

Vaccines and vaccination: Questions and answers

Why are there different types of Covid-19 vaccines?

Due to the urgent need for a vaccine to help protect people from Covid-19, many different vaccines are being developed by scientists around the world. As long as the vaccines are safe and effective, having multiple vaccines is a good thing as it means more people can be protected.

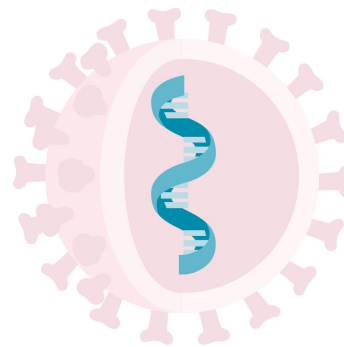
There are three main approaches to making a vaccine:



use of a whole virus
or bacterium



use of parts of a
virus or bacterium



use of just the
genetic material from a
virus or bacterium

Illustrations adapted from a World Health Organization resource (www.who.int/news-room/feature-stories/detail/the-race-for-a-covid-19-vaccine-explained)

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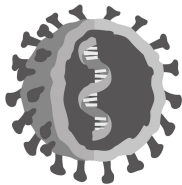
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How do different types of vaccines work?

All Covid-19 vaccines are designed to teach the body's immune system to safely recognise and block the virus that causes the disease.



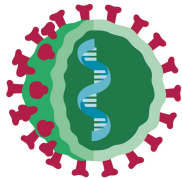
Inactivated or weakened virus vaccines

These use a form of the virus that has been inactivated or weakened so that it does not cause the disease, but still prompts an immune response. Vaccines against chickenpox and polio work this way. Sinopharm is this kind of vaccine.



Protein-based, or subunit vaccines

These use harmless fragments of proteins that mimic the Covid-19 virus to safely generate an immune response. Influenza B and whooping cough vaccines are examples of this type of vaccine. None of the Covid-19 vaccines approved by late 2020 were made this way.



Viral vector vaccines

This type of vaccine works by using a safe virus so it cannot cause disease in people. The safe virus produces proteins which prompt an immune response in our bodies to the virus that causes Covid-19. The Oxford/AstraZeneca vaccine is this kind of vaccine. The Ebola vaccine works in a similar way.



RNA and DNA vaccines (sometimes called mRNA vaccines)

These are new types of vaccines. The vaccine provides 'instructions' for cells in our body to build a protein that then safely causes an immune response against the virus. Both Pfizer/BioNTech and Moderna vaccines work this way. These vaccines do not alter our genetic DNA.

How does testing and approval ensure Covid-19 vaccines are safe?

Covid-19 vaccines are being held to the same safety standards as all other vaccines.

Stages of testing

Once a group of scientists has developed a trial vaccine, three different stages of testing are required before the vaccine is approved for widespread use. Before moving onto the next stage, scientists carefully assess safety of the vaccine including side effects, the way the vaccine affects the body's natural immune responses and what doses are needed to provide protection against the virus.

Each stage tests the experimental vaccine with more and more volunteers, until thousands of people have taken the vaccine across many different groups (ages, ethnicity, healthy and underlying health conditions).

Approval

A vaccine must be proven to be safe and effective across a broad population before it will be approved and introduced into a national vaccination programme. The required standards for vaccine safety and efficacy are extremely high.

Many high-income countries have their own vaccine approval bodies. The World Health Organization (WHO) has its own approval process for vaccines, which is appropriate for any country in the world. A strength of the WHO approval process is that it is not influenced by any politically motivated pressure that a government might apply on their own country's vaccine approval process.

Further monitoring

Monitoring of the vaccine continues after it is approved for use. This enables scientists to keep track of the vaccine's impact and its safety over a long time frame.

Are side effects likely after having a Covid-19 vaccine?

Most people do not have serious problems after having a vaccine. However, your arm may be sore or swollen. Some people report getting a headache, fever, fatigue or body aches after getting a vaccine.

Any side effects are usually short-lived and indicate that your body is developing a good immune response.

It is important to tell the health worker who is giving the vaccine if you have any health conditions or known allergies. As these are new vaccines, it is possible that some people could be allergic to a component of them. However, this would normally show up shortly after administration of the vaccine. Health workers who give the vaccines will be ready to respond to allergic reactions and other adverse effects.

If your country is using vaccines that require two doses, it is important to return for the second dose, even if the first dose has minor unpleasant side effects.

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How effective are the vaccines?

The available vaccines are all highly effective at preventing you from getting seriously ill with the Covid-19 virus. Some vaccines are more than 90 per cent effective. This means that out of every 100 people receiving the vaccine, 90 will be protected from the virus. Vaccines will not be approved if they do not work well for the majority of people.

Your immune system starts to give you protection from the virus about seven days after receiving the vaccine. If two doses of the vaccine are needed, you will benefit from the full protection of the vaccine about a week after the second dose.

Scientists do not yet know for certain how long protection will last, but it may be that repeat vaccinations are needed. Researchers are studying this closely.

Why were some Covid-19 vaccines approved so quickly?

Some Covid-19 vaccines were approved very quickly compared to vaccines against other diseases. However, this does not mean that they are less safe or less effective than other vaccines.

There are several reasons why it was possible to approve some vaccines very quickly without compromising safety.

1. Governments across the globe provided financial backing for the most promising vaccine candidates. This speeded up the production of large quantities of vaccine once a particular vaccine was approved.
2. Some learning already existed from previous research on similar viruses. The virus that causes Covid-19 is a new virus, but it is very similar to SARS and MERS. This meant experts were not starting a completely new process when it came to quickly developing a vaccine.
3. Newer vaccine technology is being used. Recent scientific breakthroughs have removed many of the hurdles that used to exist in developing vaccines.
4. Hundreds of different types of vaccine were developed and tested simultaneously. This meant that even though some of these vaccine development programmes experienced problems and had to be stopped, there were many others that could carry on.



Going deeper: Further resources on Covid-19 vaccines

World Health Organization(WHO): [Covid-19 vaccines Q&A](#) and [Vaccines explained](#)

[International Christian Medical and Dental Association: Coronavirus vaccines FAQ](#)

[International Federation of Red Cross and Red Crescent Societies CV19 vaccination FAQ](#)

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