

## **COVID-19 VACCINES: FREQUENTLY ASKED QUESTIONS**

### **1) What is the vaccine made of?**

The COVID-19 vaccines are made of a chemical called mRNA which is a cousin of DNA, the building blocks of genes. These vaccines contain only one mRNA particle, and they are NOT capable of spreading the virus or causing COVID-19 in recipients. The vaccine made by Pfizer contains one mRNA molecule, and the vaccine made by Moderna contains a slightly different version. Therefore, the vaccines are not completely identical, but they produce immunity by the same mechanism.

### **2) How do the vaccines work?**

The vaccines contain a small portion of the RNA found in the COVID virus. After the vaccine is administered, the body recognizes it as a foreign substance and develops an immunity to the RNA and the protein it produces. If you later come in contact with the entire COVID virus, your immune system blocks the virus from entering cells to create an infection. Both of these vaccines work the same way, but some of the many other vaccines which are being tested work slightly differently.

For a more detailed explanation of how mRNA vaccines work, you can watch the short video found here:

<https://video.statnews.com/m/9qNGSOCK/what-are-mrna-vaccines?list=JAmaD2Ah>

### **3) Why were the vaccines approved so quickly?**

The vaccines were given Emergency Use Authorization last month by the FDA because the vaccines had been tested thoroughly. Even though it was done in a short time, each vaccine was tested in more than 40,000 individuals. Both vaccines were deemed VERY SAFE AND VERY EFFECTIVE. These vaccines are the best way to prevent the continued spread of COVID-19, and it was important to approve the vaccines quickly so we could begin to vaccinate as many people as possible as quickly as possible.

### **4) How safe are the vaccines?**

During the trials the vaccines were found to be very safe. The only individuals who had severe reactions to the vaccines were people with a history of severe allergies. Since the vaccines have now been in widespread use, there are still only very FEW reports of severe side effects, and, again, they have almost always been in people with severe allergies.

### **5) How effective are the vaccines?**

The vaccines are VERY effective. In the trials both vaccines prevented about 95% of COVID-19 infections once the participants had received both doses of the vaccine. This is an extremely high number. To give you a comparison, the flu vaccine prevents only about 50 to 70% of infections in any given year.

## 6) How is the vaccine given?

The vaccine is given as an injection in the upper arm. The vaccines contain NO MERCURY or other preservatives. People need to receive two doses of the vaccine. The Pfizer vaccine is given three weeks apart, and the Moderna vaccine is given four weeks apart. The vaccines are NOT INTERCHANGEABLE. If you received the Pfizer vaccine, the second dose has to be the Pfizer vaccine, and the same for the Moderna vaccine. The vaccines can be given farther apart than this and still be effective, but they should not be given closer together. Full immunity develops two to three weeks after the second dose.

## 7) What are the possible side effects?

The vaccine can commonly cause minor side effects. Some people will have more of these reactions than others, but these are the ones known to occur: soreness at the injection site (some people say it was like a “super tetanus shot” and others say they barely felt it), tiredness, headache, muscle pains, joint pains, chills, or fever. These side effects are slightly more common after the second dose.

## 8) What about allergies?

People who have allergies to the vaccine generally are people with known allergies, especially those who have had allergies to vaccines in the past. Because of the possibility of an allergic reaction, it is recommended that all people be observed for 15 minutes after they get the vaccine, and for 30 minutes or longer if they have a history of severe allergies. Severe allergic reactions almost always happen in this time frame, and they can be successfully treated just as other allergic reactions would be. Very rarely, allergic reactions, such as hives, itching, or trouble breathing, can occur three to four hours after the vaccine is administered. In such a situation, people should immediately go to the nearest Emergency Room for treatment.

In the first week of January, 2021, the CDC reported that of the nearly 2,000,000 people who have received either vaccine in the United States, there were only 21 severe allergic reactions. One of these individuals died. While it is terrible that anyone died from the vaccine, the vaccine is extremely safe.

## 9) If I have side effects, what do I do? Can I work?

Side effects can be treated symptomatically. Ice can help swelling or pain at the injection site. Tylenol or ibuprofen (Motrin or Advil) can help with headache, muscle or joint pains, and fever.

The question of working with these side effects is a tricky one. Unfortunately, these side effects could be confused with symptoms of a COVID-19 infection, and it would be impossible to know for certain someone does NOT have COVID-19. But, we also do want people to be able to work, especially in a health care setting, after they’ve been vaccinated.

There are no firm recommendations, but in general if your symptoms are minimal or mild, you can work. If the symptoms are more severe, last longer than 48 hours, are accompanied by a high fever, or cause you to lose your sense of taste or smell (not a known side effect of the vaccines), you should not work, and you should have a COVID-19 test.

## 10) Who should get the vaccine?

- The Pfizer vaccine is approved for people 16 and older, and the Moderna vaccine for people 18 and older. Basically, everyone in these age groups should receive the vaccine unless they have a specific reason, as below, not to. It is expected that enough vaccine will be available by the end of 2021 for everyone who wants the vaccine to receive it.
- People with allergies not related to vaccines, even if they are related to medications, can receive the vaccine.

- Studies are ongoing to determine the suitability of vaccinating children.
- Although the initial studies did not include many pregnant women, the American College of Obstetrics and Gynecology recommends that pregnant women be vaccinated. Women who are nursing should discuss getting the vaccine with their clinician.
- Elderly people and those with chronic diseases were included in the trials and did not have any unusual side effects during the trials. They should receive the vaccine.

## 11) Who should NOT get the vaccine?

- The first group of people who should not get the vaccine would be people who have a history of allergies to any component of the vaccine. Mostly this would be people who got their first dose and had an allergic reaction. They should not get the second dose.
- People with known allergies to a chemical called PEG or polysorbate should not receive the vaccine. These allergies are rare, and people probably know if they have it.
- It is not likely people who have had allergic reactions to other vaccines would be allergic to this vaccine, but they should consult with their clinician before receiving it.
- People with even SEVERE immune disorders can probably receive the vaccine safely because it does not contain any whole virus particles, but they also should discuss this with their clinician.
- Although there have been some controversy and conflicting public statements, people who have had Guillain-Barré Syndrome (GBS) can probably receive the vaccine. There have been no reported cases of GBS from either vaccine so far, but it is probably a good idea to discuss this with your clinician.

## 12) I recently had a flu shot. Can I get the vaccine?

Right now no other vaccines are being given with the COVID vaccine. In general, if you get a vaccine, you cannot get COVID vaccine for 4 weeks. Likewise, you should not get a different vaccine until four weeks after your second COVID shot.

## 13) I had COVID and was treated for it. Should I get the vaccine?

It is recommended that people who had COVID still receive the vaccine. If someone received treatment with monoclonal antibodies, the vaccine should not be given until 90 days after the treatment. If the patient did not receive monoclonal antibodies, he/she can be vaccinated as soon as symptoms have resolved, but the vaccine can be given later at if the person prefers.

## 14) I got the vaccine. Can I stop wearing this mask and face shield?

Because there are a lot of unknowns about immunity in the general population, the CDC recommends that people who have been vaccinated continue to practice good infection control including social distancing and continue to wear a mask and face shield as appropriate.

## 15) What about the stories I hear about the vaccine?

These conspiracy theories are just not true!

*Myth #1: The vaccines aren't safe and weren't tested enough.*

- Although the vaccines were developed rapidly, they were tested in many thousands of patients, and they are being continually monitored by the CDC and similar bodies in other parts of the world where they are being given. Evidence shows that the vaccines are safe and very effective.

*Myth #2: The vaccines contain a microchip to let companies track people.*

- The vaccines do NOT contain a microchip. First, the technology does not exist. There is no microchip small enough to fit through the tiny needle which is used to give the vaccine. Second, the “schematics” for this microchip that were shared on line are actually for a small sound amplifier. Third, these microchips would have to be in every dose of vaccine being developed by every different manufacturer in the world for this infection.
- This theory is closely related to the one that 5G cell towers are somehow spreading the virus with the help of Microsoft. There is nothing to support any of this.

*Myth #3: The vaccine will alter people’s genes.*

- The vaccines CANNOT alter your genes. Your genes are made of DNA, while the vaccines contain RNA. These are different, non-interchangeable chemicals, and there is no possibility the vaccine could alter your DNA.

*Myth #4: The vaccine will give me COVID-19.*

- As stated above, the vaccine is not able to give someone COVID-19 because it doesn’t have the complete virus particle needed to infect you.

*Myth #5: The vaccine was really developed for population control and will make me impotent or sterile.*

- There is nothing in either vaccine that would cause either impotence in men or sterility in men or women.

*Myth #6: “Herd immunity” is better than the vaccine because it produces “natural immunity.”*

- Herd immunity means that a tremendous number of people will become sick from the virus and then be immune preventing the spread of the virus. While this is something that does happen with all types of infections, it doesn’t happen until very large portions of the population are infected, and for COVID-19 that means a lot of those people will die. The best guess for the lowest number of infections to cause herd immunity is about 75% of the population.

Here is some simple math about herd immunity:

- The US population as of December 2019, was about 330 million.
- 75% of 330 million is 225 million, which would be the smallest number of people who have to be infected to achieve “herd immunity.” It may well be much higher.
- There have been about 21.4 million known cases of COVID-19 in the US, and 361,000 of those people have died.
- We would need to have more than 10 times the number of known cases to get to 225 million, which would mean more than 3.6 million Americans would die before we got close to herd immunity. And again, the true numbers on herd immunity remain unknown.

In 2018 before there was COVID-19, 2,839,205 people died in the US from all causes. That would mean more than all the people who died in one year would also have to die from COVID-19 before we were even close to achieving herd immunity. There is also nothing to show that “natural immunity” is better than immunity acquired through immunization. Vaccination is the much safer way for us to achieve the goal of preventing the spread of COVID-19.