schools within a region and classrooms within schools) for public middle schools (grades 6-8) and for public high schools (grades 9-12) to

## Tobacco Use - Continued

obtain a representative sample of 11,865 middle and 10,675 high school students. The 1999 survey was conducted in 242 of the 255 schools that participated in the 1998 survey sample, among a representative sample of 11,724 middle and 9254 high school students. The middle school response rates for 1998 and 1999 were $97 \%$ and $93 \%$, respectively; the student response rates were $82 \%$ and $88 \%$, respectively; and the overall response rates were $80 \%$ and $82 \%$, respectively. For the high school surveys, school response rates for 1998 and 1999 were $95 \%$ and $89 \%$, respectively; the student response rates were $76 \%$ and $79 \%$, respectively; and the overall response rates were $72 \%$ and $70 \%$, respectively. Data were weighted to provide estimates that can be generalized to all public school students in grades 6-12 in the seven regions and in the state. Survey data were analyzed and point estimates were generated using SAS software, and variance estimates and $95 \%$ confidence intervals were calculated using SUDAAN.

Students completed a self-administered questionnaire that included questions about tobacco use (cigarette, cigar, and smokeless tobacco), exposure to environmental tobacco smoke, minors' ability to purchase or otherwise obtain tobacco products, knowledge and attitudes about tobacco, familiarity with pro- and antitobacco media messages, and tobacco-use curriculum in schools. Current tobacco use prevalence data are presented in this report; data on other findings and survey methodology are available from the Florida Department of Health (3). Current cigarette, cigar, and smokeless tobacco users were students who reported product use on $\geq 1$ of the 30 days preceding the survey.

From 1998 to 1999, the prevalence of current cigarette use among middle school students declined from $18.5 \%$ to $15.0 \%$ ( $p<0.01$ ) (Table 1); among high school students, use declined from $27.4 \%$ to $25.2 \%$ ( $p=0.02$ ) (Table 2). Among middle school students, declines in current cigarette use were significant for both males and females; among high school students, the decline was statistically significant among females. Among both middle and high school students, the declines were most pronounced among non-Hispanic white students: from $22.0 \%$ to $16.1 \%$ ( $p<0.01$ ) among middle school students and from $34.8 \%$ to $31.3 \% ~(~ p=0.02$ ) among high school students. The change in prevalence of current cigarette use among non-Hispanic black or Hispanic students at the middle or high school level was not statistically significant. Prevalence of current cigarette use in these groups was lower than that among non-Hispanic whites in both 1998 and 1999.

Current cigar use declined significantly only among middle school students, from $14.1 \%$ in 1998 to $11.9 \%$ in 1999 ( $p<0.01$ ). This overall decline was almost entirely accounted for by the decline among males, from $17.6 \%$ to $14.2 \%$. Among racial/ethnic groups at the middle school level, the decline in current use of cigars was statistically significant only among non-Hispanic white students.

Current smokeless tobacco use declined among middle school students from 6.9\% in 1998 to $4.9 \%$ in 1999. The decline occurred among male and female middle school students and among non-Hispanic white and Hispanic middle school students. Students at every grade in middle school were significantly less likely to use smokeless tobacco in 1999 than in 1998. Current use of smokeless tobacco products remained unchanged among high school students from 1998 to 1999.

TABLE 1. Percentage of public middle school students who used cigarettes, cigars, or smokeless tobacco, by sex, race/ethnicity, and grade - Florida Youth Tobacco Survey, 1998 and 1999

| Characteristic | Current cigarette use* |  |  |  |  | Current cigar use ${ }^{\dagger}$ |  |  |  |  | Current smokeless tobacco use ${ }^{\text {§ }}$ |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\begin{gathered} 1998 \\ (\mathrm{n}=11,031) \end{gathered}$ |  | $\begin{gathered} 1999 \\ (\mathrm{n}=10,268) \end{gathered}$ |  | $p$ value | $\begin{gathered} 1998 \\ (n=11,535) \\ \hline \end{gathered}$ |  | $\begin{gathered} 1999 \\ (\mathrm{n}=10,890) \\ \hline \end{gathered}$ |  | p value | $\begin{gathered} 1998 \\ (\mathrm{n}=11,633) \\ \hline \end{gathered}$ |  | $\begin{gathered} 1999 \\ (\mathrm{n}=10,919) \end{gathered}$ |  | p value |
|  | \% | (95\% CII) | \% | (95\% CI) |  | \% | (95\% CI) | \% | (95\% CI) |  | \% | (95\% CI) | \% | (95\% CI) |  |
| Sex |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Female | 18.1 | $( \pm 1.5)$ | 14.9 | $( \pm 1.8)$ | <0.01 | 10.3 | $( \pm 1.0)$ | 9.4 | $( \pm 1.4)$ | 0.26 | 4.4 | $( \pm 0.6)$ | 2.8 | $( \pm 0.6)$ | <0.01 |
| Male | 18.9 | $( \pm 1.7)$ | 15.0 | $( \pm 1.4)$ | <0.01 | 17.6 | $( \pm 1.3)$ | 14.2 | $( \pm 1.3)$ | <0.01 | 9.3 | $( \pm 1.1)$ | 6.8 | $( \pm 0.9)$ | <0.01 |
| Race/Ethnicity** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Non-Hispanic white | 22.0 | $( \pm 1.8)$ | 16.1 | $( \pm 1.7)$ | <0.01 | 14.5 | $( \pm 1.2)$ | 11.1 | $( \pm 1.4)$ | <0.01 | 7.6 | $( \pm 1.1)$ | 4.8 | $( \pm 0.8)$ | <0.01 |
| Non-Hispanic black | 9.5 | $( \pm 1.4)$ | 8.5 | $( \pm 1.5)$ | 0.34 | 13.0 | $( \pm 1.6)$ | 12.3 | $( \pm 1.9)$ | 0.55 | 5.3 | $( \pm 1.1)$ | 4.4 | $( \pm 1.4)$ | 0.27 |
| Hispanic | 16.8 | $( \pm 2.1)$ | 16.1 | $( \pm 2.6)$ | 0.51 | 13.6 | $( \pm 1.7)$ | 12.9 | $( \pm 2.3)$ | 0.53 | 5.5 | $( \pm 1.3)$ | 3.6 | $( \pm 1.1)$ | 0.02 |
| Grade |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 | 10.5 | $( \pm 1.4)$ | 8.0 | $( \pm 1.3)$ | 0.01 | 7.8 | $( \pm 0.9)$ | 6.7 | $( \pm 1.2)$ | 0.16 | 6.0 | $( \pm 1.0)$ | 3.9 | $( \pm 0.9)$ | <0.01 |
| 7 | 19.3 | $( \pm 2.1)$ | 16.6 | $( \pm 2.5)$ | 0.07 | 14.2 | $( \pm 1.7)$ | 11.4 | $( \pm 1.8)$ | 0.02 | 7.0 | $( \pm 1.2)$ | 5.2 | $( \pm 1.0)$ | 0.01 |
| 8 | 25.0 | $( \pm 2.3)$ | 19.5 | $( \pm 2.5)$ | <0.01 | 19.5 | $( \pm 1.7)$ | 16.8 | $( \pm 2.2)$ | 0.06 | 7.1 | $( \pm 1.1)$ | 4.8 | $( \pm 1.0)$ | <0.01 |
| Total | 18.5 | $( \pm 1.4)$ | 15.0 | $( \pm 1.3)$ | <0.01 | 14.1 | $( \pm 1.0)$ | 11.9 | $( \pm 1.1)$ | <0.01 | 6.9 | $( \pm 0.7)$ | 4.9 | $( \pm 0.6)$ | <0.01 |

${ }^{*}$ Smoked cigarettes on $\geq 1$ of the 30 days preceding the survey.
Smoked cigars on $\geq 1$ of the 30 days preceding the survey
${ }^{\S}$ Used smokeless tobacco on $\geq 1$ of the 30 days preceding the survey.
IConfidence interval.
**Numbers for other racial/ethnic groups were too small for meaningful analysis.

TABLE 2. Percentage of public high school students who used cigarettes, cigars, or smokeless tobacco, by sex, race/ethnicity, and grade - Florida Youth Tobacco Survey, 1998 and 1999

| Characteristic | Current cigarette use* |  |  |  |  | Current cigar use ${ }^{\dagger}$ |  |  |  |  | Current smokeless tobacco use ${ }^{\text {§ }}$ |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\begin{gathered} 1998 \\ (\mathrm{n}=9,991) \\ \hline \end{gathered}$ |  | $\begin{gathered} 1999 \\ (\mathrm{n}=9,991) \\ \hline \end{gathered}$ |  | $p$ value | $\begin{gathered} 1998 \\ (\mathrm{n}=10,473) \end{gathered}$ |  | $\begin{gathered} 1999 \\ (\mathrm{n}=9,099) \\ \hline \end{gathered}$ |  | $p$ value | $\begin{gathered} 1998 \\ (\mathrm{n}=10,202) \end{gathered}$ |  | $\begin{gathered} 1999 \\ (\mathrm{n}=9,041) \\ \hline \end{gathered}$ |  | $p$ value |
|  | \% | (95\% CIII) | \% | (95\% Cl) |  | \% | (95\% CI) | \% | (95\% CI) |  | \% | (95\% CI) | \% | (95\% CI) |  |
| Sex |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Female | 28.3 | $( \pm 1.9)$ | 25.9 | $( \pm 2.0)$ | 0.04 | 14.1 | $( \pm 1.2)$ | 14.1 | $( \pm 1.6)$ | 0.96 | 2.1 | $( \pm 0.5)$ | 2.4 | $( \pm 0.7)$ | 0.59 |
| Male | 26.5 | $( \pm 1.9)$ | 24.6 | $( \pm 2.4)$ | 0.16 | 27.0 | $( \pm 1.8)$ | 24.7 | $( \pm 1.9)$ | 0.08 | 11.2 | $( \pm 1.6)$ | 10.3 | $( \pm 1.6)$ | 0.26 |
| Race/Ethnicity** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Non-Hispanic white | 34.8 | $( \pm 1.8)$ | 31.3 | $( \pm 2.0)$ | 0.02 | 22.7 | $( \pm 1.6)$ | 21.4 | $( \pm 2.2)$ | 0.24 | 8.7 | $( \pm 1.5)$ | 8.0 | $( \pm 1.7)$ | 0.32 |
| Non-Hispanic black | 9.8 | $( \pm 1.5)$ | 9.4 | $( \pm 1.9)$ | 0.61 | 17.1 | $( \pm 2.1)$ | 14.8 | $( \pm 1.9)$ | 0.09 | 3.5 | $( \pm 1.1)$ | 2.8 | $( \pm 0.7)$ | 0.24 |
| Hispanic | 24.8 | $( \pm 2.6)$ | 24.2 | $( \pm 2.8)$ | 0.70 | 17.9 | $( \pm 2.0)$ | 18.5 | $( \pm 2.4)$ | 0.82 | 2.9 | $( \pm 0.8)$ | 4.4 | $( \pm 1.2)$ | 0.07 |
| Grade |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 | 25.9 | $( \pm 2.6)$ | 23.3 | $( \pm 2.8)$ | 0.17 | 19.3 | $( \pm 2.3)$ | 18.8 | $( \pm 2.7)$ | 0.78 | 6.5 | $( \pm 1.4)$ | 6.8 | $( \pm 1.7)$ | 0.74 |
| 10 | 25.5 | $( \pm 2.8)$ | 24.4 | $( \pm 2.8)$ | 0.50 | 19.5 | $( \pm 2.2)$ | 19.1 | $( \pm 2.2)$ | 0.76 | 7.0 | $( \pm 1.7)$ | 5.9 | $( \pm 1.5)$ | 0.38 |
| 11 | 29.8 | $( \pm 2.5)$ | 27.0 | $( \pm 2.4)$ | 0.08 | 23.2 | $( \pm 2.5)$ | 19.2 | $( \pm 2.2)$ | 0.01 | 7.3 | $( \pm 1.4)$ | 5.3 | $( \pm 1.1)$ | 0.02 |
| 12 | 29.8 | $( \pm 2.9)$ | 27.8 | $( \pm 4.0)$ | 0.32 | 21.5 | $( \pm 2.7)$ | 21.2 | $( \pm 2.8)$ | 0.86 | 6.4 | $( \pm 1.3)$ | 7.1 | $( \pm 1.7)$ | 0.47 |
| Total | 27.4 | $( \pm 1.6)$ | 25.2 | $( \pm 1.8)$ | 0.02 | 20.7 | $( \pm 1.2)$ | 19.5 | $( \pm 1.5)$ | 0.14 | 6.7 | $( \pm 1.0)$ | 6.4 | $( \pm 0.9)$ | 0.22 |

${ }^{*}$ Smoked cigarettes on $\geq 1$ of the 30 days preceding the survey.
${ }^{\dagger}$ Smoked cigars on $\geq 1$ of the 30 days preceding the survey.
${ }^{\S}$ Used smokeless tobacco on $\geq 1$ of the 30 days preceding the survey.
${ }^{\uparrow}$ Confidence interval.
**Numbers for other racial/ethnic groups were too small for meaningful analysis.

## Tobacco Use - Continued

Reported by: U Bauer, PhD, T Johnson, J Pallentino, JD, R Hopkins, MD, State Epidemiologist, W McDaniel, RG Brooks, MD, Secretary, Florida Dept of Health. Office on Smoking and Health, National Center for Chronic Disease Prevention and Health Promotion, CDC.
Editorial Note: Nationwide, the prevalence of cigarette smoking among adolescents has increased during the 1990s (4,5); however, smoking prevalence rates among adolescents may have peaked and could be starting to decline (6). National data for comparison with the Florida data for 1998 and 1999 are unavailable, but the significant decline from 1998 to 1999 in Florida is larger than any annual decline observed nationally among youth since 1980 (5,6). In California and Massachusetts, which have initiated comprehensive tobacco prevention and education efforts, annual smoking rate increases among youth appear to have slowed, but no decline similar to that reported in Florida has been observed $(7,8)$.

The Florida Pilot Program on Tobacco Control implements activities to combat tobacco use among youth aged <18 years and tobacco's attractiveness to youths. The program's major component is a youth-oriented, counter-marketing media campaign developed to reduce the allure of smoking. Community partnerships in all 67 Florida counties, an education and training initiative, and enhanced enforcement of youth tobacco access laws are the other program components. The FYTS is a key instrument to assess the program's effectiveness; however, more direct assessments are needed to determine how much of the decline in tobacco use can be attributed to the various pilot program activities and how much may be a result of cigarette price increases that occurred during the study period. Additional evaluation of program activities can be used to strengthen the program's effectiveness for diverse populations such as nonHispanic black and Hispanic students, among whom no statistically significant declines in cigarette use were observed.

The findings described in this report are subject to at least four limitations. First, these data apply only to youth who attend public middle or high school and, therefore, are not representative of all persons in this age group. During the 1997-98 school year in Florida, $5.9 \%$ of persons aged $\geq 16$ years had left a high school program and had not completed high school (M.J. Butler, Florida Department of Education, personal communication, 1999). In addition, approximately $11 \%$ of middle and high school students are enrolled in private schools. Second, in both survey years, tobacco use is based on self-report. Third, trend analysis is limited to 2 years and will be enhanced by additional data collection. Finally, data are not available to fully assess the impact of recent cigarette price increases and program activities on the decline in tobacco use in Florida.

Comparisons between the significant decline in tobacco use among middle and high school students in Florida and trends in the United States overall will enable the findings in this report to be assessed more fully. However, if the observed declines in youth tobacco use are sustained over time, programs similar to the Florida Pilot Program on Tobacco Control or program components should be considered by other states to reverse the nationwide increase in youth smoking observed during the 1990s $(4,5)$.

## References

1. McGinnis JM, Foege WH. Actual causes of death in the United States. JAMA 1993;270:2207-12.

## Tobacco Use - Continued

2. CDC. State tobacco control highlights-1996. Atlanta, Georgia: US Department of Health and Human Services, CDC, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 1996; CDC publication no. 099-4895.
3. Florida Department of Health. Online tobacco education resources. Available at [http://www.state.fl.us/tobacco](http://www.state.fl.us/tobacco), click on "Research." Accessed March 29, 1999.
4. CDC. Tobacco use among high school students-United States, 1997. MMWR 1998;47:229-33.
5. Johnston LD, O'Malley PM, Bachman JG. National survey results on drug use from the Monitoring the Future study, 1975-1997. Vol I: secondary school students. Rockville, Maryland: US Department of Health and Human Services, Public Health Service, National Institutes of Health, National Institute on Drug Abuse, 1998; NIH publication no. 98-4345.
6. Johnston L, Bachman J, O'Malley P. Smoking among American teens declines some. Ann Arbor, Michigan: University of Michigan News and Information Services, December 18, 1998.
7. Independent Evaluation Consortium. Final report of the independent evaluation of the California Tobacco Prevention and Education Program: wave I data, 1996-1997. Rockville, Maryland: Gallup Organization, 1998.
8. Connolly G, Robbins H. Designing an effective statewide tobacco control programMassachusetts. Cancer 1998;83:2722-7.

## Transfusion-Transmitted Malaria Missouri and Pennsylvania, 1996-1998

Malaria is a rare but potentially serious complication of blood transfusion. During 1958-1998, 103 cases of transfusion-transmitted malaria in the United States were reported to CDC. This report summarizes the investigation of three cases that occurred during 1996-1998 in Missouri and Pennsylvania and illustrates the key features of transfusion-transmitted malaria and the importance of donor screening.

## Case 1, Missouri

A 70-year-old man with Waldenström's macroglobulinemia received 3 units of packed red blood cells (RBCs) on November 12, 1996. On November 27, he was hospitalized with fever; peripheral blood smears showed intraerythrocytic parasites suspected to be either Plasmodia or Babesia. Despite treatment with oral quinine and clindamycin, the patient developed respiratory and renal failure and died on November 30. He had not traveled outside the United States since the 1940s but had received 7 units of packed RBCs during 1996 (two in May, two in June, and the three received in November).

CDC confirmed Plasmodium falciparum parasites in the patient's blood smears ( $6 \%$ parasitemia). Stored serum samples from all donors were tested for antimalarial antibodies at CDC by the indirect fluorescent antibody (IFA) test. One of the donors, a U.S. Army reservist whose blood was collected by a civilian blood center, had elevated titers (1:16,384 to P. falciparum, 1:256 to both P. malariae and P. ovale, and 1:64 to P. vivax). Blood smears obtained from this donor in March 1997 demonstrated rare P. falciparum rings, and DNA of the same species was detected by polymerase chain reaction (PCR) of whole blood. The donor reported no fever at the time of blood donation. He had immigrated to the United States from west Africa in April 1996 (1). He was treated with quinine and doxycycline.

## Transfusion-Transmitted Malaria - Continued

## Case 2, Missouri

An 85-year-old man was hospitalized October 9-11, 1997, for gastrointestinal bleeding and received 5 units of packed RBCs. He was again hospitalized on November 1 with recurrent gastrointestinal bleeding and fever, and peripheral blood smears showed $P$. falciparum infection. Treatment was initiated with oral quinine and doxycycline but changed to intravenous quinidine and doxycycline when his mental status deteriorated the following day. A computerized tomography scan showed a cerebral vascular accident; the patient died on November 18. He had not traveled outside the United States since the 1940s.

Stored serum samples from all donors were tested. One donor, a recruit at a military training base whose blood was collected by a civilian blood center and who had immigrated to the United States from west Africa in 1995 (1), had positive malaria serology (titers were 1:16,384 to P. falciparum, 1:4096 to P. malariae, 1:1024 to P. ovale, and 1:64 to P. vivax). Blood smears obtained from this donor in November 1997 did not show malaria parasites, but P. falciparum DNA was detected by PCR of whole blood. He was treated with quinine and doxycycline.

## Case 3, Pennsylvania

A 49-year-old man received 4 units of packed RBCs during surgery for hip replacement on January 15, 1998. He was again hospitalized on February 19 with fever, hypotension, and renal failure. Blood smears showed P. falciparum (12\% parasitemia). He was treated successfully with intravenous quinidine and doxycycline and exchange blood transfusion. He had never traveled outside the United States.

Stored serum samples from all donors were tested, and one donor had elevated IFA titers (1:16,384 to P. falciparum, 1:16,384 to P. malariae, 1:1024 to $P$. ovale, and 1:256 to P. vivax). This donor was born in west Africa, had lived in Europe, then had returned to west Africa where he had lived for approximately 20 years before immigrating to the United States in 1996. PCR performed on a stored sample from the time of donation detected P. falciparum DNA.
Reported by: S Kleinman, MD, Univ of British Columbia, Vancouver, British Columbia, Canada. J Lugo, C Litty, MD, American Red Cross, Philadelphia; L Daskal, MD, R Fischer, MD, R Silibovsky, MD, J Zuckerman, MD, Albert Einstein Medical Center, Philadelphia; C Johnson, MD, A Yang, Philadelphia Dept of Health, Pennsylvania. E Esguerra, MD, St. John's Hospital, Joplin; G Tegtmeier, PhD, Community Blood Center of Greater Kansas City, Kansas City; D Donnell, MD, State Epidemiologist, Missouri Dept of Health. DM Burgess, MSN, Georgia Health District 3-3; P Blake, MD, State Epidemiologist, Div of Public Health, Georgia Dept of Human Resources. R Biswas, MD, J Epstein, MD, E Tabor, MD, Office of Blood Research and Review, Center for Biologics Evaluation and Research, Food and Drug Administration. Div of Viral and Rickettsial Diseases; Biology and Diagnostics Br and Epidemiology Br, Div of Parasitic Diseases, National Center for Infectious Diseases; and an EIS Officer, CDC.
Editorial Note: Transfusion-transmitted malaria is rare in the United States, occurring at an estimated rate of 0.25 cases per million blood units collected (2). Because no approved tests are available in the United States to screen donated blood for malaria, prevention of transfusion-transmitted malaria requires careful questioning of prospective donors (3). Recommendations for deferral of such donors have been published by the Food and Drug Administration (FDA) (3); the American Association of Blood Banks (AABB) has published standards consistent with FDA recommendations (4). Correct application of these standards should have prevented these three cases.

Transfusion-Transmitted Malaria - Continued
Donors who are residents of nonmalarious countries are deferred for 1 year after return from travel to a malarious area. Donors who have had malaria are deferred for 3 years; immigrants, refugees, citizens, or residents of malarious areas are deferred for 3 years after leaving such areas. These criteria are supported by observations that $97 \%$ and $99 \%$ of reported malaria cases in U.S. and foreign civilians occur within 1 and 3 years, respectively, of having been in a malarious area (CDC, unpublished data, 1995).

Persons who emigrate from highly malarious areas and have acquired malarial immunity may have asymptomatic parasitemia that can persist for varying periods, depending on the species. P. falciparum rarely persists longer than 2 years, although it has persisted for up to 13 years (5,6). P. malariae can persist asymptomatically in the blood at low levels for up to 40 years. Therefore, rare cases of transfusiontransmitted malaria will continue to occur despite correct application of donor exclusion criteria. FDA, in consultation with CDC, is developing a new guidance document for blood collection centers, with revised recommendations for donor questioning about exposure to malaria and exclusion criteria for donor deferral.

In the three cases described in this report, the screening process at the time of donation, which is critical to reducing the risk for transfusion-transmitted malaria (particularly infections caused by species other than P. malariae), did not yield accurate information. A history of having been in a malarious area within the previous 3 years was elicited only during subsequent questioning. In cases 1 and 2 , the screening questions about travel to malarious areas, previous malaria infection, or antimalarial drug use within the previous 3 years were not successful in preventing donation. The AABB has recommended uniform donor-history questions that, instead of relying on donors to determine whether they have been in a malarious area, inquire generally about travel outside the United States or Canada within the previous 3 years. Blood bank staff then determine whether travel was to a malarious area. In case 3, these questions were asked but failed to elicit accurate information, presumably because the donor misunderstood the travel-related questions.

Donors who have been implicated as the infection source in transfusiontransmitted malaria cases typically have very low levels of parasitemia that may be undetectable, even with microscopic examination of several thick blood films. Of 60 cases reported in the United States during 1963-1998 where a blood smear was obtained, only 18 ( $30 \%$ ) of implicated donors had Plasmodium parasites detected on the blood smear. Detection of malaria antibodies provides evidence of an immune response to current or past infection, but these tests may remain positive for more than 10 years after parasitemia has resolved; therefore, malaria antibody detection to screen blood donations would result in the exclusion of otherwise healthy persons. PCR has increased sensitivity over blood film examination, positivity indicating current malaria infection ( 7 ), and species differentiation when microscopic examination may be inconclusive (8). The availability of testing for malaria by antibody detection or PCR is limited by lack of commercial reagents. In previous investigations of transfusion-transmitted malaria cases, antibody detection has been the method of choice to identify infected donors (9). However, since detection of antibodies does not necessarily indicate parasitemia, the use of PCR is a helpful tool for investigations.

These cases illustrate the importance of considering malaria in diagnosing a febrile illness following blood transfusion in any patient. Transfusion-transmitted malaria

## Transfusion-Transmitted Malaria - Continued

usually occurs in patients with underlying diseases or who have undergone surgery (10) and can be life-threatening. Diagnosis may be delayed because fever may be attributed to the underlying illness, postoperative infection, or tissue reaction to surgical trauma (10).

## References

1. US Army Medical Surveillance Activity. Transfusion-transmitted P. falciparum malaria. Medical Surveillance Monthly Report 1998;4:13-4.
2. Guerrero IC, Weniger BG, Schultz MG. Transfusion malaria in the United States, 1972-1981. Ann Intern Med 1983;99:221-6.
3. Zoon K. Recommendations for deferral of donors for malaria risk: letter to all registered blood establishments. Rockville, Maryland: US Department of Health and Human Services, Food and Drug Administration, 1994.
4. American Association of Blood Banks. Standards for blood banks and transfusion services. 18th ed. Bethesda, Maryland: American Association of Blood Banks, 1997.
5. Besson P, Robert JF, Reviron J, Richard-Lenoble D, Gentilini M. Two cases of transfusional malaria. Rev Fr Transfus Immunohematol 1976;19:369-73.
6. Slinger R, Giulivi A, Bodie-Collins M, et al. Transfusion-transmitted malaria in Canada. Can Commun Dis Rep 1999;25:53-6.
7. Vu TT, Tran VB, Phan NT, et al. Screening donor blood for malaria by polymerase chain reaction. Trans R Soc Trop Med Hyg 1995;89:44-7.
8. Kachur SP, Bloland PB. Malaria. In: Wallace RB, ed. Maxcy-Rosenau-Last textbook of public health and preventive medicine. 14th ed. Norwalk, Connecticut: Appleton and Lange, 1998: 313-26.
9. Sulzer AJ, Wilson M. The indirect fluorescent antibody test for the detection of occult malaria in blood donors. Bull World Health Organ 1971;45:375-9.
10. Anonymous. Which are the appropriate modifications of existing regulations designed to prevent the transmission of malaria by blood transfusion, in view of the increasing frequency of travel to endemic areas? Vox Sang 1987;52:138-48.

## Notice to Readers

## Publication of An Ounce of Prevention...What Are the Returns?

The second edition of An Ounce of Prevention... What are the Returns? is now available. This publication outlines strategies for and economic benefits of health promotion and disease and injury prevention. In addition, it outlines interventions in 19 areas of chronic and infectious disease and injury in which prevention can improve the quality of life and increase longevity. Each section presents the health impact of the disease, injury, or disability on U.S. society; the effectiveness of prevention strategies; the costs of the disease, injury, or disability; and the cost-effectiveness of prevention strategies.

An Ounce of Prevention is available on the World-Wide Web, <http://www.cdc.gov/ epo/prevent.htm>, or from CDC's Prevention Effectiveness Branch, Division of Prevention Research and Analytic Methods, Epidemiology Program Office, Mailstop D-01, 1600 Clifton Road, N.E., Atlanta, GA 30333; e-mail epopeb@cdc.gov.

FIGURE I. Selected notifiable disease reports, comparison of provisional 4-week totals ending March 27, 1999, with historical data - United States


* No measles cases were reported for the current 4-week period, yielding a ratio for week 12 of zero (0).
${ }^{\dagger}$ Ratio of current 4 -week total to mean of 154 -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 March 27, 1999 (12th Week)

|  | Cum. 1999 |  | Cum. 1999 |
| :---: | :---: | :---: | :---: |
| Anthrax | - | Plague | - |
| Brucellosis | 10 | Poliomyelitis, paralytic | - |
| Cholera | - | Psittacosis | 8 |
| Congenital rubella syndrome | - | Rabies, human | - |
| Cryptosporidiosis* | 221 | Rocky Mountain spotted fever (RMSF) | 29 |
| Diphtheria | - | Streptococcal disease, invasive Group A | 411 |
| Encephalitis: California* | 1 | Streptococcal toxic-shock syndrome* | 11 |
| eastern equine* | - | Syphilis, congenital ${ }^{\text {I }}$ | - |
| St. Louis* | - | Tetanus | 4 |
| western equine* | - | Toxic-shock syndrome | 24 |
| Hansen Disease | 12 | Trichinosis | 3 |
| Hantavirus pulmonary syndrome* ${ }^{\dagger}$ | 2 | Typhoid fever | 58 |
| Hemolytic uremic syndrome, post-diarrheal* | 5 | Yellow fever | - |

-:no reported cases
*Not notifiable in all states.
${ }^{\dagger}$ 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
Updated monthly from reports to the Division of HIV/AIDS Prevention-
HIV, STD, and TB Prevention (NCHSTP), last update February 21, 1999.
$\llbracket$ Updated from reports to the Division of STD Prevention, NCHSTP.

TABLE II. Provisional cases of selected notifiable diseases, United States, weeks ending March 27, 1999, and March 28, 1998 (12th Week)

| Reporting Area | AIDS |  | Chlamydia |  | Escherichia coli 0157:H7 |  | Gonorrhea |  | Hepatitis C/NA,NB |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | NETSS ${ }^{\dagger}$ | PHLIS ${ }^{5}$ |  |  |  |  |
|  | $\begin{aligned} & \hline \text { Cum. } \\ & \text { 1999* } \end{aligned}$ | $\begin{gathered} \hline \text { Cum. } \\ 1998 \end{gathered}$ |  |  | $\begin{aligned} & \hline \text { Cum. } \\ & 1999 \end{aligned}$ | $\begin{aligned} & \hline \text { Cum. } \\ & 1998 \end{aligned}$ | $\begin{aligned} & \hline \text { Cum. } \\ & 1999 \end{aligned}$ | $\begin{aligned} & \hline \text { Cum. } \\ & 1999 \end{aligned}$ | $\begin{gathered} \hline \text { Cum. } \\ 1999 \end{gathered}$ | $\begin{gathered} \hline \text { Cum. } \\ 1998 \end{gathered}$ | $\begin{aligned} & \hline \text { Cum. } \\ & 1999 \end{aligned}$ | $\begin{gathered} \hline \text { Cum. } \\ 1998 \end{gathered}$ |
| UNITED STATES | 7,049 | 10,878 | 114,094 | 130,076 | 249 | 117 | 63,077 | 76,310 | 500 | 924 |
| NEW ENGLAND | 359 | 310 | 4,343 | 4,847 | 42 | 27 | 1,434 | 1,367 | 46 | 21 |
| Maine | 5 | 4 | 153 | 211 | 3 | - | 10 | 11 | - | - |
| N.H. | 13 | 12 | 225 | 233 | 2 | 1 | 19 | 26 | - |  |
| V . | 4 | 8 | 107 | 66 | 3 | - | 12 | 1 | 1 | 2 |
| Mass. | 245 | 92 | 2,060 | 1,924 | 19 | 16 | 644 | 501 | 45 | 19 |
| R.I. | 20 | 34 | 510 | 577 | 1 | 1 | 126 | 74 | - | - |
| Conn. | 72 | 160 | 1,288 | 1,836 | 14 | 9 | 623 | 754 | - | - |
| MID. ATLANTIC | 1,497 | 3,359 | 16,204 | 15,704 | 13 | 1 | 8,540 | 9,094 | 32 | 86 |
| Upstate N.Y. | 74 | 426 | N | N | 10 | - | 727 | 1,510 | 28 | 75 |
| N.Y. City | 837 | 1,934 | 7,966 | 8,251 | - | 1 | 3,825 | 3,817 | - | - |
| N.J. | 375 | 516 | 2,310 | 2,748 | 3 | - | 1,161 | 1,649 |  | - |
| Pa . | 211 | 483 | 5,928 | 4,705 | N | - | 2,827 | 2,118 | 4 | 11 |
| E.N. CENTRAL | 487 | 793 | 17,035 | 19,675 | 40 | 25 | 11,571 | 14,915 | 107 | 113 |
| Ohio | 95 | 154 | 5,418 | 6,530 | 21 | 8 | 3,205 | 3,826 | - | 5 |
| Ind. | 52 | 80 | , | - | 5 | 7 | 726 | 1,456 | - | 2 |
| III. | 231 | 373 | 6,456 | 4,536 | 4 | 3 | 4,277 | 4,095 | 2 | 15 |
| Mich. | 80 | 144 | 4,249 | 5,392 | 10 | 4 | 2,967 | 4,294 | 105 | 91 |
| Wis. | 29 | 42 | 912 | 3,217 | N | 3 | 396 | 1,244 | - | - |
| W.N. CENTRAL | 161 | 195 | 3,774 | 8,266 | 54 | 15 | 1,319 | 3,536 | 21 | 143 |
| Minn. | 26 | 31 | 1,284 | 1,653 | 16 | 12 | 496 | 565 | - | - |
| Iowa | 12 | 9 | 396 | 874 | 5 | 2 | 160 | 239 | - | 3 |
| Mo. | 84 | 100 | - | 2,927 | 4 | 1 | - | 1,701 | 20 | 140 |
| N. Dak. | 3 | 3 | 102 | 234 | 2 | - | 7 | 21 | - | - |
| S. Dak. | 4 | 7 | 418 | 390 | 1 | - | 38 | 66 | - | - |
| Nebr. | 11 | 14 | 679 | 713 | 19 | - | 291 | 288 | - | - |
| Kans. | 21 | 31 | 895 | 1,475 | 7 | - | 327 | 656 | 1 | - |
| S. ATLANTIC | 1,888 | 2,971 | 25,922 | 25,643 | 26 | 10 | 19,353 | 20,594 | 50 | 27 |
| Del. | 31 | 40 | 694 | 563 | 1 | - | 403 | 334 | - | - |
| Md. | 254 | 334 | 1,805 | 1,740 | 1 | - | 2,114 | 2,073 | 18 | 3 |
| D.C. | 67 | 193 | N | N | - | - | 588 | 813 | - | - |
| Va . | 103 | 176 | 3,153 | 2,774 | 6 | 2 | 2,170 | 1,820 | 6 | 1 |
| W. Va. | 14 | 19 | 547 | 1,117 | - | 1 | 94 | 365 | 6 | 2 |
| N.C. | 126 | 216 | 5,062 | 5,097 | 7 | 3 | 4,448 | 4,416 | - | 7 |
| S.C. | 132 | 162 | 4,816 | 4,026 | 1 | 1 | 2,397 | 2,607 | 6 | - |
| Ga. | 209 | 370 | 3,366 | 5,866 | 1 | - | 2,422 | 4,663 | 1 | 8 |
| Fla. | 952 | 1,461 | 6,479 | 4,460 | 9 | 3 | 4,717 | 3,503 | 13 | 6 |
| E.S. CENTRAL | 303 | 382 | 8,722 | 9,063 | 17 | 4 | 7,615 | 8,664 | 25 | 30 |
| Ky. | 37 | 63 | , | 1,448 | 5 | - | ,615 | 850 | 1 | 6 |
| Tenn. | 132 | 140 | 3,370 | 3,030 | 8 | 3 | 2,627 | 2,597 | 23 | 21 |
| Ala. | 71 | 118 | 3,290 | 2,379 | 4 | - | 3,010 | 2,965 | 1 | 3 |
| Miss. | 63 | 61 | 2,062 | 2,206 | - | 1 | 1,978 | 2,252 | - | - |
| W.S. CENTRAL | 989 | 1,356 | 12,798 | 18,501 | 6 | 6 | 7,823 | 11,038 | 24 | 16 |
| Ark. | 34 | 52 | 1,234 | 849 | 2 | 2 | 590 | 1,092 | 2 | 2 |
| La. | 69 | 207 | 3,881 | 2,813 | 1 | 2 | 3,349 | 2,442 | 12 | - |
| Okla. | 20 | 71 | 1,944 | 2,183 | 2 | 2 | 1,011 | 1,169 | 1 | - |
| Tex. | 866 | 1,026 | 5,739 | 12,656 | 1 | - | 2,873 | 6,335 | 9 | 14 |
| MOUNTAIN | 213 | 348 | 6,355 | 6,952 | 16 | 6 | 1,702 | 1,848 | 46 | 136 |
| Mont. | 3 | 10 | 271 | 211 | - | - | 5 | 11 | 4 | 4 |
| Idaho | 5 | 8 | 399 | 454 | - | 1 | 25 | 41 | 4 | 54 |
| Wyo. | 1 | 1 | 180 | 180 | 1 | 1 | 7 | 10 | 14 | 32 |
| Colo. | 57 | 65 | 1,748 | 1,813 | 5 | 2 | 460 | 588 | 7 | 8 |
| N. Mex. | 9 | 52 | 971 | 951 | 1 | - | 173 | 176 | 4 | 19 |
| Ariz. | 89 | 126 | 1,837 | 2,382 | 4 | 1 | 724 | 805 | 10 | - |
| Utah | 27 | 35 | 356 | 512 | 5 | 1 | 38 | 58 | 1 | 9 |
| Nev. | 22 | 51 | 593 | 449 | - | - | 270 | 159 | 2 | 10 |
| PACIFIC | 1,152 | 1,164 | 18,941 | 21,425 | 35 | 23 | 3,720 | 5,254 | 149 | 352 |
| Wash. | 59 | 74 | 2,810 | 2,526 | 4 | 8 | 495 | 443 | 2 | 5 |
| Oreg. | 32 | 40 | 1,119 | 1,362 | 12 | 9 | 162 | 198 | - | 8 |
| Calif. | 1,040 | 1,027 | 14,124 | 16,568 | 19 | 6 | 2,906 | 4,445 | 147 | 304 |
| Alaska | 5 | - | 453 | 466 | - | - | 90 | 71 | - | 1 |
| Hawaii | 16 | 23 | 435 | 503 | - | - | 67 | 97 | - | 34 |
| Guam | 1 | 1 | - | 73 | N | - | - | 6 | - | - |
| P.R. | 214 | 271 | U | U | 1 | U | 68 | 102 | - | - |
| V.I. | 3 | 13 | N | N | N | U | U | U | U | U |
| Amer. Samoa | - | - | U | U | N | U | U | U | U | U |
| C.N.M.I. | - | - | N | N | N | U | - | 8 | - | - |
| N : Not notifiable | U: Unavailable |  | - no reported cases C.N.M.I.: Commonwealth of Northern Mariana Islands |  |  |  |  |  |  |  |
| *Updated monthly from reports to the Division of HIV/AIDS Prevention-Surveillance and Epidemiology, National Center for HIV, STD, and TB Prevention, last update February 21, 1999. <br> ${ }_{s}^{\dagger}$ National Electronic Telecommunications System for Surveillance. <br> ${ }^{\S}$ Public Health Laboratory Information System. |  |  |  |  |  |  |  |  |  |  |

TABLE II. (Cont'd.) Provisional cases of selected notifiable diseases, United States,
weeks ending March 27, 1999, and March 28, 1998 (12th Week)

| Reporting Area | Legionellosis |  | $\begin{gathered} \text { Lyme } \\ \text { Disease } \end{gathered}$ |  | Malaria |  | Syphilis(Primary \& Secondary) |  | Tuberculosis |  | Rabies, <br> Animal <br> Cum. <br> 1999 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\begin{aligned} & \hline \text { Cum. } \\ & 1999 \end{aligned}$ | $\begin{gathered} \hline \text { Cum. } \\ 1998 \end{gathered}$ | $\begin{gathered} \hline \text { Cum. } \\ 1999 \end{gathered}$ | $\begin{aligned} & \hline \text { Cum. } \\ & 1998 \end{aligned}$ | $\begin{aligned} & \hline \text { Cum. } \\ & 1999 \end{aligned}$ | $\begin{gathered} \hline \text { Cum. } \\ 1998 \end{gathered}$ | $\begin{aligned} & \hline \text { Cum. } \\ & 1999 \end{aligned}$ | $\begin{aligned} & \hline \text { Cum. } \\ & 1998 \end{aligned}$ | Cum. 1999* | $\begin{aligned} & \hline \text { Cum. } \\ & \text { 1998* } \end{aligned}$ |  |
| UNITED STATES | 168 | 280 | 695 | 899 | 223 | 259 | 1,260 | 1,647 | 990 | 1,598 | 984 |
| NEW ENGLAND | 12 | 17 | 137 | 172 | 3 | 9 | 16 | 18 | 77 | 78 | 176 |
| Maine | 2 | 1 | - | 1 | - | - | - | 1 | 3 | 2 | 32 |
| N.H. | 1 | 2 | - | 5 | - | - | - | 1 | - | 2 | 13 |
| Vt. | 3 | - | - | 2 | - | - | 1 | - | - | 1 | 34 |
| Mass. | 2 | 5 | 91 | 39 | 3 | 9 | 10 | 14 | 41 | 41 | 40 |
| R.I. | 1 | 4 | 8 | 14 | - | - | 1 | - | 15 | 9 | 15 |
| Conn. | 3 | 5 | 38 | 111 | - | - | 4 | 2 | 18 | 23 | 42 |
| MID. ATLANTIC | 42 | 60 | 377 | 565 | 60 | 90 | 47 | 64 | 374 | 359 | 211 |
| Upstate N.Y. | 12 | 13 | 116 | 241 | 18 | 21 | 4 | 7 | 32 | 44 | 130 |
| N.Y. City | 3 | 15 | 2 | 17 | 13 | 48 | 22 | 9 | 227 | 221 | U |
| N.J. | 5 | 3 | 97 | 67 | 21 | 12 | 1 | 20 | 115 | 94 | 51 |
| Pa. | 22 | 29 | 162 | 240 | 8 | 9 | 20 | 28 | U | U | 30 |
| E.N. CENTRAL | 39 | 109 | 19 | 19 | 14 | 18 | 235 | 236 | 45 | 64 | 1 |
| Ohio | 17 | 33 | 13 | 14 | 2 | 1 | 20 | 46 | U | U | - |
| Ind. | 5 | 25 | 5 | 4 | 4 | 1 | 32 | 37 | U | U |  |
| III. | 2 | 15 | - | - | - | 9 | 157 | 98 | U | U |  |
| Mich. | 14 | 15 | 1 | 1 | 6 | 6 | 26 | 38 | 38 | 40 | 1 |
| Wis. | 1 | 21 | U | U | 2 | 1 | - | 17 | 7 | 24 | - |
| W.N. CENTRAL | 6 | 17 | 9 | 9 | 8 | 11 | 6 | 45 | 87 | 56 | 92 |
| Minn. | - | 1 | 3 | 1 | - | 4 | 1 | 2 | 36 | 26 | 20 |
| lowa | 4 | 2 | 1 | 6 | 2 | 2 | 1 | - | - | - | 20 |
| Mo. | 1 | 7 | - | 1 | 5 | 4 | - | 33 | 41 | 13 | 4 |
| N. Dak. | - | - | 1 | - | - | - | - | 3 | 1 | 1 | 29 |
| S. Dak. | 1 | - | - | - | - | - | - | - | 3 | 4 | - |
| Nebr. | - | 7 | - | - | - | - | 1 | 4 | 4 | - | 1 |
| Kans. | - | - | 4 | 1 | 1 | 1 | 3 | 6 | 2 | 12 | 18 |
| S. ATLANTIC | 30 | 34 | 98 | 97 | 65 | 54 | 475 | 631 | 149 | 334 | 374 |
| Del. | 2 | 6 | - | 2 | - | 1 | 1 | 6 | - | 5 | - |
| Md. | 5 | 8 | 78 | 85 | 19 | 22 | 102 | 167 | U | U | 78 |
| D.C. | - | 2 | 1 | 4 | 6 | 3 | 10 | 21 | 10 | 25 | - |
| Va. | 4 | 3 | - | 1 | 10 | 5 | 36 | 49 | 17 | 53 | 98 |
| W. Va. | N | N | 1 | - | 1 | - | 1 | - | 10 | 17 | 16 |
| N.C. | 4 | 4 | 13 | - | 5 | 6 | 130 | 192 | 60 | 161 | 90 |
| S.C. | 5 | 4 | 1 | - | - |  | 61 | 73 | 52 | 73 | 24 |
| Ga . |  | - | - | 2 | 5 | 12 | 56 | 51 | U | U | 33 |
| Fla. | 10 | 7 | 4 | 3 | 19 | 5 | 78 | 72 | U | U | 35 |
| E.S. CENTRAL | 8 | 9 | 12 | 11 | 3 | 8 | 228 | 296 | 73 | 132 | 51 |
| Ky. | 2 | 5 | - | 1 | - | - | - | 34 | U | U | 13 |
| Tenn. | 5 | 2 | 4 | 5 | 2 | 4 | 126 | 148 | U | U | 21 |
| Ala. | 1 | 1 | 6 | 5 | 1 | 2 | 75 | 62 | 67 | 87 | 17 |
| Miss. | - | 1 | 2 | - | - | 2 | 27 | 52 | 6 | 45 |  |
| W.S. CENTRAL | 1 | 2 | - | - | 5 | 5 | 199 | 211 | 49 | 439 | 16 |
| Ark. | - | - | - | - | - | 1 | 24 | 30 | 27 | 18 | - |
| La. | 1 | - | - | - | 3 | 3 | 59 | 82 | U | U | - |
| Okla. | - | - | - | - | 1 | - | 60 | 12 | 22 | 26 | 16 |
| Tex. | - | 2 | - | - | 1 | 1 | 56 | 87 | - | 395 | - |
| MOUNTAIN | 11 | 15 | 2 | 1 | 10 | 13 | 18 | 59 | 35 | 52 | 30 |
| Mont. | - | 1 | - | - | 1 | - | - | - | - | 2 | 12 |
| Idaho | - | - | - | - | 1 | 1 | - | - | - | 1 | - |
| Wyo. | - | 1 | 1 | - | - | - | - | - | - | 1 | 8 |
| Colo. | 1 | 4 | - | - | 4 | 4 | - | 4 | U | U | 1 |
| N. Mex. | 1 | 1 | 1 | - | 1 | 4 | - | 4 | 10 | 9 | - |
| Ariz. | 1 | 1 | - | - | 3 | 2 | 16 | 46 | U | U | 9 |
| Utah | 4 | 6 | - | - | - | 1 | 1 | 2 | 11 | 11 |  |
| Nev. | 4 | 1 | - | 1 | - | 1 | 1 | 3 | 14 | 28 | - |
| PACIFIC | 19 | 17 | 41 | 25 | 55 | 51 | 36 | 87 | 101 | 84 | 33 |
| Wash. | 2 | 1 | - |  | 3 | , | 5 | 4 | 58 | 41 | - |
| Oreg. |  | - | 1 | 2 | 7 | 10 |  | 2 | U | U | - |
| Calif. | 17 | 16 | 40 | 23 | 42 | 41 | 29 | 81 | U | U | 30 |
| Alaska | - | - | - | - | - | - | 1 | - | 8 | 10 | 3 |
| Hawaii | - | - | - | - | 3 | - | 1 | - | 35 | 33 | - |
| Guam | - | 1 | - | - | - | 1 | - | - | - | 34 | - |
| P.R. | - | - | - | - | - |  | 52 | 52 | - | 6 | 14 |
| 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. | - | - | - | - | - | - | - | 50 | - | 26 | - |
| N : Not notifiable | U: Un | ailable | -: no | orted c |  |  |  |  |  |  |  |

TABLE III. Provisional cases of selected notifiable diseases preventable by vaccination, United States, weeks ending March 27, 1999, and March 28, 1998 (12th Week)

| Reporting Area | H. influenzae, invasive |  | Hepatitis (Viral), by type |  |  |  | Measles (Rubeola) |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | A |  | B |  | Indigenous |  | Imported ${ }^{\dagger}$ |  | Total |  |
|  | $\begin{aligned} & \hline \text { Cum. } \\ & \text { 1999* } \end{aligned}$ | $\begin{aligned} & \hline \text { Cum. } \\ & 1998 \end{aligned}$ | $\begin{aligned} & \hline \text { Cum. } \\ & 1999 \\ & \hline \end{aligned}$ | $\begin{gathered} \hline \text { Cum. } \\ 1998 \\ \hline \end{gathered}$ | $\begin{gathered} \hline \text { Cum. } \\ 1999 \\ \hline \end{gathered}$ | $\begin{gathered} \hline \text { Cum. } \\ 1998 \\ \hline \end{gathered}$ | 1999 | $\begin{gathered} \hline \text { Cum. } \\ 1999 \\ \hline \end{gathered}$ | 1999 | $\begin{aligned} & \hline \text { Cum. } \\ & 1999 \\ & \hline \end{aligned}$ | $\begin{aligned} & \hline \text { Cum. } \\ & 1999 \\ & \hline \end{aligned}$ | $\begin{aligned} & \hline \text { Cum. } \\ & 1998 \\ & \hline \end{aligned}$ |
| UNITED STATES | 267 | 299 | 3,298 | 4,569 | 1,236 | 1,934 | - | 8 | - | 9 | 17 | 9 |
| NEW ENGLAND | 21 | 21 | 34 | 86 | 20 | 32 | - | - | - | 1 | 1 | 1 |
| Maine | 2 | 2 | 2 | 9 |  |  | - | - | - | - | - | - |
| N.H. | 2 | 1 | 5 | 5 | 2 | 4 | - | - | - | 1 | 1 | - |
| V . | 3 | 2 | 1 | 4 | 1 | - | - | - | - | - | - | - |
| Mass. | 11 | 16 | 11 | 25 | 15 | 16 | - | - | - | - | - | 1 |
| R.I. |  |  | - | 5 | 2 | 1 | - | - | - | - | - | - |
| Conn. | 3 | - | 15 | 38 | - | 11 | - | - | - | - | - | - |
| MID. ATLANTIC | 35 | 41 | 187 | 366 | 142 | 284 | - | - | - | - | - | 1 |
| Upstate N.Y. | 21 | 15 | 57 | 79 | 33 | 70 | U | - | U | - | - | - |
| N.Y. City | 2 | 12 | 28 | 139 | 28 | 72 |  | - |  | - | - | - |
| N.J. | 12 | 13 | 33 | 69 | 24 | 51 | - | - | - | - | - | 1 |
| Pa . | - | 1 | 69 | 79 | 57 | 91 | - | - | - | - | - | - |
| E.N. CENTRAL | 25 | 41 | 808 | 750 | 110 | 433 | - | - | - | - | - | 1 |
| Ohio | 16 | 19 | 192 | 94 | 26 | 20 | - | - | - | - | - | - |
| Ind. | 1 | 5 | 29 | 87 | 4 | 214 | U | - | U | - | - | - |
| III. | 7 | 16 | 89 | 196 |  | 58 |  | - |  | - | - | - |
| Mich. | 1 |  | 496 | 311 | 80 | 119 | - | - | - | - | - | 1 |
| Wis. | - | 1 | 2 | 62 | - | 22 | - | - | - | - | - | - |
| W.N. CENTRAL | 22 | 8 | 166 | 421 | 68 | 103 | - | - | - | - | - | - |
| Minn. | 5 | 2 | 11 | 15 | 9 | 6 | - | - | - | - | - | - |
| lowa | 5 | 1 | 28 | 176 | 12 | 13 | U | - | U | - | - | - |
| Mo. | 8 | 1 | 103 | 179 | 39 | 72 | U | - | U | - | - | - |
| N. Dak. | - | - |  | 2 | - | 1 | - | - | - | - | - | - |
| S. Dak. | 1 | - | 2 | 2 | - | 1 | - | - | - | - | - | - |
| Nebr. | 1 | - | 13 | 10 | 6 | 4 | - | - | - | - | - | - |
| Kans. | 2 | 4 | 9 | 37 | 2 | 6 | - | - | - | - | - | - |
| S. ATLANTIC | 70 | 58 | 392 | 389 | 229 | 204 | - | - | - | - | - | 5 |
| Del. |  | - | - | - | - | - | - | - | - | - | - | - |
| Md. | 22 | 14 | 92 | 94 | 42 | 39 | - | - | - | - | - | 1 |
| D.C. | 2 | - | 15 | 13 | 6 | 3 | - | - | - | - | - | - |
| Va . | 8 | 9 | 31 | 60 | 23 | 25 | - | - | - | - | - | 2 |
| W. Va. | 1 | 2 | 2 | - | 1 | 1 | - | - | - | - | - | - |
| N.C. | 11 | 8 | 39 | 24 | 44 | 48 | - | - | - | - | - | - |
| S.C. | 2 | 1 | 5 | 8 | 25 | - | - | - | , | - | - | - |
| Ga. | 12 | 17 | 74 | 109 | 27 | 57 | U | - | U | - | - | 1 |
| Fla. | 12 | 7 | 134 | 81 | 61 | 31 | U | - | U | - | - | 1 |
| E.S. CENTRAL | 22 | 20 | 97 | 118 | 84 | 120 | - | - | - | - | - | - |
| Ky. | 2 | 5 | 6 | 5 | 7 | 8 | U | - | U | - | - | - |
| Tenn. | 11 | 9 | 65 | 64 | 52 | 90 | U | - | - | - | - | - |
| Ala. | 8 | 5 | 24 | 30 | 25 | 22 | - | - | - | - | - | - |
| Miss. | 1 | 1 | 2 | 19 | - | - | - | - | - | - | - | - |
| W.S. CENTRAL | 12 | 17 | 261 | 292 | 76 | 126 | - | - | - | 2 | 2 | - |
| Ark. |  |  | 8 | 11 | 9 | 23 | - | - | - | - | - | - |
| La. | 3 | 7 | 9 | 8 | 8 | 10 | - | - | - | - | - | - |
| Okla. | 7 | 8 | 91 | 105 | 22 | 7 | - | - | - | - | - | - |
| Tex. | 2 | 2 | 153 | 168 | 37 | 86 | - | - | - | 2 | 2 | - |
| MOUNTAIN | 36 | 49 | 342 | 782 | 112 | 185 | - | 1 | - | - | 1 | - |
| Mont. | 1 | - | 4 | 7 | 1 | 2 | - | - | - | - | - | - |
| Idaho | 1 | - | 9 | 46 | 6 | 7 | - | - | - | - | - | - |
| Wyo. | 1 | - | 1 | 11 | - | 2 | - | - | - | - | , | - |
| Colo. | 2 | 9 | 76 | 62 | 26 | 23 | - | 1 | - | - | 1 | - |
| N. Mex. | 10 | - | 8 | 42 | 41 | 75 | - |  | - | - | - | - |
| Ariz. | 17 | 25 | 193 | 507 | 16 | 41 | - | - | - | - | - | - |
| Utah | 4 | 4 | 14 | 45 | 8 | 16 | , | - | - | - | - | - |
| Nev. | - | 11 | 37 | 62 | 14 | 19 | U | - | U | - | - | - |
| PACIFIC | 24 | 44 | 1,011 | 1,365 | 395 | 447 | - | 7 | - | 6 | 13 | 1 |
| Wash. | - | 1 | 67 | 136 | 7 | 30 | - | - | - |  | - |  |
| Oreg. | 10 | 30 | 58 | 188 | 19 | 70 | - | 6 | - | - | 6 | - |
| Calif. | 12 | 10 | 883 | 1,019 | 360 | 340 | - | 1 | - | 6 | 7 | 1 |
| Alaska | 2 | 1 | 2 | 1 | 6 | 2 | - | - | - | - | - | - |
| Hawaii | - | 2 | 1 | 21 | 3 | 5 | - | - | - | - | - | - |
| Guam | - | , | , | , | , | - | U | - | U | - | - | - |
| P.R. | - | 1 | 17 | 13 | 24 | 144 | - | - | - | - | - | - |
| 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 |  |  |  |  | 21 | U |  | U | - | - |  |

N : Not notifiable U: Unavailable $\quad-$ no reported cases
*Of 55 cases among children aged $<5$ years, serotype was reported for 23 and of those, 4 were type b.
${ }^{\dagger}$ For imported measles, cases include only those resulting from importation from other countries.

TABLE III. (Cont'd.) Provisional cases of selected notifiable diseases preventable by vaccination, United States, weeks ending March 27, 1999, and March 28, 1998 (12th Week)

| Reporting Area | Meningococcal Disease |  | Mumps |  |  | Pertussis |  |  | Rubella |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\begin{aligned} & \hline \text { Cum. } \\ & 1999 \end{aligned}$ | $\begin{aligned} & \hline \text { Cum. } \\ & 1998 \\ & \hline \end{aligned}$ | 1999 | $\begin{aligned} & \hline \text { Cum. } \\ & 1999 \\ & \hline \end{aligned}$ | $\begin{aligned} & \hline \text { Cum. } \\ & 1998 \\ & \hline \end{aligned}$ | 1999 | $\begin{gathered} \hline \text { Cum. } \\ 1999 \end{gathered}$ | $\begin{aligned} & \hline \text { Cum. } \\ & 1998 \\ & \hline \end{aligned}$ | 1999 | $\begin{aligned} & \hline \text { Cum. } \\ & 1999 \end{aligned}$ | $\begin{aligned} & \hline \text { Cum. } \\ & 1998 \\ & \hline \end{aligned}$ |
| UNITED STATES | 608 | 827 | 11 | 86 | 107 | 75 | 916 | 998 | 1 | 6 | 104 |
| NEW ENGLAND | 32 | 45 | - | 1 | - | 1 | 99 | 212 | - | - | 16 |
| Maine | 3 | 4 | - | - | - | - | - | 4 | - | - | - |
| N.H. | - | 1 | - | 1 | - | - | 18 | 17 | - | - | - |
| V t. | 2 | 1 | - | - | - | - | 10 | 25 | - | - | - |
| Mass. | 22 | 19 | - | - | - | 1 | 65 | 161 | - | - | 1 |
| R.I. | 2 | 3 | - | - | - | - | 2 | - | - | - | - |
| Conn. | 3 | 17 | - | - | - | - | 4 | 5 | - | - | 15 |
| MID. ATLANTIC | 57 | 83 | - | 10 | 9 | - | 126 | 110 | - | - | 58 |
| Upstate N.Y. | 9 | 21 | U | 2 | 2 | U | 97 | 70 | U | - | 53 |
| N.Y. City | 18 | 10 | - | - | 5 | - | - | 6 | - | - | 1 |
| N.J. | 15 | 19 | - | - | - | - | $\stackrel{-}{-}$ | 6 | - | - | 4 |
| Pa . | 15 | 33 | - | 8 | 2 | - | 29 | 28 | - | - | - |
| E.N. CENTRAL | 91 | 128 | 3 | 10 | 14 | 4 | 97 | 122 | - | - | - |
| Ohio | 47 | 48 | 3 | 6 | 7 | 4 | 83 | 34 | - | - | - |
| Ind. | 7 | 24 | U | - | - | U | 2 | 34 | U | - | - |
| III. | 26 | 28 | - | - | 7 | - | - | 5 | - | - | - |
| Mich. | 11 | 13 | - | 4 | 7 | - | 12 | 13 | - | - | - |
| Wis. | - | 15 | - | - | - | - | - | 36 | - | - | - |
| W.N. CENTRAL | 70 | 66 | - | 2 | 9 | 1 | 13 | 76 | - | - | - |
| Minn. | 18 | 3 | - | - | 4 | - | - | 39 | - | - | - |
| Iowa | 15 | 10 | U | 2 | 3 | U | 5 | 15 | U | - | - |
| Mo. | 26 | 30 | - | - | 1 | - | 6 | 11 | - | - | - |
| N. Dak. | - | - | - | - | 1 | - | - | - | - | - | - |
| S. Dak. | 5 | 5 | - | - | - | 1 | 2 | 2 | - | - | - |
| Nebr. | 2 | 3 | - | - | - | - | - | 3 | - | - | - |
| Kans. | 4 | 15 | - | - | - | - | - | 6 | - | - | - |
| S. ATLANTIC | 108 | 115 | 4 | 17 | 13 | 8 | 70 | 68 | 1 | 2 | 1 |
| Del. | 2 | 1 | - | - | - | - | - | - | - | - | - |
| Md. | 17 | 14 | - | 3 | - | 1 | 22 | 15 | - | 1 | - |
| D.C. | 1 | - | - | 1 | - | - | - | - | - | - | - |
| Va. | 14 | 14 | - | 2 | 2 | - | 7 | - | - | - | - |
| W. Va. | 1 | 3 | - | - | - | - | - | 1 | - | - | - |
| N.C. | 14 | 19 | 2 | 3 | 6 | 1 | 22 | 34 | 1 | 1 | 1 |
| S.C. | 15 | 15 | - | 2 | 3 | - | 6 | 6 | - | - | - |
| Ga. | 14 | 33 | U | - | - | U | 4 | - | U | - | - |
| Fla. | 30 | 16 | 2 | 6 | 2 | 6 | 9 | 12 | - | - | - |
| E.S. CENTRAL | 46 | 67 | - | 1 | 1 | - | 14 | 14 | - | - | - |
| Ky. | 10 | 11 | U | - | - | U | 1 | 1 | U | - | - |
| Tenn. | 18 | 24 | - | - | - | - | 9 | 4 | - | - | - |
| Ala. | 13 | 24 | - | 1 | 1 | - | 4 | 9 | - | - | - |
| Miss. | 5 | 8 | - | - | - | - | - | - | - | - | - |
| W.S. CENTRAL | 30 | 50 | 2 | 11 | 21 | 1 | 27 | 43 | - | 4 | 22 |
| Ark. | 11 | 9 | - | - | - | 1 | 4 | 4 | - | - | - |
| La. | 7 | 16 | - | - | - | - | - | - | - | - | - |
| Okla. | 10 | 17 | - | 1 | - | - | 2 | 6 | - | - | - |
| Tex. | 2 | 8 | 2 | 10 | 21 | - | 21 | 33 | - | 4 | 22 |
| MOUNTAIN | 51 | 53 | - | 7 | 8 | 12 | 155 | 176 | - | - | 5 |
| Mont. | - | 2 | - | - | - | - | 1 | 1 | - | - | - |
| Idaho | 5 | 3 | - | - | - | 6 | 81 | 66 | - | - | - |
| Wyo. | 2 | 3 | - | - | 1 | - | 1 | - | - | - | - |
| Colo. | 16 | 13 | - | 2 | 1 | 2 | 21 | 40 | - | - | - |
| N. Mex. | 7 | 7 | N | N | N | 1 | 10 | 47 | - | - | 1 |
| Ariz. | 16 | 18 | - | - | 2 | 1 | 20 | 14 | - | - | 1 |
| Utah | 3 | 6 | - | 4 | - | 2 | 19 | 4 | - | - | 2 |
| Nev. | 2 | 1 | U | 1 | 4 | U | 2 | 4 | U | - | 1 |
| PACIFIC | 123 | 220 | 2 | 27 | 32 | 48 | 315 | 177 | - | - | 2 |
| Wash. | 16 | 23 | - | - | 4 | 44 | 174 | 62 | - | - | - |
| Oreg. | 19 | 63 | N | N | N | - | 3 | 17 | - | - | - |
| Calif. | 81 | 130 | 2 | 23 | 19 | 4 | 137 | 95 | - | - | 1 |
| Alaska | 3 | 1 | - | 1 | 2 | - | 1 | - | - | - | - |
| Hawaii | 4 | 3 | - | 3 | 7 | - | - | 3 | - | - | 1 |
| Guam | - | - | U | - | 2 | U | - | - | U | - | - |
| P.R. | 2 | 2 | - | - | 1 | - | - | 2 | - | - | - |
| V.I. | U | U | U | U | U | U | U | U | U | U | U |
| Amer. Samoa | U | U | U | U | U | U | U | U | U | U | U |
| C.N.M.I. | - | - | U | - | 2 | U | - | 1 | U | - | - |

TABLE IV. Deaths in 122 U.S. cities,* week ending March 27, 1999 (12th Week)

| Reporting Area | All Causes, By Age (Years) |  |  |  |  |  | $\begin{aligned} & \text { P\&I }{ }^{\dagger} \\ & \text { Total } \end{aligned}$ | Reporting Area | All Causes, By Age (Years) |  |  |  |  |  | $\begin{aligned} & \text { P\&I }{ }^{\dagger} \\ & \text { Total } \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\begin{gathered} \text { All } \\ \text { Ages } \end{gathered}$ | >65 | 45-64 | 25-44 | 1-24 | <1 |  |  | $\begin{gathered} \text { All } \\ \text { Ages } \end{gathered}$ | >65 | 45-64 | 25-44 | 1-24 | <1 |  |
| NEW ENGLAND | 581 | 437 | 100 | 31 | 6 | 7 | 57 | S. ATLANTIC | 1,052 | 738 | 198 | 72 | 27 | 17 | 88 |
| Boston, Mass. | 133 | 92 | 32 | 8 | - | 1 | 12 | Atlanta, Ga. | U | U | U | U | U | U | U |
| Bridgeport, Conn. | 52 | 38 | 11 | 3 |  | - | 2 | Baltimore, Md. | 183 | 114 | 38 | 19 | 9 | 3 | 31 |
| Cambridge, Mass. | 21 | 17 | 3 |  | 1 |  |  | Charlotte, N.C. | 143 | 96 | 31 | 11 | 4 | 1 | 12 |
| Fall River, Mass. | 36 | 31 | 2 | 2 | 1 | - | 3 | Jacksonville, Fla. | 155 | 112 | 30 | 6 | 4 | 3 | 6 |
| Hartford, Conn. | 50 | 34 | 10 | 5 | 1 | - | 5 | Miami, Fla. | U | U | U | U | U | U | U |
| Lowell, Mass. | 24 | 21 | 1 | 2 |  | - | 6 | Norfolk, Va. | 64 | 42 | 9 | 8 | 4 | 1 | 2 |
| Lynn, Mass. | 23 | 18 | 3 | 2 |  |  | 3 | Richmond, Va. | 67 | 43 | 19 | 2 | 2 | 1 | 3 |
| New Bedford, Mass. | 24 | 22 | 2 |  |  |  |  | Savannah, Ga. | 36 | 23 | 11 | 2 |  | - | 9 |
| New Haven, Conn. | 33 | 22 | 6 | 3 |  | 2 | 3 | St. Petersburg, Fla. | 68 | 59 | 5 | 3 |  |  | 3 |
| Providence, R.I. | 59 | 46 | 11 | 1 | 1 |  | 1 | Tampa, Fla. | 221 | 168 | 35 | 10 | 3 | 5 | 19 |
| Somerville, Mass. | 2 | 2 |  |  |  |  |  | Washington, D.C. | 101 | 69 | 18 | 11 | - | 3 | 3 |
| Springfield, Mass. | 37 | 26 | 4 | 3 | 1 | 3 | 5 | Wilmington, Del. | 14 | 12 | 2 | - | - |  | - |
| Waterbury, Conn. | 34 | 28 | 4 | 2 |  |  | 2 |  |  |  |  | 70 | 11 |  |  |
| Worcester, Mass. | 53 | 40 | 11 | - | 1 | 1 | 14 | Birmingham, Ala. | 221 | 164 | 1619 | 10 | 11 | 21 4 | 74 29 |
| MID. ATLANTIC | 2,470 | 1,792 | 440 | 167 | 34 | 36 | 123 | Chattanooga, Tenn. | 79 | 64 | 6 | 7 | 2 |  | 9 |
| Albany, N.Y. | 59 | 45 | 7 | 7 |  | - | 6 | Knoxville, Tenn. | 97 | 77 | 13 | 4 | 2 | 1 | 1 |
| Allentown, Pa. | 26 | 22 | 4 |  |  |  |  | Lexington, Ky. | 70 | 43 | 22 | 4 | 1 |  | 4 |
| Buffalo, N.Y. | 107 | 77 | 24 | 2 | 1 | 2 | 5 | Memphis, Tenn. | 203 | 149 | 27 | 17 | 3 | 7 | 13 |
| Camden, N.J. | 23 | 14 | 3 | 4 | 1 | 1 | 1 | Mobile, Ala. | 94 | 61 | 20 | 10 |  | 3 | 1 |
| Elizabeth, N.J. | 19 | 16 | 3 |  |  |  |  | Montgomery, Ala. | 28 | 23 | 3 | 2 |  |  | 6 |
| Erie, Pa. | 43 | 37 | 4 |  | 2 | - | 7 | Nashville, Tenn. | 170 | 114 | 31 | 16 | 3 | 6 | 11 |
| Jersey City, N.J. | 30 | 22 | 4 | 3 | 1 |  |  |  |  |  |  |  |  |  |  |
| New York City, N.Y. | 1,246 | 880 | 244 | 91 | 15 | 16 | 27 | W.S. CENTRAL | 1,571 | 1,074 | 310 | 106 | 45 | 36 | 139 |
| Newark, N.J. | 52 | 23 | 15 | 12 | 1 | 1 | 3 | Austin, Tex. | 89 | 62 | 17 | 9 |  | 1 | 9 |
| Paterson, N.J. | 20 | 13 | 6 | - | , | $\overline{-}$ | - | Baton Rouge, La. | 88 | 62 | 18 | 3 | 3 | 2 | 7 |
| Philadelphia, Pa. | 402 | 288 | 62 | 32 | 12 | 8 | 24 | Corpus Christi, Tex. Dallas, Tex. | - 208 | 141 | 81 | 15 | 6 | 1 | 7 |
| Pittsburgh, Pa.§ | 94 | 70 | 15 | 4 |  | 5 | 10 | Dallas, Tex. | 110 | 141 82 | 41 19 | 15 4 | 6 1 | 5 4 | 5 |
| Reading, Pa. | 27 | 25 | 1 | 1 |  | - | 2 | El Paso, Tex. Ft. Worth, Tex. | 110 | 82 98 | 19 36 | 4 | 1 | 4 5 | 7 24 |
| Rochester, N.Y. | 133 | 108 | 20 | 4 |  | 1 | 15 | Ft. Worth, Tex. | 388 | 237 | 89 | 38 | 14 |  | 40 |
| Schenectady, N.Y. | 26 | 20 | 4 | 2 |  | - | 2 | Houston, ${ }^{\text {Lex. }}$ Little Rock, Ark. | 388 81 | 54 | 19 | 5 | 1 | 1 | 40 |
| Scranton, Pa. | 29 | 24 | 4 |  |  | $\overline{-}$ | 2 | New Orleans, La. | U | U | U | U | U | U | U |
| Syracuse, N.Y. | 80 | 65 | 11 | 2 |  | 2 | 16 |  | 205 |  |  |  |  | 3 | 22 |
| Trenton, N.J. | 23 | 18 | 4 | 1 |  |  | 1 | San Antonio, Tex. | 205 | 149 | 34 | 14 | 5 3 | 2 | 22 |
| Utica, N.Y. | 31 | 25 | 5 |  |  | - | 2 | Tulsa, Okla. | 117 | 54 89 | 16 | 3 9 | 3 2 | 1 | 10 |
| Yonkers, N.Y. | U | U | U | U | U | U | U | Tulsa, Okla. | 117 | 89 | 16 | 9 | 2 | 1 |  |
| E.N. CENTRAL | 2,319 | 1,645 | 395 | 143 | 63 | 73 | 216 | MOUNTAIN | 963 | 712 | 152 | 53 | 29 | 17 | 80 |
| Akron, Ohio | 62 | 48 | 8 | 4 | , | 1 | 1 | Albuquerque, N.M. | 99 | 76 | 8 | 9 | 4 | 2 | 5 |
| Canton, Ohio | 43 | 35 | 3 | 3 | - | 2 | 5 | Boise, Idaho | 45 | 30 | 9 | 2 | 4 | - | 3 |
| Chicago, III. | 465 | 309 | 73 | 47 | 17 | 19 | 44 | Colo. Springs, Colo. | 71 | 48 | 14 | 5 | 2 | 2 | 6 |
| Cincinnati, Ohio | 111 | 78 | 19 | 4 | 1 | 9 | 19 | Denver, Colo. | 117 | 87 | 17 | 5 | 3 | 5 | 16 |
| Cleveland, Ohio | 187 | 120 | 46 | 7 | 7 | 7 | 7 | Las Vegas, Nev. | 202 | 144 | 40 | 9 | 6 | 3 | 14 |
| Columbus, Ohio | 172 | 113 | 28 | 13 | 12 | 6 | 21 | Ogden, Utah | 32 | 28 | 3 | 7 | - | - | 5 |
| Dayton, Ohio | 183 | 143 | 30 | 7 | 2 | 1 | 27 | Phoenix, Ariz. | 95 | 68 | 13 | 7 | 6 | 1 | 2 |
| Detroit, Mich. | 236 | 147 | 50 | 23 | 6 | 10 | 12 | Pueblo, Colo. | 22 | 18 | 2 | 1 | - | 1 | 2 |
| Evansville, Ind. | 64 | 48 | 12 | 2 | 2 | - | 4 | Salt Lake City, Utah | 116 | 84 | 21 | 8 | 2 | , | 14 |
| Fort Wayne, Ind. | 95 | 78 | 10 | 3 | 1 | 3 | 9 | Tucson, Ariz. | 164 | 129 | 25 | 6 | 2 | 2 | 13 |
| Gary, Ind. | 23 | 12 | 7 | 3 |  | - | - | PACIFIC | 1,666 | 1,200 | 290 | 108 | 40 | 23 | 153 |
| Grand Rapids, Mich. | 62 | 47 | 6 | 3 | 2 | 4 | 13 | Berkeley, Calif. | 1,66 | 13 | 6 |  | - |  |  |
| Indianapolis, Ind. | 201 | 141 | 44 | 8 | 3 | 5 | 4 | Fresno, Calif. | 99 | 76 | 15 | 5 | 3 | - | 10 |
| Lansing, Mich. | 60 | 51 | 5 | 3 | 1 | - | 6 | Glendale, Calif. | 20 | 19 |  | 1 |  |  | 2 |
| Milwaukee, Wis. | 127 | 96 | 24 | 5 |  | 1 | 20 | Honolulu, Hawaii | 59 | 41 | 13 | 3 | 1 | 1 | 5 |
| Peoria, III. | 55 | 38 | 12 | 1 | 2 | 2 | 4 | Long Beach, Calif. | 57 | 45 | 9 | 2 | 1 | - | 9 |
| Rockford, III. | 52 | 46 | 2 | 2 | - | 2 | 10 | Los Angeles, Calif. | 369 | 255 | 72 | 28 | 7 | 7 | 20 |
| South Bend, Ind. | 51 | 38 | 7 | 3 | 3 | - | 4 | Pasadena, Calif. | 18 | 15 | 2 | - | 1 | - | 2 |
| Toledo, Ohio | U | U | U | U | U | U | U | Portland, Oreg. | 111 | 74 | 24 | 8 | 3 | 2 | 6 |
| Youngstown, Ohio | 70 | 57 | 9 | 2 | 1 | 1 | 6 | Sacramento, Calif. | 185 | 143 | 27 | 9 | 6 | - | 34 |
| W.N. CENTRAL | 800 | 600 | 129 | 38 | 16 | 17 | 95 | San Diego, Calif. | 147 | 93 | 34 | 14 | 6 | - | 14 |
| Des Moines, lowa | 102 | 80 | 18 | 2 | - | 2 | 14 | San Francisco, Calif. | U | U | U | U | U | U | U |
| Duluth, Minn. | 26 | 21 | 3 |  | 1 | 1 | 4 | San Jose, Calif. | 230 | 175 | 34 | 13 | - | 8 | 26 |
| Kansas City, Kans. | U | U | U | U | U | U | U | Santa Cruz, Calif. | 33 | 28 | 2 | 3 | - | - | 2 |
| Kansas City, Mo. | 96 | 69 | 18 | 6 | 3 | U | 10 | Seattle, Wash. | 141 | 92 | 24 | 13 | 7 | 5 | 11 |
| Lincoln, Nebr. | 41 | 34 | 2 | 4 |  | 1 | 1 | Spokane, Wash. | 69 | 51 | 15 | 2 | 1 | - | 8 |
| Minneapolis, Minn. | 225 | 176 | 29 | 8 | 6 | 6 | 30 | Tacoma, Wash. | 109 | 80 | 13 | 7 | 4 | - | 4 |
| Omaha, Nebr. | 103 | 73 | 24 | 1 | 3 | 2 | 17 | TOTAL | 12,384 ${ }^{\text {I }}$ | 8,893 | 2,175 | 788 | 271 |  | 025 |
| St. Louis, Mo. | 123 | 84 | 24 | 10 | 2 | 3 | 11 | TOTAL | 12,384 | 8,893 | 2,175 | 788 | 271 |  | , |
| St. Paul, Minn. | 84 | 63 | 11 | 7 | 1 | 2 | 8 |  |  |  |  |  |  |  |  |
| Wichita, Kans. | U | U | U | U |  | U | U |  |  |  |  |  |  |  |  |

U: Unavailable -: no reported cases
*Mortality data in this table are voluntarily reported from 122 cities in the United States, most of which have populations of 100,000 or more. A death is reported by the place of its occurrence and by the week that the death certificate was filed. Fetal deaths are not included.
${ }_{\$}^{\dagger}$ Pneumonia and influenza.
${ }^{\S}$ 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.
TTotal includes unknown ages.

| Contributors to the Production of the MMWR (Weekly) |  |
| :--- | :--- |
| Weekly Notifiable Disease Morbidity Data and 122 Cities Mortality Data |  |
|  | Samuel L. Groseclose, D.V.M., M.P.H. |
|  | CDC Operations Team |
| State Support Team | Caro M. Knowles |
| Robert agan | Deborah A. Adams |
| Scort Connolly | Willie J. Anderson |
| Gerald Jones | Patsy A. Hall |
| David Nitshke | Amy K. Henion |
| Carol A. Worsham |  |

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| :--- | :---: | :---: |
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[^0]:    *Vaccine recommended for universal use in U.S. children. For smallpox, routine vaccination was ended in 1971.
    ${ }^{\dagger}$ Vaccine developed (i.e., first published results of vaccine usage).
    ${ }^{\S}$ Vaccine licensed for use in United States.

