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

Public health is real, it is tangible and it has contributed to the well-being of everyone in our country.

Public health is credited for adding 25 years to the life expectancy of people in the United States in this century. As Public Health Week nears, April 5-9, 1999, CDC is taking a moment to remind citizens how far we've come, how we got here, and exactly what public health is: the active protection of our nation's health and safety, credible information to enhance health decisions, and partnerships with local communities and organizations to promote good health. CDC is doing this by launching a series of articles, "Ten Great Public Health Achievements in the 20th Century," in MMWR. The introduction to the series and the first article, on immunizations, appear in this week's issue.

Impact of Vaccines Universally Recommended for Children -- United States, 1900-1998

Vaccines are one of the 20th century's major triumphs in preventing illness and death, and the promise for the next century is great.
Vaccination has been one of the 20th century's most effective tools for preventing disease and death. By the beginning of this century, five vaccines had been developed. One of these -- smallpox vaccine -- had been available for about 100 hundred years. However, in 1900, there were 21,064 cases of smallpox reported in the United States; 894 of these persons died. In the 1920's, other diseases that are now vaccine-preventable exacted an enormous toll. Cases of measles, diphtheria, and pertussis exceeded half a million per year; deaths from these diseases totaled about 20,000 annually. Today, the world is free of smallpox, and polio has been eradicated from the Western Hemisphere. Further, childhood vaccination levels in the United States are at an all-time high; and disease and death from diphtheria, pertussis, tetanus, measles, mumps, rubella and Haemophilus influenzae type b are at, or near, record lows.

### Tobacco Use Among Middle and High School Students

**-- Florida, 1998 and 1999**

*Teen smoking declines in Florida.*

New survey data released by the Florida Department of Health and CDC show that past-month smoking rates declined significantly between 1998 and 1999 in Florida among middle school students (from 18.5 percent to 15.0 percent), and high school students (from 27.4 percent to 25.2 percent). The study also found that current cigar and smokeless tobacco use declined significantly among middle school students for the same period. Since the early 1990's, teen smoking has been increasing in the United States. The decline of teen smoking in Florida between 1998 and 1999 is the largest annual reported decline observed in this nation since 1980.

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

*Malaria is a rare, but potentially serious, complication of blood transfusion in the United States.*

During 1958-1998, 103 cases of transfusion-transmitted malaria were reported to CDC (on average, 2-3 cases/year). This report summarizes three recent cases of *Plasmodium falciparum*, including two fatal cases, that illustrate the key features of transfusion-transmitted malaria and the importance of accurate donor screening. Transfusion-transmitted malaria occurs rarely in the United States (with an estimated incidence of 1 case/4 million donor units collected); there is no indication of a recent change in its incidence. The FDA, in collaboration with CDC, is currently developing new guidance for blood collection centers, which includes revised guidelines for donor questioning and exclusion that aim to further lower the risk of transmission of malaria by blood transfusion.

### Impact of Vaccines Universally Recommended for Children
Vaccination has been one of the 20th Century's most effective tools for preventing disease and death. At the beginning of this century, five vaccines had been developed; in this century, 21 diseases have been added to the list of those that are preventable by vaccine.

At the end of the century, polio caused by wild virus has been eradicated from the Western Hemisphere; childhood vaccination levels in the United States are at an all-time high; and disease and death from diphtheria, pertussis, tetanus, measles, mumps, rubella and Haemophilus influenzae type b are at or near record lows.

In 1900, 21,064 cases of smallpox were reported in the United States; 894 of these persons died. The last case of smallpox in the United States was reported in 1949. The last case in the world was reported in 1977. The eradication of smallpox made it possible to stop efforts at prevention and treatment, including, in 1971, routine vaccination. One report, published in 1985, estimated that the U.S. recoups its investment in worldwide eradication of smallpox every 26 days.

In the 1920's, other diseases that are now vaccine-preventable exacted an enormous toll. Cases of measles, diphtheria, and pertussis exceeded half a million per year; deaths from these diseases totaled about 20,000 annually.

To fulfill the promise of vaccines in the future, the current vaccination delivery system must be strengthened, extended to new populations of adolescents and adults, and international efforts to deliver existing and new vaccines must be enhanced.

**Vaccine Facts**

- The average annual number of smallpox cases in 1900-1904: 48,164. United States cases per year since 1950: 0. Worldwide cases per year since 1977: 0.
- The average annual number of diphtheria cases in the U.S. in 1920-1922 (the three years before vaccine development): 175,885. U.S. cases in 1998: 1.
- The average annual number of pertussis cases in 1922-1925 (the 4 years before vaccine development): 147,271. U.S. cases in 1998: 6,279.
- The estimated average annual number of tetanus cases in 1922-1926: 1,314. U.S. cases in 1998: 34.
- The average annual number of paralytic polio cases in 1951-1954 (the 4 years before vaccine licensure): 16,316. U.S. cases of wild type poliovirus in 1998: 0.
- The number of mumps cases in 1968 (the year reporting began and the first year after licensure): 152,209. U.S. cases in 1998: 606.
- The estimated average annual number of cases of congenital rubella syndrome in 1966-1968 (the 3 years before vaccine licensure): 823. U.S. cases in 1998: 5.
- The estimated average annual number of Hib cases before vaccine licensure: 20,000. U.S. cases in 1998: 54.

Transfusion-Transmitted Malaria

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Malaria is caused by one of four protozoan species of the genus Plasmodium: P. falciparum, P. vivax, P. ovale, and P. malariae and is transmitted by the bite of an infected female Anopheles mosquito. Occasionally transmission occurs by blood transfusion or congenitally from mother to fetus.

Malaria is transmitted in large areas of Central and South America, Hispaniola, sub-Saharan Africa, the Indian subcontinent, the Middle East, Southeast Asia, and Oceania. Worldwide it is estimated that 300-500 million clinical cases and 1.5-2.7 million deaths occur due to malaria annually.

Although the disease was eradicated in the United States in the 1940s, about 1,000-1,400 cases of malaria are reported to CDC each year; almost all acquired during international travel. Over 75% of these cases are associated with failure to use recommended chemoprophylaxis.

Each year in the United States, several cases (< 10) of malaria are acquired stateside, by congenital transmission, local mosquito-borne transmission, or by blood transfusion or organ transplantation. On average, 2-3 cases of transmission occur by blood transfusion annually.

Symptoms of malaria include fever, chills, headache, muscle aches, and malaise. Early stages of malaria may resemble the onset of the flu. Travelers who become ill with a fever during or after travel in a malarious area should seek prompt medical attention and should inform their physician of their recent travel history.

Malaria can often be prevented by the use of antimalarial drugs and the use of personal protection measures against mosquito bites. Anopheles mosquitoes bite during nighttime hours, from dusk to dawn. The risk of malaria depends on the traveler’s itinerary, the duration of travel, and the place where the traveler will spend evenings and nights.

Travelers can still get malaria, despite use of prevention measures. Malaria symptoms can develop as soon as
6-8 days after being bitten by an infected mosquito, or as late as several months after departure from a malarious area (after antimalarial drugs are discontinued). Malaria can be treated effectively in its early stages, but delaying treatment can have serious consequences. Malaria can cause anemia and jaundice, and can lead to coma, renal failure, acute respiratory distress, and death.

For more information on malaria, visit http://www.cdc.gov/travel/malinfo.htm