What is COVID-19?

COVID-19 stands for "coronavirus disease 2019." It is caused by a virus called SARS-CoV-2. The virus first appeared in late 2019 and quickly spread around the world.

What are vaccines?

Vaccines are a way to prevent certain serious or deadly infections. When a person gets a vaccine, this is called "vaccination" or "immunization."

To understand how vaccines work, it helps to understand what happens when you get an infection. Infections are caused by germs, such as bacteria or viruses. When a germ gets into your body, it multiplies (makes copies of itself) and attacks, which can make you sick. Your "immune system," or infection-fighting system, recognizes that the germ should not be there. In response, it starts to make proteins called "antibodies" to fight the germ.

There are different types of vaccines. They all work by causing your body to make antibodies, like it would if you had an infection. This prepares your immune system to fight off germs if you

come into contact with them in the future. Most vaccines are given as shots, although some come in other forms. Some require more than 1 dose in order to fully protect you from infection.

Thanks to vaccines, the number of people who die from infections has gone way down. Experts believe that vaccines will be one of the most important ways to control the COVID-19 pandemic.

How does the COVID-19 vaccine work?

There are multiple COVID-19 vaccines being developed. They work in slightly different ways.

In the United States, there are a few COVID-19 vaccines available. All of these have been found to work very well in preventing serious illness and death from COVID-19. They include:

- **mRNA vaccines** – The first 2 vaccines became available in late 2020. Both are a type of vaccine called an "mRNA vaccine." mRNA refers to genetic material from the virus that causes COVID-19. This genetic material is used in the vaccine. It gives the body instructions to make a specific piece of protein that is normally found on the virus. In response, the immune system then makes antibodies that can recognize and attack the virus in the future.

  The mRNA vaccines for COVID-19 are made by the Pfizer and Moderna companies. They both require 2 doses given a few weeks apart. It's important to get both doses for the vaccine to be most effective. When to get the second dose depends on which vaccine you get.

- **Vector vaccine** – In early 2021, another type of vaccine became available. This is called a "vector vaccine." It only requires 1 dose. It contains a weakened version of a different virus, called an adenovirus. This virus does not make you sick, but it acts as a "vector," or a way to deliver instructions to all the cells in your body. These instructions tell your body to make the protein normally found on the virus that causes COVID-19. Then, your immune system makes antibodies that can recognize and attack the virus in the future.

  The vector vaccine for COVID-19 is made by the Johnson and Johnson company. In mid-April 2021, use of this vaccine in the United States was temporarily stopped. This happened because a very small number of people got blood clots after getting the vaccine. But this possible side effect appears to be extremely rare, and the vaccine is now available again. The risk of getting very sick with COVID-19 is greater than the risk of serious side effects from the vaccine.

It's important to know that these COVID-19 vaccines do **not** contain infectious SARS-CoV-2 virus. So they cannot give you COVID-19. They also do not affect your DNA.

Different COVID-19 vaccines are available in other countries.

Why should I get the COVID-19 vaccine?

Getting vaccinated greatly lowers your chances of getting infected. And while it's uncommon to get COVID-19 after being vaccinated, if you do get infected, you will be much less likely to get severely ill.

In addition to protecting yourself, getting the vaccine will also help protect other people, including those who are at higher risk of getting very sick or dying. Even if you are not worried about getting very sick yourself, you could still spread the virus to others, even without realizing it.

The COVID-19 pandemic will be controlled when there is "herd immunity." This is when enough people are immune to a disease that it can no longer spread easily. The best way to do this is to vaccinate as many people as possible.

It's not clear exactly how many people need to be vaccinated in order to get to herd immunity for COVID-19. But the more people who are vaccinated, the harder it will be for the virus to spread. And protecting those who are most likely to get very sick or die from COVID-19 will help get us closer to a return to normal life.

Do vaccines work against the different virus variants?

Viruses constantly change or "mutate." When this happens, a new strain or "variant" can form. Most of the time, new variants do not change the way a virus works. But when a variant has changes in important parts of the virus, it can act differently.

Experts have discovered several new variants of the virus that causes COVID-19. They are studying them to better understand if and how they act differently. They are also studying how well the available vaccines work to protect against them. From what they know so far, it seems like the available vaccines provide at least some protection from the different variants.

If enough people get vaccinated, the virus will have a harder time spreading. When the virus cannot spread easily, new variants are less likely to form.

Can people who have been vaccinated still spread the virus?

The risk is much lower than for people who are not vaccinated. Vaccines work very well to prevent serious illness and death, but they do not prevent 100 percent of infections. So it is still possible for a person who has been vaccinated to get COVID-19. However, these "breakthrough infections" seem to be uncommon. Also, from what experts know so far, when a vaccinated person does get infected, they typically have less virus in their body. This makes them less likely to infect others.

Does the COVID-19 vaccine cause side effects?

It can. Side effects are common, and can include:

- Pain where you got the shot (upper arm)
- Fever
- Feeling very tired
- Headache

If you get a vaccine that comes in 2 doses, side effects are more common after the second dose. While side effects can be annoying, they should not last longer than a day or 2. Some people do not have bothersome side effects at all. If you do have side effects, this does not mean you are sick, just that your immune system is responding to the vaccine.

Vaccines also sometimes cause more serious side effects, such as severe allergic reactions. But this is rare. If you have had a reaction to the vaccine or its ingredients in the past, you might need to talk to an allergy expert. They can help you figure out if you should get the COVID-19 vaccine. People who do get the vaccine might be monitored for 15 to 30 minutes to make sure they do not have an allergic reaction.

In mid-April 2021, use of the single-dose (Johnson and Johnson) vaccine was temporarily paused in the United States. This was so experts could learn more about blood clots that some people got after getting the vaccine. Experts confirmed that the risk of blood clots is **extremely rare**, and much smaller than the risk of getting very sick with COVID-19. Because of this, the single-dose vaccine is now available again. If you had the Johnson and Johnson vaccine **within the last 3 weeks**, let your doctor or nurse know right away if you have any symptoms that could be caused by a blood clot. These include severe and persistent headache, blurry vision, weakness on 1 side of the body, back pain, trouble thinking clearly, severe belly pain, trouble breathing, leg swelling, tiny red spots on the skin, or bruising easily.

Can I get COVID-19 from the vaccine?

No. You **cannot** get COVID-19 from the vaccine.

Some people worry that the vaccine actually contains the virus that causes COVID-19. The vector vaccine that is available in the United States does contain virus, but it is a different virus. It is also created in a lab in a weakened form so it will not make a healthy person sick. mRNA vaccines do not contain virus at all.

How do I know the vaccine is safe?

COVID-19 vaccines have been developed very quickly. Because of this, some people wonder if they are safe. The answer is **yes**, the new vaccines had to go through the same process as other vaccines to test them for safety. This involved running "clinical trials" with lots of people who volunteered to try the vaccine. The volunteers included adults of all ages and ethnicities. During these trials, researchers studied how well the vaccines work and how many people had side effects. The results were reviewed by doctors and other experts who do not work for the drug companies that made the vaccines. These experts agreed that the vaccines are safe and effective enough to be given to the public.

It's true that clinical trials for the new COVID-19 vaccines have happened much more quickly than usual. That's because experts know that an effective vaccine will be one of the best ways to control the pandemic. In the United States, drug companies were able to work faster to develop vaccines because they received money from the government. This allowed them to focus their efforts on COVID-19. Drug companies were also able to make progress quickly because they had already learned a lot from many years of working on other vaccines. This includes studying other vaccines that work similarly to the ones made for COVID-19.

As more people get vaccines, researchers will continue to study how they work. They will learn more about how long a person is protected after getting a vaccine, and how well vaccination is working to slow the spread of COVID-19.

Which vaccine should I get?

All of the available vaccines work very well to protect against the virus that causes COVID-19. Depending on where you live and when you can get a vaccine, you might not have a choice

about which one to get. Since the amount of vaccine available might be limited, it's best to get whatever version you are offered.

Do I still need the vaccine if I have had COVID-19?

Yes. Experts recommend getting vaccinated even if you had COVID-19 in the past. People who get COVID-19 do develop antibodies that likely provide some protection against getting infected again. But it is not known exactly how long antibodies last after a person recovers.

People who have had COVID-19 in the past might be more likely to have side effects after they get the vaccine. Keep in mind that any side effects are temporary, and it's still important to get vaccinated.

Will I have to pay for my vaccine?

No. In the United States, COVID-19 vaccines are free. When you are eligible to get one based on your state's rules, you will not have to pay for it. This is true even if you do not have insurance. You might be asked for your insurance information, if you have it, but this does not mean there will be a cost to you.

How can I prepare for my vaccine?

Once you have an appointment to get the vaccine, make sure you have a plan for how to get there on time. Be sure you have anything you were told to bring, like your ID or any other information.

You don't need to do anything else specific to get ready. Doctors recommend **not** taking medicines like acetaminophen (sample brand name: Tylenol) or ibuprofen (sample brand names: Advil, Motrin) just before you get the vaccine. That's because they don't know if these medicines could make the vaccine work less well. You can take pain medicine after your vaccine if you need to.

Wear a face mask when you go to your appointment. There will be staff to tell you where to wait and what to do after you've gotten your shot. They will also make sure you know when to come back for your second dose.

Can children get the COVID-19 vaccine?

It depends on their age. One of the available vaccines in the United States can be given to people 12 years of age or older. The others can be given to people 18 or older. Eventually, children younger than 12 will be able to get a vaccine as well, once experts have studied this more to make sure it is safe.

What if I am pregnant?

Experts are also still studying the safety of the COVID-19 vaccine during pregnancy. However, many pregnant people have gotten the vaccine without any problems. Also, pregnant people might be more likely to get seriously ill if they get COVID-19. For these reasons, experts recommend that pregnant people consider getting the COVID-19 vaccine. Your doctor or nurse can help you decide whether or not you should get the vaccine.

What can I do after I am vaccinated?

Once you are fully vaccinated, you are much less likely to get or spread the virus, and it is safe to start doing some activities again. "Fully vaccinated" means you have had all doses of the vaccine **and** it has been at least 2 weeks since the last dose. (If you had a single-dose vaccine, you are fully vaccinated 2 weeks after you get the shot.)

Once you are fully vaccinated:

- It is safe to gather with other people without masks. You might also be able to go without a mask in some public places, but this depends on your local and state rules.

- If you choose to travel within the United States, you do not need to get a COVID-19 test or self-quarantine.

- You do not need to self-quarantine if you come into contact with someone who has COVID-19, as long as you have no symptoms.

It's important to keep in mind that there are still situations where you **do** need to wear masks or socially distance:

- Even if you have had the vaccine, if it has not yet been 2 weeks since your last dose, you are not yet fully vaccinated. If this is the case, you should continue to avoid gathering with unvaccinated people from other households.

- Even if you are fully vaccinated, you should continue to wear masks and social distance while traveling or on public transit. Some businesses and other public spaces might also still require that everyone wear a mask. These include places like hospitals, medical offices, and nursing homes.

- If you start to have any symptoms of COVID-19, wear your mask and get tested as soon as possible.

If you have a weaker than normal immune system (for example, if you have certain health conditions or take certain medicines), there might be different guidelines for what you can do once you are vaccinated. This is because COVID-19 vaccines might not work as well in people with a weakened immune system. Your doctor or nurse can talk to you about the best way to keep yourself safe.

What if I have other questions?

It's normal to have a lot of questions or to be nervous about the idea of getting a new vaccine. Your doctor or nurse can help answer your questions or direct you to sources you can trust.

Be careful with information you find on the internet or social media. In some cases, it can be hard to tell what is true and what is false. This is especially dangerous if people share health information that is not based on science or evidence.

You can find more information about COVID-19 vaccines through the United States Centers for Disease Control and Prevention (CDC): www.cdc.gov/coronavirus/2019-ncov/vaccines/index.html.