

## Coronavirus (COVID-19) Vaccine & Treatment

Currently, there are a variety of vaccines and treatments in development for the COVID-19 virus.

Researching, developing and testing a vaccine is not simple. Anthony Fauci, MD, director of the National Institute of Allergy and Infectious Diseases, says that a safe and effective coronavirus vaccine can take at least 12 to 18 months to develop, possibly longer.

Once a safe and effective vaccine is developed it will help protect you against getting COVID-19.



Creating a vaccine requires six stages of development, according to the [Centers for Disease Control and Prevention](#) (CDC). Those stages include:

- Discovering a potential vaccine
- Preclinical testing
- Clinical testing for safety, effectiveness and dosage
- Regulatory review and approval
- Manufacturing
- Quality control

## How Does a Vaccine Work?

Vaccines are designed to mimic an infection caused by a virus or bacteria. The vaccine causes the immune system to develop antibodies against the specific infection. Those antibodies will protect you from that particular pathogen in the future. In general, vaccines take about two weeks to protect your body. Many of the COVID-19 vaccines in development require two doses and show immunity within seven days of the second dose.

## Common Types of Vaccines

1. **Inactivated Vaccines** use the specific virus or bacteria (pathogen) after it's been killed with heat or chemicals. The dead pathogen is introduced into the body but can still teach the body's immune system how to fight the live versions of the pathogen in the future. In the United States, the injected polio is an example of an inactivated vaccine.
2. **Live, Attenuated Vaccines** use a weakened (attenuated) version of the living virus or bacteria. These vaccines are close to a natural infection so they teach the immune system how to fight the full strength pathogen. Live, attenuated vaccines do not cause serious disease in people with healthy immune systems. Chickenpox, and the measles, mumps and rubella vaccines are examples of this type of vaccine.
3. **DNA/RNA or Genetic Vaccines** use a small part of the pathogen's genetic information to cause an immune response without causing disease or harm.

## COVID-19 Vaccine

National Jewish Health scientists and others around the world are working to develop a vaccine. Many COVID-19 vaccines in development are two-dose vaccines, with minimal protection after the first dose and immunity within seven days of the second dose. What is not known is if we will need a COVID-19 vaccine every year.

Here are some of the vaccines in progress:

### [mRNA vaccine by Pfizer](#)

In the company's press release, they report that the vaccine is 90% effective in preventing COVID-19 in participants who did not have a previous SARS-CoV-2 infection. The two-dose vaccine claims protection is achieved 28 days after the first dose, with no serious safety concerns observed.

### [ChAdOx1 nCoV-19 by the University of Oxford and AstraZeneca](#)

Currently in Phase 3 clinical trials. This vaccine uses a weakened common cold virus to teach the immune system to recognize SARS-CoV-2 and fight the virus.

### [Recombinant Adenovirus Type-5 \(Ad5\)](#)

Phase 1 trials are underway in China, Phase 1 & 2 trials are underway in Canada and Phase 3 trials have begun in Russia and Pakistan. This vaccine is showing the ability to help participants develop antibodies to SARS-CoV-2 with mild-to-moderate adverse effects.

### [RNA Vaccine by Moderna and the U.S. Government](#)

Currently in Phase 1, Phase 2 and Phase 3 clinical trials across the nation. Early results indicate it is safe and produces higher levels of antibodies to the SARS-CoV-2 virus

Here is a continually updated list of [vaccine frontrunners](#) underway in the U.S. and other countries.

## COVID-19 Treatments

For most of 2020, there was no specific treatment for coronavirus, however, there are a few that are in development.

### **Bamlanivimab**

The U.S. Food and Drug Administration (FDA) issued an emergency use authorization Nov. 9, 2020 for the investigational monoclonal antibody therapy [bamlanivimab](#) to treat mild-to-moderate COVID-19 in adult and pediatric patients not in the hospital or on oxygen.

### **Remdesivir**

Oct. 22, 2020, the FDA approved Veklury ([remdesivir](#)), an antiviral, to treat COVID-19 patients 12 years old and older as long as they weigh about 88 pounds. This drug slows the virus and reduces its ability to spread throughout the body.

Find more updates on investigational medications at the [National Institutes of Health](#) (NIH) website.

Visit our website for more information about support groups, clinical trials and lifestyle information.

© Copyright 2020

NOTE: This information is provided to you as an educational service of National Jewish Health. It is not meant to be a substitute for consulting with your own physician.

**National Jewish Health** is the leading respiratory hospital in the nation. Founded 123 years ago as a nonprofit hospital, National Jewish Health today is the only facility in the world dedicated exclusively to groundbreaking medical research and treatment of patients with respiratory, cardiac, immune and related disorders. Patients and families come to National Jewish Health from around the world to receive cutting-edge, comprehensive, coordinated care. To learn more, visit [njhealth.org](#).