

Dear EOGH family

There is a tremendous amount of information out there about the vaccine for COVID-19. With our busy lives it can be quite overwhelming to try and review everything on the subject. I put together this document to review and explain many of the common areas of concern around vaccination for COVID-19 and also to share why I personally decided to get the vaccine.

Should you take this COVID-19 Vaccine?

That is absolutely up to you to decide. Below I will explain some of the risks of the disease as well as the science behind the vaccine so you can make an informed decision for you and your families.

Does the Vaccine Work?

As this vaccine becomes available to all of us over the next few weeks to months, amazingly COVID-19 will be considered a preventable disease!!!! Based on very large well-done studies of volunteers (patriots in my mind) this vaccine has been shown to be effective and safe. Protection against developing symptomatic COVID-19 appears to be around 52-80% (depending on which vaccine you get) after the first of the two injections and 7-14 days after the 2nd dose this will jump to around 95% protection. **LET ME SAY THAT AGAIN BECAUSE IT FEELS SO GOOD, AFTER DOSE #2 YOU WILL HAVE A 95% LESS RISK TO GET SYMPTOMATIC COVID-19.** Furthermore, based on the trials there appears to be a major reduction in risk in developing severe COVID-19 as there were no cases of severe COVID in the Moderna trial and only one case in the Pfizer trial (this is fantastic news).

Let us put these risk reduction numbers into real life perspective. Latest predictions by IHME show by April 1st there will be 567,000 **United States citizen deaths** with 398k deaths as of today 1/15/21. For a comparison the horrible tragedy that was 9/11 left us with 2,996 deaths (we now have one to two 9/11 number of deaths per day). Imagine how a 95% reduction in symptomatic cases could decrease the number of deaths of our fellow humans going forward if this vaccine finds its way into our arms.

Ok, so that is prevention of deaths, but we can also prevent the challenges that occur after surviving a COVID-19 infection. So far (and this is not over) it is estimated by the CDC that we have had between 51-91 million COVID Infections in the US in around 10 months (23 million have been confirmed by testing) and some percentage of these infections will develop chronic illness. **A Harvard economist recently predicted that the post SARS-CoV-2 illness will cost the US 4.2 trillion dollars over the next 10-year period.** Now I am not focusing on the money but that amount of cost represents a massive amount of pain and suffering that is now avoidable with this vaccine.

One of our main medical journals the Lancet published on January 8th an article called *"6-month consequences of COVID-19 in patients discharged from hospital"*. The article found that **56% of participants followed had lung damage six months after symptom onset and**

furthermore that 1 in 10 patients with normal kidney function before COVID had damaged kidneys at follow-up. The article also showed fatigue, muscle weakness, sleep difficulties, anxiety & depression at the 6-month mark. Inability to breath normally, debilitating chronic fatigue, headaches, weak hearts, bad kidneys, the effects of brain strokes are all examples of disease that can now possibly be prevented with this vaccine that is now available.

How does the vaccine work and what can you expect after receiving it? Will the vaccine make you feel sick?

I know it will be a bit long, but I want to explain how the vaccine works so you can understand its safety. **First off, I want to point out that there is no Coronavirus in the vaccine, so it is scientifically impossible to get COVID-19 from the vaccine.** Understanding how the vaccine works will explain why you may feel a bit under the weather for a day or so after the injection and why you should not be worried about it.

Let me take you through the vaccination science for SARS-CoV-2, a small needle will inject a tiny amount of liquid into the deltoid muscle of your arm. This will contain what is known as messenger RNA (mRNA), some salts, and some fat droplets (tiny greasy spheres that protect the mRNA and help it slide inside cells). This vaccine is free of Thimerosal, arsenic, and mercury and aluminum.

Think of the mRNA as instructions on a POST-IT note that your muscle cells and some highly specialized immune cells in your body will read. Using small pieces of equipment in your cells called ribosomes, the mRNA is read, and a protein called the M-protein is synthesized. **The injected mRNA (the POST-IT note) is naturally degraded by your body after a few days and it will be gone forever.**

This M-protein which is also known as the spike protein is the most abundant structural protein in SARS-CoV-2 will be pushed to the outside of your cells for your immune system to recognize. Your immune cells which are on patrol 24 hours a day looking for any viruses will see it. When your immune system discovers this M-protein it will immediately ring all of its alarm bells by releasing chemicals into the blood to call in the calvary to come and help get rid of this M-protein and assure it can never come back.

The downside but expected effect of these chemicals (interferons and other cytokines) is that you may feel symptoms associated with the flu for a day or so. Based on the vaccine studies there is a 60% chance (more likely than not) that you may feel some fatigue, body aches, or chills like this for a day or so.

You do not have COVID-19 when you feel this way you are just feeling your immune system working as intended. During this time your immune system is building the machinery to destroy COVID if it ever sees it again. It is making special immune cells like Cd4 Helper T-cells, Cd8 Killer T-cells, and antibodies against COVID-19. Now that that you have this

massive army stored in your body that knows what COVID-19 looks like it will be more likely to obliterated SARS-CoV-2 if you ever get exposed to it again.

So, what you have to decide for yourself is this: Is a 60% chance of 1 day of flu like symptoms worth bringing your risk of symptomatic COVID-19 down by 95%? For me the answer was HECK YEAH and I received the vaccine on December 20th and my second dose on January 10th.

If I had COVID-19, how long do I need to wait to get the vaccine?

Vaccination of persons with known current SARS-CoV-2 infection should be deferred until the person has recovered from the acute illness (if the person had symptoms) and criteria have been met for them to discontinue isolation. While there is otherwise no recommended minimum interval between infection and vaccination, current evidence suggests that reinfection is uncommon in the 90 days after initial infection. Thus, persons with documented acute SARS-CoV-2 infection in the preceding 90 days may delay vaccination until near the end of this period, if desired.

Will I still need to wear a mask/personal protective equipment?

Yes. It is unclear if the vaccine only protects against getting symptomatic infections (known as providing neutralizing antibodies) or if it provides sterilizing immunity (preventing infection completely) which needed to prevent the transmission of the virus. To describe this further, if I am vaccinated and a patient with COVID coughs close to me, the virus may start growing in my nose. My immune system will be ready and should destroy the virus before it has a chance to multiply in massive numbers and spread to my lungs so I may not get symptoms, but the virus still may be in my nose in sufficient quantities for me to spread to those around me. If I do not follow standard precautions of masking, hand washing, and social distancing I possibly could spread the virus.

A 95% effective rate also means a 1:20 failure rate (although your sickness probably will be milder). Even when vaccinated after exposure your immune system will still have to fight the virus and if your body is run down, malnourished, or just having a bad day the virus could win so I would not tempt fate by putting yourself in high-risk situation, especially at times when there is high community spread.

Can the vaccine cause severe allergic reactions (e.g., anaphylaxis)?

Anaphylaxis have been reported, although the cases are very very very rare. Between December 14-23, there was a **0.001% risk of anaphylaxis** and no one who had it died out of 9 million injections so far, they were all fine with standard treatment. **To put this into perspective you have a 10.7 per 100,000 risk of dying in a car crash this year which is around 10 times more likely than you having anaphylaxis from this vaccine.**

Could There Be Unknown Side Effects from the Vaccine:

As any medical treatment you will have to ask yourself does the benefit of the vaccine outweigh the risks? This is a decision only you can make for yourself. I will tell you for me it was a no brainer based on the horror I have seen for the last ten months.

Of note though, the mRNA platform has been studied for more than 15 years. Not needing to give a live virus, or even an inactivated virus decreases the theoretical risks of other types of vaccine platforms. You can rest assured that all of our human proteins (our proteome) were looked at one by one to make sure that the protein the vaccine codes for is not similar to any of our proteins which could cause autoimmunity. Lastly, since humans first used a vaccine in 1796, we have noticed that the most serious side effects manifest themselves in the first 8 weeks and we have studied this vaccine in humans for greater than 6 months and there were no concerns that prevented the emergency use authorization by the FDA which is a very tough process.

Should you take Advil or Tylenol in advance?

This is a controversial area, but **I personally would not take these medications unless absolutely needed and especially not prophylactically (in advance) to vaccination.** There was a study shedding some light on the topic called "*Effect of antipyretic analgesics on immune responses to vaccination*" in the journal of Human Vaccine Immunotherapy which showed the timing of administration of drugs like Tylenol or Advil appeared to be paramount. In all studies that reported a negative effect on antibody response, the medications were given in advance of the injection. Interestingly, this negative effect was not seen when acetaminophen was given four hours after immunization. As always you will need to talk to your doctor to discuss if and when these drugs are appropriate.

What did I Experience?

I have had multiple colleagues with absolutely no sore arm or other symptoms but that is not always the case. For example, after my first dose I barley had a sore arm for a day or two. Six hours after dose #2 however, I developed some headache, fatigue, felt a bit cold and achy. I even felt a tender lymph node in my armpit (now resolved two days later). What is interesting is that as a physician, **I WAS THRILLED TO HAVE THESE SYMPTOMS BECAUSE THAT MEANT IT WAS WORKING.** I was so happy my immune system saw the vaccine and was making antibodies and other immune cells to be ready for when I am exposed to COVID next time. I woke up the following day and was 100% back to normal and well on my way to being protected from COVID....not a bad trade off.

Wouldn't it be great to send COVID to the history books with herd immunity like we did smallpox, polio, and rubella.

Amazing News!

Beginning January 14, all individuals over 65 and individuals 16-64 with certain medical conditions will be eligible for vaccination. These individuals include patients with Cancer, Chronic kidney disease, COPD (chronic obstructive pulmonary disease), Down Syndrome, Heart conditions, such as heart failure, coronary artery disease, or cardiomyopathies, Obesity, Sickle cell disease, Smoking, and Type 2 diabetes mellitus

If you are interested registering members of your family register @ the link below:

<https://covidvaccine.nj.gov/>



Be well all!

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