

COVID-19 VACCINE FAQs

1. How do the Pfizer-BioNTech and Moderna mRNA vaccines work?

Both the Pfizer and Moderna vaccines are messenger RNA (mRNA) vaccines. Messenger RNA vaccines give instructions for our cells to make a harmless product called a “spike protein.” The spike protein is found on the surface of the virus that causes COVID-19.

COVID-19 mRNA vaccines are given in the upper arm muscle. Once mRNA from the vaccine is inside our cells, they use them to make the spike protein. After the spike protein is made, enzymes in the cell break down the mRNA from the vaccine.

Next, the cell displays this newly made spike protein on its surface. Our immune system recognizes that this is a new, “foreign” protein and begins building an immune response. This response includes making protective antibodies, like what happens during natural infection against COVID-19. At the end of the process, our bodies have learned how to protect against future exposure to the virus.

The benefit of mRNA vaccines, like all vaccines, is that those people who are vaccinated gain protection from infection without ever having to risk the serious consequences of getting sick with the illness, like COVID-19.

2. What are the differences between the Pfizer and Moderna vaccines?

In terms of how they work, the Pfizer and Moderna vaccines are very similar. Both contain messenger RNA within a lipid (fatty or made up of fat) protective layer. Both stimulate our cells to produce the coronavirus spike protein, which in turn stimulates the immune system to produce protective spike protein antibodies. Both vaccines are given as a series of 2 intramuscular shots.

The vaccines differ slightly in how they are stored and administered. The Pfizer vaccine requires long-term storage at -80°C to -60°C , while the Moderna vaccine is stored at -25°C to -15°C . Both should be kept away from the light (sunlight and ultraviolet light).

The timing of the vaccine doses is also slightly different. The second dose of the Pfizer vaccine is given 3 weeks (21 days) after the first dose, while the second dose of the Moderna vaccine is given 4 weeks (28 days) after the first dose.

3. Will we receive one kind of vaccine or will there be different types from different companies?

There are several COVID-19 vaccines in development. The mRNA vaccines from Pfizer and Moderna are the two most likely to be approved and distributed first. In the future, there are likely to be other COVID-19 vaccines. At this point, Operation Ward Speed is organizing vaccine distribution efforts and we don't have the option of selecting what COVID-19 we receive.

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4. What does the vaccine look like?

The vaccine is an off-white suspension. The Pfizer vaccine is diluted in normal saline. The Moderna vaccine does not require dilution.

5. How is the vaccine administered?

The Pfizer and Moderna vaccines are both administered via an intramuscular shot, meaning a shot delivered into a large muscle. The most common site of administration is the upper shoulder muscle (deltoid) because it is a big muscle and it is convenient to access.

6. Is it one shot or a series?

Both the Moderna and Pfizer vaccines require 2 doses. For the Pfizer vaccine, the second dose is given 21 days after the first dose. For the Moderna vaccine, the second dose is given 28 days after the first dose. It is important to note that you must receive the same vaccine for both doses. In other words, if you receive the Moderna vaccine on January 1, you should receive the Moderna vaccine on January 28.

7. Why are two vaccine doses needed? Are the two doses different?

For both the Moderna and Pfizer vaccines, the second vaccine dose is the same as the first dose. The second dose helps boost the immune system to produce a stronger immune response. This means more antibodies to protect against the COVID-19 virus. While the exact amount of antibodies needed to confer protection isn't known, in clinical trials, two doses of the vaccine produced a much more reliable response than one dose. Two doses also help the immune system develop long-lasting immunity, better than just one dose.

8. Do I need to get the same vaccine to complete my two doses?

Yes, if you receive a vaccine product that requires two doses, the second dose must be the same brand/manufacturer as the first dose.

9. What are the ingredients and what are their purpose?

The Moderna and Pfizer vaccines both contain messenger RNA, which carries a recipe for a specific SARS-CoV-2 (the virus that causes COVID-19) protein called the spike protein. This mRNA is carried in a fat droplet called a lipid nanoparticle. The lipid nanoparticles protect and transport the active mRNA component of the vaccine to its target site inside our cells.

There's also some buffer solution, which contains electrolytes that balance the pH of the liquid (potassium chloride, sodium chloride, etc.).

There are no additives or preservatives in these vaccines.

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10. Is there any human or animal tissue in the either the Moderna or Pfizer vaccine?

No. The vaccine only contains the messenger RNA code and lipid particles that protect it so it can reach its target cells in the body.

11. Are messenger RNA COVID vaccines made with fetal cells?

No, there are no fetal cells required to manufacture the mRNA COVID-19 vaccines.

12. How effective are the mRNA COVID-19 vaccines?

The vaccines developed by Pfizer and Moderna have reported efficacy of 94%-95%. This efficacy is among the best we have available for any currently used vaccine. For comparison, the efficacy of the MMR vaccine is 97% (2 doses); and chickenpox is 90-92% (2 doses).

13. Is there any chance that a messenger RNA COVID vaccine could give me COVID-19?

No. The mRNA vaccines don't have all of the components necessary to make full copies of the virus that causes COVID-19, so it's not possible to get COVID-19 from a messenger RNA COVID-19 vaccine.

14. Can a person still get the virus even after they've been vaccinated?

It's possible, but much less likely than if you don't receive the vaccine. In clinical trials, both the Moderna and Pfizer vaccines have shown an efficacy of 94% to 95% after the second dose. That means the vaccine might not be fully protective in about 1 in 20 people.

Even when you get the COVID-19 vaccine, it takes a few weeks for the body's immune response to gear up. Keep in mind, one dose of the vaccine isn't good enough. It's important to get 2 vaccine doses. All totaled, it will take about 6 weeks after you receive the first vaccine dose to get the full protection from the vaccine. That means it's important to continue to practice all the measures currently being recommended to reduce the spread of the virus, including:

- Wash your hands regularly with soap and water, or alcohol-based hand rub.
- Cover your mouth and nose with a mask when in public settings or around others.
- Avoid touching your face.
- Cover your mouth and nose when coughing or sneezing.
- Stay home if you feel unwell.
- Practice physical distancing by avoiding unnecessary travel and staying away from large groups of people.

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15. Is there one type of vaccine or different vaccines for different strains of the COVID virus?

Several different strains of the SARS-CoV-2 virus – the virus that causes COVID-19 – have been identified. However, among these strains, there are some common structural elements. One of these is a spike protein on the vaccine’s surface. This protein is crucial to the virus gaining entry into our cells, which allows it to replicate and cause illness. The spike protein stays the same on the different strains of virus.

Both the Pfizer and Moderna mRNA vaccines contain a recipe that allows our cells to produce this specific spike protein. The presence of this new protein causing the immune system to produce antibodies directed against this protein. These antibodies protect against future COVID-19 infection.

16. Does this vaccine act in the same way a flu shot, building up antibodies to help fight the virus?

Yes, basically. The COVID-19 stimulates the body to produce protective antibodies against the virus that causes COVID-19. It also stimulates immune cells called T cells, which help the body to “remember” the virus if exposed to it again. This makes it easier for our immune system to fight off the virus should it come into contact with the virus at a later date.

17. What’s the difference between an immunization and a vaccination?

Vaccination is the process of getting a vaccine into the body. Vaccines stimulate the body’s immune system to protect a person against subsequent infection or disease. Immunization is the process whereby a person is made immune or resistant to an infectious disease, typically by the administration of a vaccine.

18. What are the contraindications to COVID-19 vaccination?

The FDA’s emergency use authorization indicates that the vaccine should not be administered to a person with a history of allergic reaction to a previous dose of COVID-19 vaccine.

19. Is it safe for pregnant or breastfeeding women to get the COVID-19 vaccine?

To date, the COVID-19 vaccines have not been tested on pregnant or breastfeeding women, so there’s no data to answer this question for sure. However, based on how the vaccine works, it is unlikely that vaccination would pose any additional risk to a pregnant or breastfeeding woman.

COVID-19 infection appears to be more dangerous to pregnant women compared to non-pregnant women. For this reason, the CDC is recommending that women in a high-risk

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category (for example, a healthcare worker) get vaccinated even if pregnant or breastfeeding. If you are in this category, you should discuss the pros and cons of vaccination with your healthcare provider.

20. I've heard that the COVID-19 vaccine might interfere with a woman's ability to get pregnant. Is that true?

There's no reason to believe the vaccine is unsafe to use in women trying to conceive. The mRNA used in the COVID-19 vaccine does not integrate into our cell's genetic material. The mRNA in the vaccine shares a code that signals our cells make a protein, which in turn stimulates the production of protective antibodies. Once it does this job, the mRNA is naturally destroyed by enzymes in our cells.

21. I'm trying to conceive. Should I get a pregnancy test before receiving the COVID-19 vaccine?

Pregnancy testing before COVID-19 vaccination is not recommended.

22. Can I get the COVID-19 vaccine if I have a history of Guillain-Barre or other neurological condition?

We don't know for sure, but there's no data to suggest that people with a history of Guillain-Barre or other neurological condition should be excluded from COVID-19 vaccination.

The cause of Guillain-Barre is unclear, but it seems to be related to an overactive immune response from our body. Infections are thought to be one of the triggers that may provoke this immune response. Approximately two-thirds of patients with Guillain-Barre give a history of a recent respiratory tract or gastrointestinal infection. While Guillain-Barre has followed vaccinations, the risk of Guillain-Barre after receiving a vaccination is much smaller than the risk of Guillain-Barre after having an infection such as influenza.

23. Is this vaccine safe for older people who might have chronic health conditions?

Among the 30,000 participants in the Moderna trial, more than 7,000 Americans were over the age of 65. It also included more than 5,000 Americans who are under the age of 65 but who have high-risk chronic diseases that put them at increased risk of severe Covid-19, such as diabetes, severe obesity and cardiac disease. About 40% to 45% of the participants in the Pfizer study were between the ages of 56 and 85.

Based on currently available information, the vaccine is just as safe and effective in older people with chronic diseases as it is in younger, healthy people.

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24. Should I be vaccinated if I have a condition or take medication that weakens my immune system (for example, HIV infection, treatment for cancer or rheumatologic illness)?

People whose immune systems are weak are at greater risk of developing severe COVID-19 infection. For this reason, the COVID-19 vaccine is recommended for people with conditions that suppress their immune system. Although the vaccine is recommended, people with immunosuppression may have a diminished response to the COVID-19 vaccine.

25. Does the COVID-19 vaccine cause people with autoimmune conditions to have a flare up?

In clinical trials with the COVID-19 vaccines, there were a small number of people with autoimmune conditions, and there was no evidence that receiving the COVID-19 vaccine caused their autoimmune conditions to flare up.

26. Is the vaccine safe for children?

The Pfizer vaccine has been given emergency use authorization for use in people 16 years of age and older. That's mainly because early vaccine trials did not include children. However, studies are now enrolling children, so we will have more information about the safety and effectiveness of the COVID-19 vaccines in this age group soon.

27. What are the vaccines' side effects?

The most common side effects are at the site of injection, such as localized tenderness, redness, swelling, or pain. Less commonly, people may have chills, fatigue, fever, muscle/joint pain, or nausea. Most people experience mild side effects that don't interfere with everyday activities, and most symptoms don't last longer than 2 days. Some people experience, symptoms might be moderate and last up to 5 days.

In Moderna's latest trials, about 10 percent of participants experienced fatigue, roughly 9 percent reported muscle aches and about 5 percent had joint pain and headaches. In Pfizer's analysis of its latest trials, fatigue was reported in 3.8 percent of participants and headaches in 2 percent. Injection site pain was noted with both vaccines.

The good news is that all these effects are signs that the vaccine is working and none of them produced long-term consequences.

There is a remote chance that the vaccine could cause a severe allergic reaction. These reactions usually happen minutes to one hour after getting a dose of the vaccine. Signs of a severe allergic reaction include:

- Difficulty breathing

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- Swelling of the face and throat
- Fast heartbeat
- Rash all over the body
- Dizziness and weakness

If you experience any of these side effects, call 911 or go to the nearest hospital.

28. Have there been any deaths so far from people taking the COVID vaccine?

There have been no deaths reported in either the Moderna or Pfizer vaccine trials.

29. It seems that some people are experiencing some possible long-term symptoms from COVID. I understand that the vaccine is also new but is there any data regarding possible long term reactions from the vaccine?

Trials with the Moderna and Pfizer vaccines began in March, so we only have 6 to 9 months of data on the safety of these vaccines. Based on this data, the vaccines have not been associated with any long-term effects. Usually if you have a serious side effect from a new product, you'll find it out within the first few weeks, and no serious side effects have been identified in any of the Pfizer or Moderna vaccine trials. However, there is the remote possibility that a rare, serious side effect doesn't become apparent for some time after a vaccine is being used in large numbers of people. That's why participants in the vaccine clinical trials will continue to be tracked for at least two years, and there are several comprehensive national systems to monitor vaccine safety in the United States (for example, the Vaccine Adverse Event Reporting System (VAERS) and the Vaccine Safety Datalink (VSD)).

30. I have allergies and carry an Epi-pen. Is it safe for me to receive the COVID-19 vaccine?

The CDC considers a history of severe allergic reaction (e.g., anaphylaxis) to any other vaccine or injectable therapy (e.g., intramuscular, intravenous, or subcutaneous) as a precaution but not a contraindication to vaccination. Persons who have a history of anaphylaxis to another vaccine or injectable therapy should discuss the pros and cons of COVID-19 vaccination with their health care provider.

There's no evidence that people with non-drug allergies (for example, shellfish, nut, latex allergy) have an increased risk of allergic reaction to the COVID-19 vaccine. Therefore, COVID-19 vaccination is recommended for these individuals.

If you have a history of anaphylaxis, it's recommended that you be monitored for 30 minutes after receiving the COVID-19 vaccine.

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31. How long does immunity last?

We don't know for sure because the studies with the vaccines have only followed patients for less than a year. However, we know from other mRNA vaccines that immunity usually lasts for several years, often even decades. A "booster" vaccine dose may be necessary some time after the initial 2-dose regimen, but we're not certain about this right now. The CDC will make more specific recommendations once we have more information about the long-term immunity produced by the vaccines.

32. Can I get the COVID-19 vaccine at the same time as I get my influenza vaccine?

There's no information on the COVID-19 vaccine being administered with other vaccines. So, at this point, the CDC is recommending that the COVID-19 vaccine be administered separate from any other vaccine and preferably at least 14 days before or after another vaccination, such as the flu shot. However, if you inadvertently receive the COVID-19 vaccine less than 14 days after another vaccination, re-dosing is not recommended.

33. Will people have to get a two-part vaccine every year or will it become one-part vaccine every year?

We don't know yet. Vaccine studies are ongoing to help answer this question.

34. Who will be first in line to get the vaccine?

Priority groups for vaccination haven't been fully established; however, at the current time we know that the Phase 1A priority group will be healthcare workers and people living in long-term care facilities. The CDC Advisory Committee on Immunization Practices (ACIP) will be making recommendations as to who should be prioritized to receive COVID vaccine.

35. Will the vaccine be mandatory for federal employees?

Vaccination will be voluntary but will be made available to all employees.

36. Will I need to take the vaccine if I already had COVID-19?

Although many people who have COVID-19 develop protective antibodies, it's uncertain how long those antibodies last. There's evidence to suggest that the antibody response produced by the vaccine may be stronger and last longer than the antibody response mounted by the body in response to a natural infection. For this reason, COVID-19 vaccine is recommended for people regardless of whether or not they have had COVID-19 (symptomatic or asymptomatic) in the past.

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37. If I have recently recovered from COVID-19, should I wait to get the vaccine?

The best information we have suggests that antibodies to COVID-19 that are produced by the body last for at least a few months. However, there's no way to determine whether that's true for everyone. There's also evidence to suggest that the antibody response produced by the vaccine may be stronger and last longer than the antibody response mounted by the body in response to a natural infection. For this reason, COVID-19 vaccine is recommended regardless of whether you have had COVID-19 or not.

That being said, if vaccine doses are very limited, it might make sense first to vaccinate people with no history of COVID-19, who definitely don't have antibodies to the virus and vaccinate individuals with a history of recent COVID-19 infection when more vaccine doses become available.

38. I received monoclonal antibody treatment (bamlanivimab, casirivimab, imdevimab) for COVID-19. Am I still eligible to get the vaccine?

You can still receive the COVID-19 vaccine if you were treated with monoclonal antibody therapy for COVID-19 infection. However, it's recommended that the vaccine be administered no less than 90 days after you received treatment to avoid interference of the treatment with the vaccine-induced immune response.

39. I received convalescent plasma for the treatment of COVID-19. Am I still eligible to get the vaccine?

You can still receive the COVID-19 vaccine if you were treated with convalescent plasma for COVID-19 infection. However, it's recommended that the vaccine be administered no less than 90 days after you received treatment to avoid interference of the treatment with the vaccine-induced immune response.

40. I understand the vaccine requires very strict temperature control. What are the possible negative consequences of receiving a vaccine where somewhere along the line temperature control wasn't optimal?

We don't have a lot of information to answer this question. However, based on previous experience, the most likely consequence is that the vaccine will be less effective or not effective at all. That's because the messenger RNA in the vaccine breaks down very easily, particularly if exposed to warm temperatures or light.

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41. Does the vaccine work hand-in-hand with any of new treatment medications that have been authorized for use by the FDA?

Several medications such as bamlanivimab have been granted by the Food and Drug Administration (FDA) emergency use authorization (EUA) for patients with COVID-19. These drugs are used *to treat* patients who are confirmed to be COVID-19 positive through a laboratory test. They are not used to prevent infection.

Vaccines are intended to be used on healthy people *to prevent* infection. They stimulate our immune system to create protective antibodies. Vaccines work alone. No other medications need to be given for a vaccine to work.

42. Once we have the vaccine, will we still have to wear masks in public?

Remember, it takes about 6 weeks after the first dose of COVID-19 vaccine for the body to develop a protective immune response. It will also take several months for everyone who is eligible to get vaccinated. For these reasons, it's unlikely we'll see any changes to current recommendations for some time. The CDC will continue to modify recommendations based on COVID-19 case rates and trends throughout the world.

43. Will the COVID-19 vaccine affect results of SARS-CoV-2 nucleic acid amplification (PCR) or antigen tests?

No. Results of PCR or antigen tests for SARS-CoV-2 infection are not affected by the COVID-19 mRNA vaccines.

References:

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