

Park Tower Condominium Association Social Committee
Coronavirus Vaccines – A discussion
Wednesday, February 24, 2021
7:00 pm
Zoom

Topics, Questions and Summary Answers with References

These are the topics and questions covered in the discussion. Answers are summarized. Sources are provided to find out more.

Each topic is in **bold**. Each answer is in *italics*. Sources follow answers.

1 Coronavirus vaccine origins and development -

Q - What is SARS-CoV-2?

- *SARS-CoV-2 is the virus that causes a respiratory disease called coronavirus disease 19 (COVID-19). SARS-CoV-2 is a member of a large family of viruses called coronaviruses. These viruses can infect people and some animals. SARS-CoV-2 was first known to infect people in 2019. The virus is thought to spread from person to person through droplets released when an infected person coughs, sneezes, or talks. It may also be spread by touching a surface with the virus on it and then touching one's mouth, nose, or eyes, but this is less common. Research is being done to treat COVID-19 and to prevent infection with SARS-CoV-2. Also called severe acute respiratory syndrome coronavirus 2.*

Based on –

<https://www.cancer.gov/publications/dictionaries/cancer-terms/def/sars-cov-2>

Q - What is an mRNA vaccine?

Understanding mRNA COVID-19 Vaccines / Updated Dec. 18, 2020

- *mRNA vaccines are a new type of vaccine to protect against infectious diseases. To trigger an immune response, many vaccines put a weakened or inactivated germ into our bodies. Not mRNA vaccines. Instead, they teach our cells how to make a protein—or even just a piece of a protein—that triggers an immune response inside our bodies. That immune response, which produces antibodies, is what protects us from getting infected if the real virus enters our bodies.*

- *mRNA vaccines do not contain a live virus and do not carry a risk of causing disease in the vaccinated person.*
- *mRNA from the vaccine never enters the nucleus of the cell and does not affect or interact with a person's DNA.*
- *mRNA vaccines have strands of genetic material called mRNA inside a special coating. That coating protects the mRNA from enzymes in the body that would otherwise break it down. It also helps the mRNA enter the dendritic cells and macrophages in the lymph node near the vaccination site.*

Based on –

<https://www.cdc.gov/vaccines/covid-19/hcp/mrna-vaccine-basics.html>

Q - How does the vaccine work in the body?

- *COVID-19 mRNA vaccines give instructions for our cells to make a harmless piece of what is called the "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 the instructions (mRNA) are inside the immune cells, the cells use them to make the protein piece. After the protein piece is made, the cell breaks down the instructions and gets rid of them.*
- *Next, the cell displays the protein piece on its surface. Our immune systems recognize that the protein doesn't belong there and begin building an immune response and making antibodies, like what happens in natural infection against COVID-19.*
- *At the end of the process, our bodies have learned how to protect against future infection. The benefit of mRNA vaccines, like all vaccines, is those vaccinated gain this protection without ever having to risk the serious consequences of getting sick with COVID-19.*

Based on –

<https://www.cdc.gov/coronavirus/2019-ncov/vaccines/different-vaccines/mrna.html>

- *When viruses enter our bodies, they find a cell and inject it with their genetic material. This allows them to take control of the cell and multiply.*

- *To battle this, the body's immune system must destroy infected cells. When the body first encounters a new viral infection, it deploys T cells, which find and kill infected cells. If the infection continues, the body then deploys B cells, which create antibodies that can better attack infected cells.*
- *Even after the infection has passed, antibodies remain in the body to help the body fight off future infection. How long these antibodies last in the body varies, ranging from days to a lifetime.*

Based on –

<https://www.fda.gov/emergency-preparedness-and-response/coronavirus-disease-2019-covid-19/pfizer-biontech-covid-19-vaccine> ;
<https://www.fda.gov/emergency-preparedness-and-response/coronavirus-disease-2019-covid-19/moderna-covid-19-vaccine>

Q - Is a coronavirus vaccine necessary? - Why is a vaccine needed?

- *Many people hope that coronavirus immunity can bring them back to "normal life" and that those who recovered from coronavirus do not need to be concerned about being infected or infecting others. Unfortunately, there are too many unknowns about immunity to novel coronavirus to be sure.*
- *The most important way you can protect yourself from the virus as well as others is to get the COVID-19 vaccine when it is available to you.*
- *At this point in time, there are several reasons why herd immunity cannot help stem the pandemic in the United States. Instead, we must rely on other prevention measures.*
- *According to a report by the Center for Infectious Disease Research and Policy, current data suggests that around 70 percent of the population would need to be immune to achieve herd immunity to coronavirus.*

Based on –

<https://www.umms.org/coronavirus/covid-vaccine/immunity#:~:text=Reaching%20the%20levels%20of%20infection,extraordinary%20number%20of%20deaths.>

2 Specific Vaccines

Q - What vaccines are in use for SARS-CoV-2?

- *There are 2 vaccines currently in use in the United States. One is made by the combined forces of Pfizer, a U.S. corporation, and BionTech, a German, biotechnology company. The other is made by Moderna, a U.S. based biotechnology company, in conjunction with the National Institutes of Health. Both of these are mRNA vaccines and both require a primary injection and a booster. The Pfizer booster is at 21 days after the primary shot. The Moderna booster is at 28 days after the primary shot. Note the Pfizer vaccine is approved for those 16-years-old and older and the Moderna for 18-years-old and older. There are no vaccines in the US available for those younger than 16 at the moment. The emergency use authorization allows the Pfizer-BioNTech COVID-19 Vaccine, since December 11, 2020, and the Moderna Vaccine, since December 18, 2020, to be distributed in the U.S.*

Based on –

<https://www.fda.gov/emergency-preparedness-and-response/coronavirus-disease-2019-covid-19/pfizer-biontech-covid-19-vaccine> ;
<https://www.fda.gov/emergency-preparedness-and-response/coronavirus-disease-2019-covid-19/moderna-covid-19-vaccine>

Q - How were the vaccines currently in use for Covid-19 developed so quickly?

A - This is an interesting story combining scientific research going on since 2005 and the infusion of money from our federal government in 2020. Research into coronaviruses stems from the study of SARS and MERS so it's not a new science and this knowledge was leveraged. Research into mRNA has been going on at the National Institutes of Health for about 15 years. Hundreds of vaccine candidates were and are being tested around the world with the participation of 10s of thousands of people. As the virus is spread around the world this helps to make candidates for clinical trials very available. The mRNA technology relies on a quick manufacturing process without live virus and it's the production of live virus that takes a lot of time in the production of many other vaccines. The removal of financial risk for the pharmaceutical industry spurred industrial concentration on the task. Our federal government promised both Pfizer and Moderna to buy a certain number of doses of the vaccine whether it worked or not so they didn't have to worry about the amount

of their investment in research and development. After China shared the genome of coronavirus, it was easy for scientists around the world to figure out various ways to attack it but it took the government removing the financial risk involved to spur the development. Moderna worked with NIH and took the money, that is a promise of the purchase of a large number of vaccines, regardless of whether the vaccine worked or not. Pfizer just took the money and used only its own scientists to develop its vaccine. This is what Operation Warp Speed was all about.

Based on information from –

Houston Methodist, a leading academic medical center in the Texas Medical Center

<https://www.houstonmethodist.org/blog/articles/2020/dec/how-was-the-covid-19-vaccine-developed-so-fast/#:~:text=%22The%20tremendous%20financial%20support%20from,we've%20never%20seen.%22>

- and from an Interview of Dr Paul Offit, a member of the FDA Vaccines and Related Biological Products Advisory Committee

<https://zdoggmd.com/paul-offit-4/> - [you can listen here instead of reading](#)

- and from an Interview of Professor Shane Crotty, who works at UCSD at The La Jolla Institute for Immunology.

<https://www.youtube.com/watch?v=eK0C5tFHze8>

- and from an Interview of Dr Kizzmekia Corbett, a lead scientist on the NIH team that worked with Moderna on the development of their vaccine

The second part of a larger presentation, *Making It Plain: What Black America Needs to Know About COVID-19 and Vaccines*

<https://www.youtube.com/watch?v=fv2qR6xniq4>

NOTE: Johnson and Johnson's vaccine will be discussed this Friday, February 26, 2021, by the FDA's Vaccines and Related Biological Products Advisory Committee with the potential result of Emergency Use Authorization. With this in mind, here is some information on the Johnson and Johnson vaccine.

How the Johnson & Johnson Vaccine Works

<https://www.nytimes.com/interactive/2020/health/johnson-johnson-covid-19-vaccine.html>

- The Johnson & Johnson vaccine is based on the virus's [genetic instructions](#) for building the spike protein

- This vaccine is made in cooperation with Janssen Pharmaceuticals, a UK company, and Beth Israel Deaconess Medical Center of Boston.
- The vaccine is stored in double-stranded DNA from a modified adenovirus, a common cold virus.
- The vaccine can enter a cell's nucleus but can't replicate or cause illness.
- The vaccine's gene for the coronavirus spike protein is read and copied.
- The vaccinated cell then starts making spike proteins some of which come together into spikes and some of which break into fragments,
- These spike proteins and fragments move to protrude through the outer wall of the cell.
- The protruding spikes and spike-fragments attract our bodies' immune systems.
- The adenovirus vaccine, when first entering a cell, also calls attention to the immune system which now enters the process with a very strong response.
- When a vaccinated cell dies, its spike proteins and fragments may be taken up by helper T cells which raise alarms to other immune cells to fight the virus.
- B cells, another type of immune cell, may bump into the spike proteins or fragments, lock onto them and, with the activation of helper T cells, proliferate and pour out antibodies that target the spike protein.
- The antibodies can latch onto coronavirus spikes, mark the virus for destruction and prevent infection by blocking the spikes from attaching to other cells.
- The antigen-presenting cells can also activate another type of immune cell called a killer T cell.
- The killer T cell seeks out and destroys any coronavirus-infected cells that display the spike protein fragments on their surfaces.
- This DNA-based technology is in use for a vaccine for Ebola.
- Adenovirus-based vaccines for Covid-19 are more rugged than mRNA vaccines and can thus be safely stored at regular refrigerator temperatures for 3 months.
- The Johnson & Johnson vaccine requires only 1 shot and effectively fends off serious infection and death even from known variants,
- The Johnson & Johnson vaccine's overall efficacy was 72% in US clinical trials and 57% in South Africa clinical trials.

3 How the vaccines work

- Q - How do these new genetic vaccines work?
- Q - Does the COVID-19 vaccine have live virus, derivatives of red blood cells, white blood cells, plasma platelets or contaminants?

A - Messenger RNA vaccines do not contain a live virus and do not carry a risk of causing disease in the vaccinated person. mRNA from the vaccine never enters the nucleus of the cell and does not affect or interact with a person's DNA. mRNA vaccines do not contain derivatives of red blood cells, white blood cells, plasma platelets or contaminants.

mRNA vaccines take advantage of the process that cells use to make proteins in order to trigger an immune response and build immunity to SARS-CoV-2, the virus that causes COVID-19. In contrast, most other types of vaccines use weakened or inactivated versions or components of the disease-causing pathogen to stimulate the body's immune response to create antibodies.

mRNA can most easily be described as instructions for the cell on how to make a piece of the "spike protein" that is unique to SARS-CoV-2. Since only part of the protein is made, it does not do any harm to the person vaccinated but it is antigenic.

After the piece of the spike protein is made, the cell breaks down the mRNA strand and disposes of them using enzymes in the cell. It is important to note that the mRNA strand never enters the cell's nucleus or affects genetic material.

Once displayed on the cell surface, the protein or antigen causes the immune system to begin producing antibodies and activating T-cells to fight off what it thinks is an infection. These antibodies are specific to the SARS-CoV-2 virus, which means the immune system is primed to protect against future infection.

Based on –

<https://www.cdc.gov/vaccines/covid-19/hcp/mrna-vaccine-basics.html>

4 Production, distribution and inoculation –

Q - How long will it take to build immunity after getting the COVID-19 vaccine?

It typically takes a few weeks for the body to build immunity after vaccination. That means it's possible a person could be infected with the virus that causes COVID-19 just before or just after vaccination and get sick. This is because the vaccine has not had enough time to provide protection. Dec 20, 2020.

Clinical studies show the two vaccines are 94%-95% effective after two doses. Dec 31, 2020

Based on –

https://www.google.com/search?rlz=1C1CHBF_enUS902US902&sxsrf=ALeKk03tT1bZX5MszTGtAvNtHXRYRuoDsg:1610232900511&q=How+long+does+it+take+for+the+vaccine+to+be+effective+and+how+long+is+it+effective+for?&spell=1&sa=X&ved=2ahUKEwiglqmA-Y_uAhUjwVkkHT6EDncQBSgAegQIEBAw&biw=1366&bih=625

Q - How will we know whether a COVID-19 vaccine is effective?

- *Before the U.S. Food and Drug Administration (FDA) determines whether to approve a vaccine or authorize a vaccine for emergency use, clinical trials are conducted to determine how well it works. This is known as effectiveness.*
- *After FDA approves a vaccine or authorizes a vaccine for emergency use, it continues to be studied to determine how well it works under real-world conditions. CDC and other federal partners will be assessing COVID-19 vaccine effectiveness under real-world conditions. Dec 13, 2020*

Based on –

https://www.google.com/search?rlz=1C1CHBF_enUS902US902&sxsrf=ALeKk03tT1bZX5MszTGtAvNtHXRYRuoDsg:1610232900511&q=How+long+does+it+take+for+the+vaccine+to+be+effective+and+how+long+is+it+effective+for?&spell=1&sa=X&ved=2ahUKEwiglqmA-Y_uAhUjwVkkHT6EDncQBSgAegQIEBAw&biw=1366&bih=625

Q - Should I get COVID-19 vaccine if I had COVID-19 in the past? If you had the virus, will you still need to get the vaccine?

- *Getting COVID-19 might offer some natural protection or immunity from reinfection with the virus that causes COVID-19. But it's not clear how long this protection lasts. Because reinfection is possible and COVID-19 can cause severe medical complications, it's recommended that people who have already had COVID-19 get a COVID-19 vaccine. If you've had COVID-19, wait until 90 days after your diagnosis to get a COVID-19 vaccine.*
- *COVID-19 vaccination should be offered to you regardless of whether you already had COVID-19 infection. You should not be required to have an antibody test before you are vaccinated. However, anyone currently infected with COVID-19 should wait to get vaccinated until after their illness has resolved and after they have met the criteria to discontinue isolation.*

Based on –

https://www.google.com/search?rlz=1C1CHBF_enUS902US902&biw=1366&bih=625&sxsrf=ALeKk028jIkB_PIqhKmrYfBZL2CwnH_Dzw%3A1610233703065&ei=Zzf6X8exA8ratQbJ44j4Dg&q=Should+I+get+Covid-19+if+I+had+Covid-19+in+the+past%3F&oq=Should+I+get+Covid-19+if+I+had+Covid-19+in+the+past%3F&gs_lcp=CgZwc3ktYWIQAzIFCCEQoAEyBQghEKABMgUIIRCgATIFCCEQoAEyBQghEKABOgcIIxDqAhAnOg0ILhDHARCvARDqAhAnOgQIIxAnOgUIABCRAjoLCC4QsQMqQxwEQowI6BQgAELEDOggILhCxAXCDAToECAAQQzoHCAAQsQMqQzoICAAQyQMqQI6DQgAELEDEIMBEBQqhwI6BQguELEDOgIADoICAAQsQMqgwE6EAgAELEDEIMBEMkDEBQQhwI6CggAEMkDEBQQhwI6BggAEBYQHjoFCCEQqwI6CQgAEMkDEBYQHjoICCEQFhAdEB46BwghEAoQoAFQ5pclWKT6JmC2iSdoAXAAeACAafIBiAHBKZIBBzIOLjI3LjGYAQcGaqGqAQdnd3Mtd2l6sAEKwAEB&scient=psy-ab&ved=0ahUKEwiHgYH-4_uAhVKbc0KHckxAu8Q4dUDCA0&uact=5

Q - Who should NOT get the COVID-19 vaccine?

- *People with vaccine allergies*
- *The FDA put only one group in the category of those who should not get the vaccine: people who have a known history of a severe allergic reaction to any component of the Pfizer/BioNTech vaccine. In the UK people with vaccine allergies are not being vaccinated for now. In the US, the Centers for Disease Control and Prevention said people with a history of vaccine allergies can get the Covid-19 vaccine. Those patients, though, should be told about the unknown*

risks. Parikh said they may also want to, but are not required to, check in with their doctors.

- *Patients who have had allergic reactions to vaccines in the past should be monitored for 30 minutes after getting the vaccine, according to the FDA guidance.*
- *People with other allergies, like food or mold allergies, should be fine to get the Covid-19 vaccine.*

Pregnant and lactating women

- *"Covid-19 in a pregnant woman is not a good thing, so someone might decide that they would like to be vaccinated, but that's not something that we're recommending at this time," Marks said at a news briefing Saturday. "That's something we're leaving up to the individual."*
- *According to observational data, the absolute risk to pregnant women is considered low. Since mRNA vaccines do not contain any live viruses, they should degrade quickly and won't enter the nucleus of the cell. They cannot cause genetic changes.*

People with underlying conditions and the elderly

- *People with underlying medical conditions and the elderly can get the Covid-19 vaccine.*

The immune-compromised

- *The vaccine may be appropriate for people who have a suppressed immune system due to a condition or disease or because they are undergoing a treatment for a disease like cancer. This should be an [individual's decision](#), according to CDC guidance.*
- *There were immune-compromised volunteers with stable HIV infections in the Pfizer trial, but there is no specific data about this population, so there is insufficient evidence to draw conclusions about the safety of the vaccine with these patients.*

People who have or had Covid-19

- *Late stage clinical trial data suggested the vaccine was safe and helped protect people with past Covid-19 infections from reinfection. This was regardless of their past case being mild or severe.*

- *A person who is currently sick with Covid-19 should, however, wait to get the vaccine after their symptoms have cleared up and they can come out of isolation. There's no recommended minimum time between infection and vaccination.*

People who've taken a Covid-19 antibody treatment

- *There is no safety data on people who have been given an antibody therapy or convalescent plasma to treat a Covid-19 infection.*
- *Since reinfection seems to be uncommon in the 90 days after the initial infection, as a precaution, the CDC recommends the person wait at least 90 days.*

Teens

- *Teens who are 16 and 17 can be vaccinated when there is the appropriate consent from an adult.*
- *More than 153 teens ages 16 and 17 were included in the Pfizer trial and the early analysis of that data found no safety issues.*
- *Details about how this age group reacted to the vaccine are limited, but the CDC said there "are no biologically plausible reasons for safety and efficacy profiles to be different than those observed in persons 18 years of age and older.*

Based on –

[Who should, and should not get the Covid-19 vaccine - CNN](#)

and

<https://www.cnn.com/2020/12/16/health/who-should-and-shouldnt-get-covid-19-vaccine/index.html>

5 Safety and efficacy –

Q - How do we know if COVID-19 vaccines are safe?

Q - What will happen if serious side effects crop up after the vaccine is rolled out?

A - Pharmaceuticals are regulated by the government. Products are not released for human use before they are subjected to a rigorous approval process. This is true for new drugs and generics.)

The U.S. vaccine safety system ensures that all vaccines are as safe as possible as determined by data from the manufacturers and findings from large clinical trials. These data demonstrate that the known and potential

benefits of this vaccine outweigh the known and potential harms of becoming infected with the coronavirus disease 2019 (COVID 19).

After FDA determines that a COVID-19 vaccine candidate is safe and effective, the Advisory Committee on Immunization Practices (ACIP), a committee comprising medical and public health experts, reviews available data before making vaccine recommendations to CDC.

After a vaccine is authorized or approved for use, many vaccine safety monitoring systems watch for adverse events (possible side effects). This continued monitoring can pick up on adverse events that may not have been seen in clinical trials. If an unexpected adverse event is seen, experts quickly study it further to assess whether it is a true safety concern. Experts then decide whether changes are needed in U.S. vaccine recommendations. This monitoring is critical to help ensure that the benefits continue to outweigh the risks for people who receive vaccines.

Additional systems and information sources add an additional layer of safety monitoring, giving CDC and FDA the ability to evaluate COVID-19 vaccine safety in real time and make sure COVID-19 vaccines are as safe as possible. These include CDC V-safe, a smartphone-based after-vaccination health checker for people who have been vaccinated and Vaccine Adverse Event Reporting System (VAERS found at vaers.hhs.gov), the national system that collects reports from healthcare professionals, vaccine manufacturers, and the public of adverse events that happen after vaccination and follows up on the reports. Additional reporting services are in place for the military, veterans and tribal nations.

Based on –

<https://www.drugwatch.com/fda/approval-process/#:~:text=A%20pharmaceutical%20company%20seeking%20FDA,FDA%20post%2Dmarket%20safety%20monitoring>

and

<https://www.cdc.gov/coronavirus/2019-ncov/vaccines/safety.html> -

Updated Jan. 19, 2021

Q - Are there any prior medical conditions, such as allergies, pregnancy, breast feeding, chemotherapy and diabetes, or genetic conditions, such as autoimmune diseases, to contraindicate getting the vaccine in spite of all the reasons to get it?

A - As cases increase, knowledge of possible contraindications to the vaccines increases as well. This might be a case of mutations, but more likely, scientists are learning more. It's best to follow the medical literature closely, and check with your physician.

People who are pregnant and part of a group recommended to receive the COVID-19 vaccine may choose to be vaccinated. If you have questions about getting vaccinated, talking with a healthcare provider may help you make an informed decision. Pregnant people are encouraged to enroll in v-safe, CDC's new smartphone-based tool being used to check-in on people's health after they receive a COVID-19 vaccine.

People who are breastfeeding and are part of a group recommended to receive a COVID-19 vaccine, such as healthcare personnel, may choose to be vaccinated. While breastfeeding is an important consideration, it is rarely a safety concern with vaccines.

People who have underlying conditions and/or a prior history of severe reactions to vaccines, who had a severe reaction to the first shot of coronavirus vaccine, and who are allergic to the component ingredients of the currently available Pfizer and Moderna vaccines, including polyethylene glycol and potassium chloride, should not get the vaccine.

Serious problems from vaccination can happen, but they are rare. CDC has learned of reports that some people have experienced severe allergic reactions—also known as anaphylaxis—after getting a COVID-19 vaccine. As an example, an allergic reaction is considered severe when a person needs to be treated with epinephrine or EpiPen® or if they must go to the hospital. Learn more about COVID-19 vaccines and allergies.

If you get a COVID-19 vaccine and you think you might be having a severe allergic reaction after leaving the vaccination site, seek immediate medical care by calling 911.

You can report side effects and reactions using either v-safe or the Vaccine Adverse Event Reporting System (VAERS.)

Based on -

<https://www.medpagetoday.com/infectiousdisease/covid19/90501>

and

<https://www.cdc.gov/coronavirus/2019-ncov/vaccines/faq.html>

and

<https://www.hackensackmeridianhealth.org/HealthU/2021/01/11/a-simple-breakdown-of-the-ingredients-in-the-covid-vaccines/>

Q - I'm young and at low risk. Why not take my chances with Covid-19 rather than get a vaccine?

A - *"Young" is not the same as "low risk". If you are young, but obese, diabetic, and have hypertension, you are at substantial risk, though maybe a little less than seniors.*

Also, the idea that the young were not at risk was a preliminary conclusion in the early of COVID infections. As more data accumulates, the picture is less encouraging.

But if you're young and don't have those conditions, what is your risk? For those under 25, the number of deaths is in the thousands. For those over 25, in the tens of thousands. It's only when you reach 35 that deaths occur in the hundreds of thousands. How would you decide?

Based on -

https://www.cdc.gov/nchs/nvss/vsrr/covid_weekly/index.htm#AgeAndSex

6 Expected symptoms and possible common side effects and rare serious reactions –

Q - What are common side effects of the mRNA vaccine and how do they get fixed?

A - *There are expected symptoms and common side effects observed in all phases of clinical trials for both vaccines. These reactions are "temporary," and they "self-resolve" within a few days.*

Side effects that have been reported with the Pfizer-BioNTech COVID-19 and Moderna vaccines generally last only a day or two, but include:

- *injection site pain*
- *tiredness*
- *headache*
- *muscle pain*
- *chills*
- *joint pain*
- *fever*
- *injection site swelling*
- *injection site redness*

- *nausea*
- *feeling unwell*
- *swollen lymph nodes (lymphadenopathy)*

There is a remote chance that the vaccine could cause a severe allergic reaction. A severe allergic reaction would usually occur within a few minutes to one hour after getting a dose of the vaccine. Signs of a severe allergic reaction can include:

- *Difficulty breathing*
- *Swelling of your face and throat*
- *A fast heartbeat*
- *A bad rash all over your body*
- *Dizziness and weakness*

If you experience a severe allergic reaction, call 9-1-1, or go to the nearest hospital. Call the vaccination provider or your healthcare provider if you have any side effects that bother you or do not go away. You may also report vaccine side effects to FDA/CDC Vaccine Adverse Event Reporting System (VAERS). The VAERS toll-free number is 1-800-822-7967 or report online to <https://vaers.hhs.gov/reportevent.html>.

Side effects from vaccines are not uncommon. The seasonal flu shot, for example, can cause fever and fatigue, among other reactions. And the vaccine to prevent shingles can induce shivering, muscle pain and an upset stomach, to name a few.

More serious responses include Bell's palsy, which, given time, self-corrects, and anaphylaxis which may be countered with epinephrine or EpiPen.

Based on an online article from AARP – 02-12-2020

https://www.aarp.org/health/conditions-treatments/info-2020/coronavirus-vaccine-side-effects.html?cmp=EMC-DSO-NLC-WBLTR--MCTRL-121820-F1-5088897&ET_CID=5088897&ET_RID=2061287&encparam=WFslr79nPrTZ82AzhrXbPHB9ARNvLKC1vLuSCEpQU4%3d

- and from an article from the CDC via the University of California Vaccinate with Confidence

<https://universityofcalifornia.edu/sites/default/files/coronavirus-vaccine-information-for-health-care-workers.pdf>

Coronavirus Vaccine Information for Health Care Workers

Q - What are the risks and benefits of taking and not taking the vaccine?

A - *Risks of taking the vaccine*

Side effects and serious consequences, including anaphylaxis, all of which have remedies

Benefits of taking the vaccine

COVID-19 vaccination will help keep you from getting COVID-19

COVID-19 vaccination is a safer way to help build protection than is getting the virus

COVID-19 vaccination, in combination with wearing masks, social distancing and washing of hands, is an important tool to help stop the pandemic

Taking the vaccine helps to prevent infection, reduce the severity of the illness if someone does get the disease, and to interrupt the chain of transmission.

The vaccine is a form of self-defense

Vaccination helps family, friends, neighbors, the community, the nation, the world

Risks of not taking the vaccine

Catching the virus, hospitalization, intubation, long-term disabling conditions and/or death

Spreading the virus to family, friends, neighbors, the community, the nation and the world

Overcrowding of hospital ICUs

Potentially killing family, friends, neighbors, the community, the nation and people all over the world

Benefits of not taking the vaccine

Avoiding being jabbed in the harm and potential side and serious effects

Based on –

<https://www.cdc.gov/coronavirus/2019-ncov/vaccines/vaccine-benefits.html> - Updated Jan. 5, 2021

and

<https://www.cdc.gov/coronavirus/2019-ncov/vaccines/faq.html> - Updated Jan. 15, 2021

and

<https://www.cdc.gov/coronavirus/2019-ncov/vaccines/expect/after.html> - Updated Jan. 11, 2021

and

<https://www.ucsf.edu/magazine/covid-vaccine-safety>

7 Life after I get the vaccine –

Q - Do I still have to wear a mask, wash my hands and socially distance once I get the vaccine?

A - Yes, the vaccine is only one form of protection albeit a potent one. Continue to wear a mask, wash your hands often and socially distance until public health officials, like the CDC, declare the pandemic to be over. Expect that even after the pandemic is declared over, these measures will be needed from time to time. It's the combination of several types of protections that make the world safe for you and for everyone while there is still a pandemic.

The vaccine will protect you from getting sick, but it may not prevent you from infecting others. That's why, at least for now, you should continue wearing a mask and physically distancing from others, even after you get your shots.

Clinical trials of the Pfizer/BioNTech and Moderna vaccines found that both do a good job preventing symptomatic COVID-19 disease, including severe COVID-19. However, the trials did not measure whether a person who is vaccinated is less likely to spread the virus to someone else.

It's possible that the vaccines protect against COVID-19 disease by preventing a person from becoming infected. However, it's also possible that the vaccine protects a person from getting sick but does not prevent the virus from replicating in that person's nose and throat and possibly infecting someone else.

Where does that leave us? If you're among the first groups of people to get vaccinated, it's best to continue wearing masks and maintaining physical distance in order to protect others who haven't yet gotten the vaccine. The efficacy of the vaccines were largely assessed by looking at whether they prevented people from developing symptoms – not if they stopped them being infected with the virus.

Based on -

<https://www.health.harvard.edu/diseases-and-conditions/preventing-the-spread-of-the-coronavirus> - Updated: January 12, 2021 Published: March, 2020

and

<https://www.nytimes.com/2020/12/05/health/coronavirus-swiss-cheese-infection-mackay.html> - December 24, 2020

and

<https://abc7chicago.com/why-you-still-need-to-wear-a-mask-after-getting-covid-19-vaccine/9139874/> - Monday, December 28, 2020 8:12AM

and

<https://www.bbc.com/future/article/20210114-covid-19-how-effective-is-a-single-vaccine-dose?ocid=ww.social.link.email>

January 14, 2021

Q - What is herd immunity? We don't talk about "herd immunity" for protection against influenza or other common viral infections, so why is it discussed so much with COVID?

A - Herd immunity is when a large enough portion of a community is immune to a virus so that the virus can no longer spread easily from person to person,. This is achieved once we have somewhere from 70% to even up to 90% of the world is inoculated. Ninety per cent of the U.S. population is about 298 million people.

Vaccination provides herd immunity without the potential of grave illnesses, the overwhelming of our health systems, and very high number of deaths that may occur by waiting for the virus to infect 75 – 85% of the population without vaccinations. Herd immunity saves people from getting horribly ill or dying and does so more quickly.

Based on -

<https://www.health.harvard.edu/diseases-and-conditions/preventing-the-spread-of-the-coronavirus> - Updated: January 12, 2021Published: March, 2020

<https://www.houstonmethodist.org/blog/articles/2020/dec/herd-immunity-how-many-people-need-to-get-the-covid-19-vaccine/> Dec. 30, 2020

<https://www.vox.com/future-perfect/22219362/end-of-covid-19-pandemic-social-distancing-masking> - Updated January 12, 2021, 2:05 pm EST

Q - Can I still spread the virus if I get vaccinated?

A - "Theoretically, a vaccine should stop both the infection as well as the transmission and spread," said Dr. Purvi Parikh, an immunologist with the

nonprofit Allergy & Asthma Network and a co-investigator on the Pfizer vaccine trials.

But we don't know yet if that is true of the COVID-19 vaccines. That's because the focus of the clinical trials was narrow. It had to be because of the time constraints. Scientists wanted to know whether these things prevented illness. They wanted to know whether the drugs were safe. And they got those answers.

So, experts are being careful. They need a little more time to know for sure.

Based on -

<https://fivethirtyeight.com/features/once-you-get-the-covid-19-vaccine-can-you-still-infect-others/> - December. 18, 2020, AT 1:02 PM

Q - When can I stop worrying about all of this and feel comfortable returning to restaurants, bars, theaters, concerts and travel and will I need to provide proof that I've been vaccinated?

A - First, if you have stressed out because of the coronavirus, you should consult health professionals so you can feel better now. We don't know when we can stop having concern about Covid-19.

As herd immunity takes over we will be closer to returning to normal or close to normal life, returning to restaurants, bars, theaters, concerts and travel. Now we are seemingly in a period of transition. The sooner everyone is vaccinated, wears masks, distances and washes their hands, the sooner we'll return to life that is more normal.

Think of the transition in 3 phases. In phase 1 you, your family, close friends and relatives are vaccinated. In phase 2, your city or state has reached herd immunity. In phase 3, herd immunity is reached internationally. In each phase, your "bubble" expands but your need to wear masks, distance and wash your hands remains the same until herd immunity is pervasive.

We don't know when we can completely forget all of this. Perhaps never, albeit in the future, to a much lesser extent.

Based on -

<https://www.cdc.gov/coronavirus/2019-ncov/daily-life-coping/managing-stress-anxiety.html> - Updated Dec. 11, 2020

<https://www.bloomberg.com/news/newsletters/2021-01-17/covid-q-a-will-vaccines-bring-life-back-to-normal> - January 17, 2021, 7:53 AM EST

and

<https://www.vox.com/future-perfect/22219362/end-of-covid-19-pandemic-social-distancing-masking> - Updated January 12, 2021, 2:05 pm EST