

SIZING UP “THAT VACCINE” ...FOR FIREFIGHTERS

Separating Fact & Fiction Follow-Up Questions

If you would like to submit a question, participate in future research, or receive results of our research, please follow this link:
https://ndri1.az1.qualtrics.com/jfe/form/SV_ewFMOhEAwlc6hAq

BASIC QUESTIONS ABOUT THE VACCINE

- 1. Q: We have one question in regard to personnel that have already tested positive for the virus. The recommended 2 dose vaccine for these personnel does not seem accurate. If the CDC is proposing that the body must see the virus twice then if someone has had the virus wouldn't it be more reasonable that they would only require one shot vs the two shot course? This would mean that the body would see it twice and thus meet the 95% antibody production.**

A: If you've previously had COVID-19, you still need the vaccine. Even if you had a positive antibody test. Studies have shown that ~10% of people who recovered from COVID-19 have weak antibodies and they wear off after a while (it looks like about 90 days). When the antibodies wear off, you will get re-infected if you come in contact with the virus again. And you won't have protection. Typically, mild infections don't mount a strong or lasting immunity to the virus. The worse the first infection, the stronger the immune response will be, so having had COVID-19 does not necessarily mean someone will have antibodies to protect against future infection. Vaccines provide you with the “perfect formula” needed to have a strong antibody response so the virus doesn't overwhelm your body.

Source: <https://yourlocalepidemiologist.com/vaccine-after-COVID-19-infection/>

- 2. Q: Is there any data on how long those vaccinated are protected? Is it a once a year shot like the flu vaccine?**

A: Not yet. Scientists are expecting antibodies to last 1-2 years because that's how long COVID's cousins last (SARS & MERS). Not enough time has passed to know for sure at this point. Once we have a better picture of how long antibodies last, we can determine how often we will need a vaccine. This has yet to be determined.

Source: <https://yourlocalepidemiologist.com/COVID-19-antibodies/>

- 3. Q: What is the length of time the vaccine will protect me? How often will I need a booster after receiving the vaccine?**

A: At this point, scientists have not been able to observe patients long enough to determine how long antibodies will last. Recently, three separate publications have shown COVID-19 antibodies last 120 days, 155 days, and 240 days (8 months). In other words, the majority of people that recover from COVID-19 have enough immune cells to fight the virus and prevent illness for at least 8 months. Again, these studies were only 120, 155, and 240 days long, respectfully. Antibodies likely last even longer. More research is necessary before a recommendation can be made on how often folks will need to receive the vaccine.

Sources: <https://pubmed.ncbi.nlm.nih.gov/33033172/> (122 days) <https://pubmed.ncbi.nlm.nih.gov/33033173/> (115 days) <https://www.biorxiv.org/content/10.1101/2020.11.15.383323v1> (8 months)
3-month antibody studies: <https://yourlocalepidemiologist.com/how-long-do-antibodies-last/>



4. Q: I donated blood a few weeks back and was tested for antibodies just for donating. I was positive for COVID-19 antibodies. At no time was I sick or realized I had contracted the virus. Is it necessary to get the vaccine if I already have antibodies?

A: If you've previously had COVID-19, you still need the vaccine. Even if you had a positive antibody test. The presence of antibodies after infection can be different for everybody. Just because you had COVID-19 does not mean that your body is producing antibodies so you can still get re-infected. The worse the first infection, the stronger the immune response will be, so having had COVID-19 does not necessarily mean someone will have antibodies to protect against future infection – particularly if you were asymptomatic. Vaccines provide you with the “perfect formula” needed to have a strong antibody response so the virus doesn't overwhelm your body.

Source: <https://yourlocalepidemiologist.com/vaccine-after-COVID-19-infection/>

5. Q: Has there been a decrease in the level of protection or antibodies over time? Are we going to need to get this every year?

A: The level of antibodies in the body will depend on the severity of the infection. The majority of people that recover from COVID-19 have enough immune cells to fight the virus and prevent illness for at least 8 months. Some people that experienced only mild (or no symptoms) may have only weak antibodies that wear off after approximately 90 days. Scientists are expecting antibodies to last 1-2 years because that's how long COVID's cousins last (SARS & MERS). Not enough time has passed to know for sure at this point. Scientists will have to continue to track the virus in order to figure out if annual vaccination is necessary for COVID-19.

Source: <https://yourlocalepidemiologist.com/COVID-19-antibodies/>

6. Q: How long are you protected naturally (antibodies) after being COVID-positive?

A: Studies have shown that ~10% of people who recovered from COVID-19 have weak antibodies and they wear off after a while (it looks like about 90 days). When the antibodies wear off, you will get re-infected if you come in contact with the virus again and you won't have protection. Typically, mild infections don't mount a strong or lasting immunity to the virus. The worse the first infection, the stronger the immune response will be but this will vary person to person so it's hard to say how long one would be naturally protected after being COVID positive.

Source: <https://yourlocalepidemiologist.com/category/antibodies/>

7. Q: I have heard from several healthcare professionals that they have more confidence in the Johnson and Johnson Vaccine that is in phase 3 trials at this time. Are newer types of vaccines that much different from Pfizer and Moderna?

A: The Johnson and Johnson (J&J) vaccine is a viral-vector vaccine. Viral-vector vaccines use a modified version of a different virus (the vector) to deliver important instructions to our cells. For COVID-19 viral vector vaccines, the vector (not the virus that causes COVID-19, but a different, harmless virus) will enter a cell in our body and then use the cell's machinery to produce a harmless piece of the virus that causes COVID-19. This piece is known as a spike protein and it is only found on the surface of the virus that causes COVID-19. This triggers our immune system to begin producing antibodies and activating other immune cells to fight off what it thinks is an infection. This is similar to how mRNA vaccines (like Pfizer and Moderna) work. 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. 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.

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

Peer reviewed vaccine overview:

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7551521/pdf/41392_2020_Article_352.pdf?fbclid=IwAR3YfwYIUCBxC5V5YOW_AQArUMM_KjbPFHtlWUmkiWQHKjQTR8DqlzrsP34

8. Q: Will the COVID Vaccine, much like the flu vaccine become an "annual medical necessity" as variants of the disease evolve?

A: Vaccines are made with mutations/variations of the virus in mind. For example, the Moderna and Pfizer vaccine induces something called a polyclonal response. Basically, the vaccine instructs the body to generate numerous shaped antibodies that can connect to many different parts of the virus. This would still leave areas for the antibodies to attach even if the spike protein mutated here and there. As far as an annual medical necessity, that is yet to be determined. Once we have a better picture of how long antibodies last, we can determine how often we will need a vaccine. It is also possible that future vaccines will be modified slightly to account for any new variants of COVID-19.

Source: <https://yourlocalepidemiologist.com/COVID-19-antibodies/>

9. Q: If you have had the vaccine, do you still have to quarantine for 14 days if you are exposed?

A: After you get your vaccine, you will still need to wear a mask and follow quarantine rules after a potential COVID exposure. We don't know yet if it's possible for vaccinated people to pick up COVID-19 and spread it to others. Exact recommendations have not been printed yet, but it is very unlikely that 7, 10, or 14 day quarantine periods will be needed to protect individuals that are exposed after they have received the full vaccination protection, which is about 2 weeks after the second injection.

Source: <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/faq.html#accordion-60075070e9544-card-4>

10. Q: Which vaccine is the better one to go with especially now with more vaccines and alternatives coming to the market?

A: This recommendation will change as we get more information about each of the vaccines. The two current vaccines have essentially the same protections, adverse effects (which have been very low), dosing schedules, and use in special populations. If you are aged 16-18, only the Pfizer vaccination has been approved for you. As the next several vaccines become available, and as more information becomes available about the Pfizer and Moderna vaccines, it will be necessary for the CDC and/or the FDA to develop and distribute a chart that compares the various vaccines. That chart has already been suggested to those groups, and they state they will develop it.

SAFETY CONCERNS

11. Q: What is the position of the doctors regarding those that have had cancer and as a part of their treatment, received chemotherapy in the past? I assume this will be addressed with each individual physician but it has been a source of some people I know declining vaccination without consulting a physician.

A: If the patient is not undergoing current immunosuppressant treatment, those individuals are candidates for either of the current vaccines. There are no contraindications. They probably should get the vaccine, as those patients with prior significant health issues have a tendency to die more frequently if they get a COVID infection.

12. Q: Is there any indication that the vaccine affects the ability to be a blood donor?

A: First – YAY FOR BLOOD DONATIONS!! The pandemic has blood donations down so this is a real need. Currently, if you receive the Moderna or Pfizer vaccine, you do not need to wait to give blood. Blood banks should ask you about vaccine status and which type of vaccine you had once you've been vaccinated. The American Red Cross is regularly updating their site with information on vaccines and wait times. Many blood donation organizations are currently testing blood for antibodies and using those that are present for convalescent plasma as a treatment.

Source: <https://www.redcrossblood.org/donate-blood/dlp/coronavirus--covid-19--and-blood-donation.html>

13. Q: If I suffer from migraines can either the Pfizer or Moderna vaccine exacerbate my headaches?

A: There are some vaccine recipients who have developed headaches after the vaccine. There is no indication that those effects are worse in those that have migraines. The patient who has received a vaccine may want to take acetaminophen for the day following the vaccine, which may prevent or lessen a headache, and will not modify any immune response from the vaccine.

14. Q: If it's somewhat safe why is there no fiscal responsibility from anyone if I have adverse reactions or die from the vaccine?

A: There is actually a National Vaccine Injury Compensation fund available if someone has a severe allergic reaction to any vaccine (<https://www.hrsa.gov/vaccine-compensation/index.html>). The program was developed in the late 80s in response to lawsuits filed against vaccine manufacturers and healthcare providers that threatened to decrease vaccination rates and cause shortages of vaccines. It is a no-fault alternative to standard tort process. Typically, after vaccines receive approval for use by pregnant women and children, they fall within the purview of the NVIC. Given the emergency use approval for the COVID vaccine, severe injuries and death are instead compensated through the Countermeasures Injury Compensation Program (CICP).

Source: https://www.nejm.org/doi/full/10.1056/NEJMp2034438?query=featured_coronavirus

15. Q: I've seen reports of people dying related to the vaccine. What's the story behind these reports and is it true? How many people have died during the testing of the vaccine?

A: According to Pfizer's Phase III trial data, out of 43,661 participants, 6 people died during the trial. Deaths were NOT related to the vaccine, most were related to heart attacks. From Moderna's vaccine trial data, out of 30,350 participants, 13 deaths were reported (6 from the vaccine group, 7 from the placebo group). Again, deaths were mostly due to heart issues and were not found to be related to the vaccine.

More recently news stories have focused on the number of deaths in the Netherlands post vaccine. Nearly all deaths were in ill and already compromised individuals. It should be noted that the approach to vaccination in the Netherlands was to start with the oldest citizens first.

In the U.S., there is a reporting system that is open to anyone to report adverse events post vaccine (VAERS - <https://vaers.hhs.gov/>). There are deaths that have occurred post vaccine listed in the database (as of the writing of this, approximately 40). In a close examination of the collected data, reported cases were similar to the Netherlands where the majority of deaths were elderly (over 75) with co-occurring conditions – many already in hospice. Several of those listed were people who actually died of COVID meaning they contracted COVID prior to the vaccine providing them coverage.

Results from VAERS and the data from the Netherlands does suggest that – when considering vaccination of terminally ill, elderly people – caution is warranted and requires a risk/benefit discussion with a knowledgeable provider. It should also be noted that this is the group at highest risk of death from COVID if they are infected. There has been one death in Florida of a 59 year old physician that is being investigated as vaccine related (<https://www.usatoday.com/story/news/health/2021/01/06/death-florida-doctor-following-pfizer-covid-19-vaccine-under-investigation-gregory-michael/6574414002/>).

This – as well as any deaths thought to be linked to the vaccine, go through a post mortem investigation to determine if there is a link or if the relationship was incidental.

One challenge with assessing deaths or disease development due to vaccines is that death/disease will occur at its regular rate whether or not vaccines are administered. This is often misinterpreted as meaning that people don't care about deaths/disease from vaccine. Rather, there can be death and disease diagnoses that would have occurred whether the person had the vaccine or not and we have to be careful not to assume the relationship is causal. To put it in other terms, if you are headed down a road that ends in a cliff and you are driving full steam ahead toward the cliff and will drop off of it, if you stop and get Taco Bell half way to the cliff, it doesn't mean Taco Bell caused you to drive off the cliff – it just means you stopped at Taco Bell on the way toward the edge of the cliff. This is not to disparage Taco Bell – sometimes you just need a taco.

Sources: <https://yourlocalepidemiologist.com/phase-iii-data/> <https://yourlocalepidemiologist.com/moderna-data/> https://www.pfizer.com/news/press-release/press-release-detail/pfizer-and-biontech-conclude-phase-3-study-covid-19-vaccine?fbclid=IwAR180YYOn8J1onHJlhwsxsbk3hprYdP1MZblsKJdV70xqK5EScrb_WH7dkg https://www.fda.gov/media/144434/download?fbclid=IwAR2KAia8z1SOdJL62xVCkgnbTlIjoMBiBJ-Bsn7IaljKY8CJ1OqSx_weVfc

16. Q: What are the safety issues in the elderly population? My 83 year old mother jumped right for the vaccine. What side effects will the elderly population likely have?

A: The reports both in the Netherlands and the U.S. of elderly patients who have severe illness (are already terminal) suggest caution is warranted in vaccinating this group. For otherwise healthy individuals, the risks of the vaccine need to be considered related to the risk of getting COVID. Risk of hospitalization for people over the age of 85 are 13 times higher than they are for those under 29. Emerging data suggest that side effects of the vaccine may actually be less severe in older adults, although the reason for this is unclear and currently being studied.

Source: <https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/older-adults.html>

17. Q: Is there a difference in the side-effects between the 1st dose and the 2nd dose?

A: Many people report that they experience the same side effects after the second dose that they did after the first, but with a little more severity. If you have a strong reaction to the first dose, consider planning your second one so you have some down time the day after the second dose.

18. Q: If you become COVID positive after 1st vaccination shot, do you take the 2nd shot? Should you delay 2nd vaccination shot?

A: If you currently have COVID-19, you CAN wait up to 90 days for your vaccine. That's because reinfection is incredibly rare before 90 days. It is also likely that your immune system will be better able to process the vaccination to achieve long term protection if you wait for 90 days post infection. But you CAN get it sooner. Pfizer clinical trials included people who did or did not have COVID-19 previously and some people got the virus during the study. These situations did not present any issues of concern. If you currently have active symptoms of COVID-19, the CDC recommends you wait to get vaccinated until you've recovered and met the criteria for ending isolation (mainly so you don't infect others when you go to get your vaccine).

Source: <https://yourlocalepidemiologist.com/category/vaccine/>

19. Q: Are there any risks of becoming sterile from a vaccine like this one?

A: There is no evidence that COVID-19 antibodies or the COVID-19 vaccines will cause infertility. It is important to note that COVID-19, itself, is affecting women's and men's reproductive health. We DO have the evidence for this. Not to mention that COVID-19 also causes chronic inflammation, which is also associated with decreased fertility. So, getting COVID-19 is certainly not a great second choice if you don't get the vaccine.

Source: <https://yourlocalepidemiologist.com/vaccine-andfertility/>

20. Q: When we talk about anaphylaxis what kind of allergies do people have that shouldn't get the vaccine? Any allergy? History of reactions to previous vaccines?

A: Moderna has 12 other mRNA vaccine trials (for other viruses), totaling 17,000 participants. Among these trials, there was only 1 person with a severe allergic reaction (she had a soy allergy). BUT this allergic reaction was 2 months after vaccination, so not related to the vaccine. There was also discussion about one unexpected side effect...facial swelling. Three participants had facial swelling after vaccination. Interestingly, all 3 had facial dermal fillers (2 in the cheeks; 1 in the lips). All 3 cases of swelling were resolved with steroids, but the FDA is planning on noting this in the prescribing information. Those who have had reactions to other vaccines should consult their physician to determine whether they should get the COVID vaccine.

The CDC and FDA recommend that people who have had a severe allergic reaction to any ingredient in the COVID vaccine abstain from receiving it. Those who have a history of severe allergic reactions to other vaccines should consult their doctors. Others who should be careful are those with severe allergic reactions in general (e.g. pets, latex, food) or have less severe reactions to other vaccines are considered safe to get the vaccine, but it is advised they be monitored for 30 minutes on site.

CDC Says Severe Allergic Reactions To Moderna's Coronavirus Vaccine Appear To Be Rare

Reuters (1/22/21, Chander) reported more than 4 million people in the US have received Moderna's coronavirus vaccine, and severe allergic reactions appear to be rare, according to CDC's Morbidity and Mortality Weekly Report. According to CDC data, anaphylaxis "occurred at a rate of 2.5 cases per 1 million shots administered." A CDC report released earlier this month found that severe allergic reactions to Pfizer's and BioNTech's coronavirus vaccine "occurred at a rate of 11.1 per 1 million vaccinations."

Sources: Reuters: <https://www.reuters.com/article/us-health-coronavirus-vaccine-allergy/severe-allergic-reactions-to-moderna-vaccine-appear-rare-cdc-report-idUSKBN29R2GD>
Morbidity and Mortality Weekly Report (CDC):
https://www.cdc.gov/mmwr/volumes/70/wr/mm7004e1.htm?s_cid=mm7004e1_w

21. Q: Do people get really sick after the vaccine?

A: After vaccination, most people will experience mild local symptoms. This includes pain at injection site, redness, and some swelling. To reduce pain and discomfort at the injection site, apply a clean, cool, wet washcloth over the area and continue to use or exercise your arm. Those who have had COVID and experienced severe symptoms tend to have more of a response to the vaccine than those who didn't. Timing of a vaccine for someone who has previously been ill should be considered (e.g. allow for day(s) to recover).

Sources: https://yourlocalepidemiologist.com/covid19-vaccine-side-effects/?fbclid=IwAR3FrG_VqaUpy3Lzh-mOqH8WWCYyrQxQKqTWepEE1KJFZDMzG5wBu-OFt4
<https://www.cdc.gov/coronavirus/2019-ncov/vaccines/expect/after.html>

22. Q: You speak of this virus overwhelming the system, yet the mortality rate is nearly the same to the flu? How is this possible?

A: Doctors and scientists are working to estimate the mortality rate of COVID-19, but at present, it is thought to be substantially higher (possibly 10 times or more) than that of most strains of the flu. The COVID-19 virus has a much higher potential for respiratory pathogenicity leading to more respiratory complications and therefore higher mortality compared to the flu. Thus far, 2,077,332 COVID-19 deaths have been reported worldwide.

In the US, 406,162 people have died of COVID-19 between January 2020 and January 21, 2021. The World Health Organization estimates that 290,000-650,000 people die of flu-related causes every year worldwide. In addition, the typical course of the flu is that you feel sick for a period of time and fully recover. What is being found with COVID-19, in contrast, is that there are long term consequences and damage within the body even in people who were initially asymptomatic. In one study of asymptomatic individuals, almost 60% had inflammation in their lungs. Among patients who are hospitalized for COVID-19, 87% still experience symptoms 60 days after contracting the infection. For patients who were not hospitalized, more than a third still experience symptoms at 2 weeks post infection – and 20% of people 18-34 without co-occurring conditions report symptoms at 16 days post infection. As for the long term impact of the initial cytokine storm, the research is still emerging – but it is not looking like something you want to get even if you don't have symptoms at first.

Finally – the infectivity of COVID-19 is significantly higher than the flu, meaning it is spreading far faster than the flu does. With the flu, you are typically infectious only the day before you start experiencing symptoms and continue to be infectious for 3-7 days after. With COVID-19, people are often shedding the virus and contagious for 1-2 days before they experience symptoms and can stay contagious for up to 10 days. The $R(0)$ – pronounced R-naught – is a measure of infectivity. The rate is around 2-3 for COVID-19 meaning each person will likely infect 2-3 people while the $R(0)$ for the flu is estimated to be around 1.3...so each person who is infected with the flu will infect about 1 and 1/3 people on average. $R(0)$ can be impacted by mitigation factors – so when the COVID-19 pandemic started and no measures were taken to contain it, the $R(0)$ in Wuhan was 5.7. A measure of whether mitigation factors are working is whether the $R(0)$ is going down or up.

Sources:
[https://www.thelancet.com/journals/lanres/article/PIIS2213-2600\(20\)30527-0/fulltext](https://www.thelancet.com/journals/lanres/article/PIIS2213-2600(20)30527-0/fulltext)
<https://www.hopkinsmedicine.org/health/conditions-and-diseases/coronavirus/coronavirus-disease-2019-vs-the-flu>
<https://jamanetwork.com/journals/jama/fullarticle/2771581>
<https://www.nature.com/articles/s41591-020-0965-6.pdf>

23. Q: How should we expect to monitor and learn about the ability of COVID-19 vaccinations to keep people from spreading the virus that causes COVID-19 (Transmissibility/Contagion)?

A: Frustratingly, the answer is that we have to keep watching for the data. One way to see this in your own communities is through local health departments. Many post their regular updates (daily/weekly) showing the number of cases/hospitalizations/etc. Some health departments are also sharing their vaccine rates. As vaccine rates go up, you should see the incident (or new) cases going down. There will be more research coming out in the weeks ahead that will inform the effectiveness of mass vaccination. If you see a news story that discusses the shifts in rates and you want to confirm the veracity, consider looking at the original research the article references. You can also look up the original research through pubmed.com where all medical research is catalogued. Two great journals to look toward are the New England Journal of Medicine and the Journal of the American Medical Association. They are two of the most prestigious given their stringent review criteria. Both have dedicated COVID-19 pages - <https://www.nejm.org/coronavirus> and <https://jamanetwork.com/journals/jama/pages/coronavirus-alert>

24. Q: Could you please speak to how spectacularly unlikely to impossible it would be for there to be, well, 'forces with nefarious motives' to push this virus to the public? It seems implausible that this many scientists, and this many manufacturers in this many countries could conspire so effectively to push a harmful vaccine.

A: The sheer number of people involved in the process of the vaccine development, manufacturing and deployment would make it impossible for a conspiracy of this level to occur. The scientific, medical and public health communities have worked at their full capacity just to do the work necessary to push out an extremely efficacious vaccine.

25. Q: Do you have a link for further investigation for all these claims your making?

A: This question was not time stamped so we were not able to identify what claim was being referenced specifically. The data and perspectives were a compilation of existing and emerging literature and the synthesis of experts who work within the fire service. If there is a specific statement beyond what is referenced here and/or what was discussed in the webinar, we are happy to share links if you email questions to kelley@ndri-usa.org.

In addition, PubMed is an excellent resource as it is a catalogue of the medical literature as it is published.