

# PEAK SCIENCE: THE HISTORY OF Vaccines



**December 16, 2020**

First person at Northwestern Medicine receives Pfizer-BioNTech COVID-19 vaccine at Northwestern Medicine Delnor Hospital.

**December 2020**

Food and Drug Administration (FDA) issues Emergency Use Authorization (EUA) for the Pfizer-BioNTech and Moderna COVID-19 vaccines.

Though more research typically takes place after phase 3 of a clinical trial, both vaccines met criteria showing they may be effective to prevent COVID-19 during the pandemic.

**Summer 2020**

Phase 3 clinical trials begin and last 10 weeks. They test how well the vaccine protects against COVID-19.

Moderna: 94.5% effective

Pfizer-BioNTech: 95% effective

**August 12, 2020**

Pfizer-BioNTech publishes Phase 1 and 2 clinical trial results.

**July 14, 2020**

Moderna publishes Phase 1 and 2 clinical trial results.

Phase 1 tests function, safety and dosage in a small group of healthy people.

Phase 2 examines whether the vaccine behaves differently in different groups, further testing safety in a larger group.

**March 30, 2020**

The U.S. Department of Health and Human Services announces Operation Warp Speed, an effort to quickly develop a COVID-19 vaccine.

**January 2020**

Genetic makeup of COVID-19 virus is identified.

**November 2019**

First case of COVID-19 is confirmed in Wuhan, China.

**2018**

Moderna plant opens in Norwood, Massachusetts, to manufacture mRNA vaccines for cancer clinical trials.

**2017**

BioNTech clinical trial in Germany shows mRNA vaccine is effective against melanoma.

**1990s**

Scientists begin exploring how to simplify vaccines by using mRNA, discovering that mRNA can create a stronger type of immunity. It trains the immune system to make both antibodies to fight an intruder and killer T-cells, which kill cells infected with an intruder.

**1971**

Combination measles, mumps, rubella (MMR) vaccine is released after the individual vaccines were released in 1963, 1967 and 1969, respectively. The mumps vaccine was developed in four years, and was the fastest-developed vaccine before the COVID-19 vaccine.

**1957**

Polio vaccine is made widely available.

**1946**

Influenza vaccine is approved for civilians.

**1923**

Two scientists, working independently of each other, develop technology for the toxoid vaccine, which uses a toxin produced by the virus or bacteria to help protect against illness.

**1902**

The Biologics Control Act is the first federal legislation to control the quality of medications. It creates the Hygienic Laboratory of the U.S. Public Health Service to oversee medication and vaccine production. It eventually becomes the National Institutes of Health.

**1885**

Spanish physician Jaime Ferrán develops a cholera vaccine, the first vaccine against bacterial disease.

**1879**

French biologist Louis Pasteur develops technology for attenuated vaccines, which use weakened viruses.

**1820**

Drastic decrease in smallpox mortality after vaccination begins (dropping from 18,447 deaths to 7,858 deaths per year in London compared to the previous decade).

**1813**

Establishment of the U.S. Vaccine Agency, which continues to ensure the safety and efficacy of vaccines.

**1800**

Harvard physician-scientist Benjamin Waterhouse performs the first smallpox vaccinations on his four children.

**1796**

English physician-scientist Edward Jenner proves his hypothesis that inoculating a person with cowpox pus can make them immune to smallpox.

**1000**

Cowpox pus is used to protect people against smallpox in China. This becomes common practice in many civilizations.

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