

# THEN & NOW!

## A Short History Of Vaccine Development

(NAPSA)—With the exception of providing safe water, nothing—including antibiotics—has had a more positive effect on reducing death and helping populations around the world than vaccines.

Modern vaccines started more than 200 years ago when Edward Jenner developed a smallpox vaccine in 1789. Ultimately, smallpox vaccination efforts were so successful that in 1980 the World Health Organization declared the disease had been eradicated. Following are some key milestones in vaccine development:

**1885:** Louis Pasteur, known for his animal vaccines, injects a rabies vaccine into two people and causes controversy. Few people at the time were comfortable with the idea of introducing a deadly, live virus into a human being.

**1896:** Vaccine for cholera and typhoid are developed using killed versions of bacteria. A killed vaccine for the plague was developed in 1897.

**1923:** A powerful toxin from diphtheria bacteria is chemically inactivated and used as a “toxoid” to kill bacteria. Before the vaccine as many as 200,000 cases occurred each year, with 15,000 deaths. Between 1980 and 1995, only four children died from diphtheria.

**1926:** A killed vaccine for pertussis (“whooping cough”) is developed, using the whole pertussis organism.

**1927:** A tetanus “toxoid” is developed. Before the tetanus vaccine, there were about 600 cases a year in the U.S. with 180 deaths, now about 70 cases occur, causing 15 deaths. By the late 1940s tetanus was combined with diphtheria and pertussis as the children’s vaccine “DTP.”



**Modern vaccines began 200 years ago with the development of the smallpox vaccine.**

**1954:** Jonas Salk develops a killed polio virus that decreased paralysis cases from 20,000 in 1952 to 1,600 in 1960.

**1961:** Alfred Sabin develops an oral polio vaccine using a live virus, which is easy to take and was successful at eliminating the spread of polio.

**1963:** A safe and effective measles vaccine is developed, reducing the number of cases from four million in 1962 and 3,000 deaths, to 309 cases in 1995, with no deaths.

**1964:** A killed rabies vaccine is developed, but requires up to 30 painful shots in the abdomen. By 1980, a newer version requires only five shots in the arm to protect against this deadly disease.

**1967:** A vaccine for mumps is licensed, reducing the incidence from about 200,000 cases annually with 20 to 30 deaths to about 600 cases with no deaths.

**1970:** Several strains of rubella are weakened to make a vaccine. Between 1964 and 1965 there were about 12 million cases leading to birth defects in 20,000 children. Now there are about five cases of birth defects each year. By 1971, measles, mumps and rubella vaccines were combined into a single shot known as MMR.

**1970s & 80s:** Meningococcal, pneumococcal and haemophilus influenza type b (Hib) vaccines are developed, using a piece of the bacteria cover to provide a safe antigen for the body to react to. These vaccines help protect against life-threatening diseases such as meningitis, blood infections and some pneumonias.

**1986:** A vaccine for hepatitis B is licensed with an antigen that is cloned rather than grown.

**1990:** A killed vaccine for hepatitis A is developed.

**1995:** A varicella (chicken pox) vaccine is licensed for use in children.

**1996:** The first “DTaP” vaccine is approved, using only part of the pertussis organism, combined with diphtheria and tetanus. Annual pertussis deaths have dropped from 8,000 before the vaccine to about 10 today.

**2000:** Influenza vaccine use reaches 70 million doses. Premature death related to influenza is estimated at 20,000 people annually.

While many advances have occurred in the last two centuries, science is poised for even more in the future. Today, researchers are working to improve existing vaccines and to search for vaccines to fight HIV/AIDS, cancer and other diseases.