HEALTH BASICS

COVID-19 vaccines

COVID-19 vaccines train the immune system to reduce the risk of severe illness from the virus.

WHAT IT IS
Vaccines that train immune defenses against SARS-CoV-2

WHERE IT COMES UP
Routine immunization, seasonal campaigns, travel, or workplace requirements

WHY IT MATTERS
Lower risk of severe COVID-19 and hospitalization

WHAT IT IS NOT
Not a disease or a COVID-19 test

WHO TO ASK
Pharmacist, primary care clinician, or vaccination service

HOW IT IS CHECKED
Vaccination record; no routine blood test confirms protection

Overview

COVID-19 vaccines help your immune system recognize SARS-CoV-2, the virus that causes COVID-19. They are not a disease or a diagnosis.

Vaccination lowers the chance that COVID-19 will lead to severe illness, hospitalization, or death. Protection against infection is less complete and can decrease over time. The virus also changes, which is why vaccine formulations and schedules may be updated.

Several types of COVID-19 vaccine have been used around the world. These include messenger RNA, or mRNA, vaccines; protein-based vaccines; viral-vector vaccines; and vaccines made with inactivated virus. Availability differs by country.

The recommended product and timing may be affected by your age, previous doses, recent COVID-19 infection, pregnancy, immune system, and health history. Public health recommendations can change as evidence and circulating variants change.

A COVID-19 vaccine cannot tell you whether you currently have the infection. That requires a viral test, such as a rapid antigen test or a laboratory-based molecular test.

How it works

Your immune system protects you by recognizing germs and responding to them. A vaccine gives it a safe way to practice recognizing an important part of the coronavirus.

mRNA vaccines provide temporary genetic instructions that some cells use to make a harmless piece of the virus's spike protein. The immune system responds to that protein. The mRNA does not enter the part of the cell that stores DNA, and it is broken down after delivering its instructions.

Protein-based vaccines contain a laboratory-made form of a viral protein. They also contain an ingredient called an adjuvant, which helps produce a stronger immune response.

Viral-vector vaccines use a modified, harmless carrier virus to deliver instructions for making a coronavirus protein. Inactivated vaccines contain virus that has been treated so it cannot reproduce.

These approaches can lead to antibodies, which attach to the virus, and immune cells that recognize infected cells. Antibody levels naturally fall over time. Other forms of immune memory may remain and continue to help protect against severe disease.

COVID-19 vaccines do not cause COVID-19. They do not contain a form of SARS-CoV-2 that can reproduce and cause the infection.

Why it matters for your health

The main benefit of vaccination is a lower risk of serious harm from COVID-19. This remains important even when a vaccine does not prevent every infection.

Vaccination may be especially relevant for people with a higher risk of severe COVID-19, including older adults, people with certain long-term medical conditions, and people with weakened immune systems. Some people with weak immune systems may not develop as strong a response, but vaccination may still provide useful protection.

Vaccination during pregnancy can protect the pregnant person from severe COVID-19. Antibodies can also pass to the baby before birth. Product choice and timing should follow current local guidance.

You can still become infected and spread the virus after vaccination. A "breakthrough infection" simply means an infection occurring after vaccination. It does not mean the vaccine caused the infection.

Research suggests vaccination may reduce the risk of developing long COVID, but it does not remove that risk. Long COVID means symptoms or health problems that continue or appear

after the initial infection.

What can go wrong

Most reactions are temporary signs of the immune response. These can include pain where the vaccine was given, tiredness, headache, muscle aches, chills, fever, or swollen lymph nodes. They often improve within a few days.

Some people faint around injections. This is usually related to the vaccination process rather than a vaccine ingredient. Sitting or lying down during vaccination and remaining for the advised observation period can reduce the risk of injury from a fall.

A severe allergic reaction called anaphylaxis is rare. It can cause difficulty breathing, swelling of the face or throat, widespread hives, dizziness, or collapse. It usually begins soon after vaccination, which is why vaccination sites are prepared to treat it.

Myocarditis, inflammation of the heart muscle, and pericarditis, inflammation of the lining around the heart, have occurred rarely after some COVID-19 vaccines. Reports have been more common among adolescent and young adult males after mRNA vaccination, often within about a week. A safety signal has also been identified for some protein-based vaccines. COVID-19 infection itself can also cause heart inflammation.

Certain viral-vector vaccines have been linked to thrombosis with thrombocytopenia syndrome, or TTS. This is an unusual combination of blood clots and low platelet levels. Some have also been linked to Guillain-Barré syndrome, a rare condition affecting the nerves. These products may not be available or routinely used in your country.

Seek emergency help for difficulty breathing, severe facial or throat swelling, collapse, or other signs of anaphylaxis.

Seek urgent medical assessment for chest pain, shortness of breath, a fast or pounding heartbeat, a severe persistent headache, new weakness, or other significant symptoms after vaccination. These symptoms have many possible causes and need assessment rather than self-diagnosis.

Mild arm pain, tiredness, or a short-lived fever usually needs only routine self-care and follow-up if it does not improve as expected.

What you can do

Check the current vaccination schedule from your national or local public health service. Do

not assume that an older schedule still applies.

Before vaccination, tell the vaccination service about:

These details do not always mean vaccination should be avoided. They may affect the product, timing, setting, or observation period.

Keep a record showing the product, date, dose, and vaccination site. If the record is missing, ask the vaccination service or immunization registry whether it can be recovered.

Routine antibody testing is not generally used to decide whether you are protected. Available tests do not measure every part of the immune response, and a result may not show how well you will be protected against current variants.

If you think you had a serious or unexpected reaction, seek medical care when needed and ask how to report it through your country's vaccine safety system.

- A severe allergic reaction after an earlier dose or to a vaccine ingredient
- Myocarditis or pericarditis after a previous COVID-19 vaccine
- A current moderate or severe illness
- A weakened immune system or medicines that suppress it
- Pregnancy, recent COVID-19 infection, or a recent vaccine dose

Common questions

Can a COVID-19 vaccine change my DNA?

No. mRNA does not enter the cell nucleus, where DNA is stored. Viral-vector vaccines deliver instructions without becoming part of your DNA.

Should I be vaccinated if I have already had COVID-19?

Previous infection provides some immune protection, but it can fade and may not protect well against later variants. Current local guidance can help you decide when vaccination is due after an infection.

Can I receive a COVID-19 vaccine with other vaccines?

COVID-19 vaccines can often be given at the same visit as other vaccines. The appropriate timing may be affected by your age, the products involved, and your medical history.

Do I need a COVID-19 test before vaccination?

Routine testing is not usually needed. If you currently have COVID-19 or another significant illness, contact the vaccination service about when to attend.

Does vaccination affect fertility?

Evidence has not shown that COVID-19 vaccines cause infertility. Temporary menstrual changes have been reported, but they do not establish a loss of fertility.

Can I stop taking other precautions after vaccination?

Vaccination reduces risk but does not remove it. Testing, ventilation, staying home when ill, and mask use may still be useful in higher-risk settings or during periods of increased transmission.

Sources

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