

How do vaccines work



Vaccines are an important part of routine healthcare and key to **preventing diseases** that spread from one person to another.

When bacteria or viruses enter our bodies, they attack and multiply. This invasion is called **an infection**. The immune system fights back to protect the body's cells and counterattack the invasion.

Types of COVID-19 Vaccines

- 1 **mRNA vaccines**
- 2 **Protein subunit vaccines:** fragments of the COVID-19 virus
- 3 **Vector vaccines**

- Each COVID-19 vaccine works in a different way.
- All expose the body to material that prompts an immune response.
- The immune system then builds antibodies that can recognize and fight the virus.
- If the real virus enters the body, the immune system is trained and remembers how to respond to prevent COVID-19.

ALL vaccines help keep people **SAFE** from infections by:

- Imitating an infection
- Helping the body's immune system
- Teaching the body to "remember" how to fight the bacteria or virus in the future

Building Protection to Fight Against COVID-19

After each dose of vaccine, your body might show some signs of the hard work it's doing to build this protection, such as a fever that lasts a short time or a headache. Producing immunity can take a couple of weeks.



For more information about the COVID-19 vaccine, visit vdh.virginia.gov/covid-19-vaccine or call 877-ASK-VDH3.



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How was the COVID-19 vaccine developed, approved and manufactured



Vaccines have saved the lives of thousands of Virginians through the years. Now, scientists and researchers have worked to bring us a new vaccine to help in the fight against COVID-19.

EVERY vaccine, no matter what it's for, goes through multiple steps. **For the COVID-19 vaccine, NO STEPS were skipped.** The financial part of the process was sped up to help us fight this virus.



It Starts with Lab Testing

Scientists and researchers work on formulas that will become a vaccine. Before it's ever given to people, it goes through extensive lab testing.



Next Step is Clinical Trials

Clinical trials test safety, dosage and effectiveness. Vaccines have to pass three phases in this step before they can be offered to the general public. The FDA* sets the rules for this step.



Last, Approval and Production

The FDA reviews the data from the trials and gives the go ahead for manufacturing. The vaccine is made in large quantities for distribution.

*Who is the FDA? What does it do?

A non-political group, the Food and Drug Administration (FDA) uses oversight and regulation to ensure vaccine quality, safety and effectiveness — helping to facilitate the timely development of COVID-19 vaccines.

A vaccine only gets FDA approval if it tests both **SAFE** and **EFFECTIVE**



Clinical Trials

Volunteers around the country offer to get the vaccine so scientists and medical professionals can see how they are affected.

PHASE 1: Safety

- Evaluate safety and identify any common reactions
- 20 – 100 volunteers

PHASE 2: Effectiveness

- Gather more information on safety, efficacy, dosage and reactions
- Several hundreds of volunteers

PHASE 3: Safety + Effectiveness

- Compare reactions of people who got the vaccine versus those who have not
- Thousands of volunteers



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