

**MMWR**<sup>TM</sup>  
**MORBIDITY AND MORTALITY  
WEEKLY REPORT**

- 241 Ten Great Public Health Achievements — United States, 1900–1999  
243 Impact of Vaccines Universally Recommended for Children — United States, 1900–1998  
248 Tobacco Use Among Middle and High School Students — Florida, 1998 and 1999  
253 Transfusion-Transmitted Malaria — Missouri and Pennsylvania, 1996–1998  
256 Notice to Readers

**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 risk-factor 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 anti-smoking 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, 1900–1998**

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.