ASPR TRACIE Webinar Transcript
Be a COVID-19 Vaccine Champion Webinar
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Transcript:

Shayne: On behalf of the US Department of Health and Human Services, Office of the Assistant Secretary for Preparedness and Response, I'd like to welcome you to ASPR's Technical Resources, Assistance Center, and Information Exchange Webinar titled, "Be a COVID-19 Vaccine Champion."

Before we begin, I have a few housekeeping items to note. The webinar is being recorded. To ensure a clear recording, everyone has been muted. However, we encourage you to ask questions throughout the webinar. If you have questions, please type it in the question section of the GoToWebinar console. During the Q&A portion of the webinar, we will ask the questions we received through the console. Questions we are unable to answer due to time constraints will be followed up directly via e-mail after the webinar. To help you see the presentation better, you can minimize the GoToWebinar console by clicking on the orange arrow. Today's PowerPoint presentation and speaker bios are provided in the handout section of the GoToWebinar console and will be posted along with the recording of this webinar within 24 hours on ASPR TRACIE. Next slide.

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My name is Shayne Brannman, and I am the director of ASPR TRACIE and I want to welcome new and old friends of ASPR TRACIE. I want to thank you for what you do daily to enhance the preparedness, response, and recovery activities of your health care entities and community. Your role is so vital to addressing the daily and arduous challenges being presented, so your willingness to spend the next 75 minutes with us to further advance your knowledge is noteworthy.

I also want to convey my heartfelt thanks to our awesome lineup of panelists and moderator for this webinar. Your willingness to lend your precious time and share your substantive expertise to others might benefit is commendable and genuinely appreciated. For our new friends to ASPR TRACIE on the webinar today, this slide depicts the three domains of ASPR TRACIE, Technical Resources, Assistance Center, and Information Exchange. If you cannot find the resources you are

looking for on ASPR TRACIE's website, simply e-mail, call, or complete an online form and we will respond to your inquiry.

Next slide. It is now my pleasure to introduce my boss, Mr. Joe Lamana, the director of the ASPR Readiness Division who will now provide some brief remarks before we begin the presentation. Sir, over to you.

Joe Lamana: Well thanks Shayne. Next slide please.

Since the enactment of the Pandemic All-Hazards Preparedness Act in 2006, ASPR has served as the lead federal health agency, saving lives and protecting Americans from health security threats. In this lead role, we serve as the Principal Advisor to the HHS Secretary on matters related to federal public health and medical preparedness and response for public health emergencies. In addition to the important policy related responsibilities, ASPR coordinates federal public health and medical response to emergent threats and all hazards incidents and advances research and development in medical countermeasures to help respond to those threats and health security threats. The COVID-19 pandemic has changed the lives of all Americans. From remote work and school to masking up [indiscernible] [04:02] to not visiting loved ones or dining out, we've adapted to do our part to limit the transmission of this dangerous virus.

No one has done more than our health care workforce, those on the front lines, as well as those, supporting them to fight this pandemic. On behalf of ASPR, I thank you for your hard work and sacrifice to get us this far. Throughout this challenging period a vaccine has been our great promise to begin to return to our pre-pandemic lives. Though an unprecedented partnership, or through an unprecedented partnership, between the government and the private sector, 2, two-dose vaccines were authorized for emergency use in adults within a year of recognizing the SARS- COVID-19 virus. A third, single dose vaccine, was authorized shortly thereafter. This was an incredible scientific achievement in such a short period of time.

Demand initially exceeded supply and we focused our early vaccination efforts on healthcare workforce and vulnerable older adults. And about 70% of our nation's older adults are fully vaccinated at this time. As supply improved, we expanded our eligibility to other adults. Nearly 150 million Americans have already been have already received at least one shot. More than 100 million Americans have been fully vaccinated. To meet that goal, we have continued our efforts to make vaccines accessible, as possible, through mass vaccination sites, mobile pop-ups. They're now available at pharmacies, long-term care facilities, health centers, and individual physician offices.

90% of Americans live within five minutes, or five miles of where a vaccine is available. A new reimbursement program was also just announced to cover the cost of administering COVID-19 vaccines to patients enrolled in health care plans, that either do not cover vaccination fees or cover them with patient cost-sharing. With that, Shayne, I would like to turn it back to you.

Shayne: Thanks Mr. Lamana, and now it's my pleasure to introduce Meghan Treber, who will be the moderator for today's session, and let's get started, Meghan.

Meghan; Thank you so much, Shayne, and thank you, Joe. We are very pleased to have with us today, Dr. Celine Gounder, the CEO of Just Human Productions and Clinical Assistant Professor of Medicine and Infectious Diseases at NYU School of Medicine and Bellevue Hospital. And Dr. Syra Madad, senior director of the systemwide Special Pathogens Program for New York City Health and Hospitals. These experts have developed and launched a vaccine ambassador program in New York City and are sharing their program with us today.

As Joe mentioned, vaccines are our best hope to control the spread of COVID-19 and now that there are three safe and effective vaccines available to the public, as healthcare preparedness professionals, we want to arm you with information and an approach to addressing vaccine hesitancy among your patients, your community members, and even your friends and family. This session will provide scientific and medical-based information about the vaccine and will help with some tips to counter myths, ways to approach difficult conversations with an empathetic ear and resources for more information. ASPR TRACIE does have a number of resources available to support your COVID-19 response. All noted here on this slide, we encourage you to visit the website to review these and our many thousands of other resources that can assist with healthcare system preparedness.

In order for our speakers to understand our audience a little better today, we have a poll with three short questions that we'd like you to participate in. Let's launch the first question. So, what is your role at your organization, or your facility? So, for the first two options, clinical or non-clinical, this is, if you are associated with the healthcare facility. If you are not associated with the healthcare facility, whether clinical or not, please click other. Let's go ahead and let that run for just a few more seconds. About five more seconds. 3, 2, 1, okay, let's close the poll, and let's show the results. Okay, so, we have about 43% are non-clinical in a facility, about 33% are clinical in a facility, and about 24% are outside the facility. So, that's great. Next question. So, how would you rate your current knowledge of the safety and effectiveness of the COVID-19 vaccine right now? High, average, low, or none at all? Let's go ahead. Put in your answer. Okay, we're going to close in 5, 4, 3, 2, 1. So, let's close the poll and show the results. So, this is great, about 48%, with a high knowledge of safety and effectiveness, 49% average, about 3% low, and none is 0%.

Last question: How confident, there we go, How confident do you feel about talking to patients, or your clients, your co-workers, family, and friends about the COVID vaccine? Again, sort of, same question, extremely confident, somewhat confident, a little bit confident, or not at all. Okay, we got five more seconds. 4, 3,2,1 okay, let's close the poll and show the results.

So, about 48%, extremely, 45%, somewhat, 6%, a little bit, and 1%, not at all.

Okay, so this will help our speakers understand who we're talking to today. So, with this information, we're good to go. With that let's get started, Dr. Gounder over to you.

Celine Gounder: Great, thanks so much for inviting me to join you guys, today, and thanks for being here. I just want to start by recognizing how difficult a year this has been for everybody, and that challenging, that, this challenge, that it represents for our lives, for our work continues. So thank you for all that you're doing on so many different fronts. So I'm going to talk us through some of the data on the different COVID vaccines. It sounds like this is a fairly expert group already. So hopefully most of this will be review.

Next slide, please.

So the way I explain this, whether it's to patients or other members of the public is that when you are naturally infected with the Coronavirus, with the SARS-COV-2, it's a race between the virus and your immune system. So the virus tries to multiply as fast as it can, and it does take time for your immune system to see that virus, to recognize the virus, and to launch a counterattack to respond.

Next slide, please.

So if the virus is faster than your immune system, this is where you can get very sick. And, unfortunately, if the virus wins out, this is also where you can die from COVID.

Next slide, please.

But when your immune system is faster than the virus, you may not have any symptoms or you may have only very mild symptoms, and this is where you recover successfully from COVID.

Next slide, please.

So how do vaccines work? What vaccines do is they teach your immune system how to recognize an infectious pathogen that could be a virus like the Coronavirus. That could be a bacterium, that could be a parasite. But it teaches your immune system to recognize that infectious pathogen before you ever actually encounter it. So that your immune system, in a sense, has this head start in that race against the virus.

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So we're going to go through the different COVID vaccines, the three that have received Emergency Use Authorization here in the United States include two mRNA vaccines, the Pfizer Vaccine, and the Moderna vaccine.

The Pfizer vaccine has now just this week been granted an FDA Emergency Use Authorization for people 12 and up. And so, we will likely start to see adolescence 12 and up being vaccinated in the near future.

The Moderna vaccine has an FDA emergency use authorization for 18 and up. They will soon be submitting their data to the FDA for that 12 and up group as well, So we'll likely have another second option for our adolescents in the near future.

A second category of COVID vaccines includes the non-replicating, and that's key, non-replicating adenovirus vector vaccines. This is the Johnson and Johnson Vaccine that we have access to here in the United States. Also has an FDA Emergency Use Authorization for people 18 and up. Astrazeneca is also in this category of vaccines. They have not yet submitted their data to the FDA. Although their vaccine is in use in other parts of the world, including Europe, and their trials are ongoing prior to submission to our FDA. Novavax represents another, a third vaccine technology. In some ways, this is a more traditional vaccine technology. This is more similar, for example, to

the hepatitis B vaccine that we routinely give. These trials are still ongoing. Although we do anticipate the Novavax vaccine will also receive Emergency Use Authorization probably later this summer. So for now, the three to concentrate on are Pfizer, Moderna, and Johnson and Johnson, because those are the three that are available to us right now.

Next slide, please. So, a little on the mRNA vaccine. So, again, both the Pfizer and the Moderna vaccines are mRNA vaccines. Think there's been some confusion as to are these brand new technologies. And while COVID is new mRNA vaccines are not new, scientists have actually been working on this technology since the 1990's through programs for influenza and HIV vaccine development, as well as for Zika and for cancer.

And the very first Coronavirus mRNA vaccines were developed some 20 years ago for related Coronaviruses, SARS and MERS. And we're very lucky that scientists, in fact, had developed these mRNA vaccines for SARS and MERS that they were studying them because it really made it much easier. It gave us a head start in developing a vaccine against COVID. Another advantage of these mRNA vaccines is that they're relatively easy to manufacture relative to other vaccine technologies. And they're also much easier to update if you have mutations in the virus, and you have the emergence of variants, Just like we've had the spread of the UK, B.1.1.7 variant from the UK, first in Europe, and then to the rest of the world. You also have this Brazilian and South Africa variants, which I'll also talk about a little bit more later. But the great thing about these mRNA vaccines, is they can be updated relatively easily to account for those emerging variants. Next slide, please.

So, how, what constitutes an mRNA vaccine, and how do they work? These vaccines are made of this oily, fatty envelope that surrounds the mRNA. So mRNA is really code. Kind of like computer code. It codes for the spike protein, which is the little projections of protein that you see on the surface of the virus, you have no live virus here. So, it's impossible for you to get COVID from these mRNA vaccines. They only encode for a tiny piece of the virus, not the whole virus.

And both the Pfizer and Moderna, COVID vaccines are mRNA vaccines. Next slide, please. One of the questions you know, I get a lot is, well, you know, mRNA, that sounds kinda like DNA. Could this change my DNA? So this is a figure that shows you how the vaccine is entering the cells, so to speak. So you see that mRNA vaccine, with that oily fatty layer on the outside merging into a cell.

And you see the mRNA entering the cell, your DNA is hidden away in the cell nucleus. And it's very well protected there. And mRNA cannot get into the cell nucleus. They can't get inside and change your DNA. It stays in that, what we call the cytoplasm, what looks pink in this picture, mRNA stays there, and that's where it does its work. And so it's really impossible for mRNA to be changing your DNA. Next slide, please.

So with respect to non-replicating adenovirus vector vaccine. So, as I said, the Johnson and Johnson COVID vaccine is one of these types of vaccines. Again, not a new technology. Scientists have been working on these for even longer since the 1970's, and, again, for diseases, like influenza, later for HIV, because these are two of the diseases where we do spend a lot of resources, time, and attention for developing new vaccines. The Ebola vaccine that is in widespread use, especially in parts of Africa, is also made using this technology.

And what you see on the right is a figure of, essentially what this is. So what you do is you take this, Adenovirus, which is a virus that can cause the cold, and you gut it of its normal genetics,

You take away all of that so it can't replicate. And then you insert the code for the spike protein. Just really, like you do with that mRNA vaccine. The difference here is how you deliver it. The mRNA vaccine, that code, is delivered using that fatty lipid layer. Here you are using this benign, gutted virus that can no longer replicate to deliver that code. Next slide, please.

So again, just like the mRNA vaccines, these deliver the code for spike protein to your cells. It's, again, just the difference in the technology that's being used to deliver the code and because these are non-replicating, it means that these are not live virus and they cannot give you COVID. And these vaccines, just like the mRNA vaccines, cannot change your DNA. Next slide, please.

So, here's a summary of the clinical trial results on the three vaccines that we're currently using here in the United States. Again, the Pfizer vaccine as an mRNA vaccine. Over 40,000 people were included in those initial clinical trials. The vaccine was 100% effective in clinical trials against hospitalization and death from COVID.

Moderna is another mRNA vaccine, over 30,000 people were included in their phase three clinical trials. And again, 100% effective against hospitalization and death from COVID. The Johnson and Johnson vaccine, as we discussed, is an Adenovirus vector, or a viral vector vaccine, over 40,000 people were included in their phase three clinical trials, and this also was 100% effective against hospitalization and death from COVID. So, there was not a single person in the clinical trials of these three vaccines who died from COVID and we are starting to see now more and more data showing that the vaccines not only prevent hospitalization and death, but also likely decrease transmission of the virus, not eliminate not to zero, so risk is not zero, but you probably do see significant reduction in transmission as a result of vaccination. Next slide, please.

Another question I get a lot, and I'm sure you've gotten is, how in the world did they develop these vaccines so quickly if COVID didn't really emerge until the very end of 2019, in China, before spreading elsewhere around the world. How were we able to develop vaccines so quickly? So we had a couple advantages here. One is that we had study networks. So these are networks of researchers, and they have mechanisms for recruiting patients already in place to participate in clinical trials. And so, having all of that already set up gave us an important head start.

Secondly, instead of conducting phase one, phase two, phase three, and so on, clinical trials, one after the other, and this is bit of what you're seeing in that figure to the right. Instead of doing a phase one trial where you're looking at some safety questions, you're looking at, you know, what dose should we give? In Phase two, you might be looking at, still, safety, but also immune response. What kind of antibody reaction do you get, and then phase three, you're looking at those same measures, but also, is the vaccine actually preventing disease, and hospitalization, and death? Normally, we would do phase one studies first, finish that, then you go onto a phase two finish that, then go on to a phase three, and then finish that. And here what they did, is they overlapped them, they were doing them simultaneously which really allowed us to speed up the process a lot. Pharmaceutical companies also took a big risk here.

And before we knew whether these vaccines even worked, they started manufacturing in large volume. And this is partly what the role of Operation Warp Speed under the prior administration was, was to provide funding to the pharmaceutical companies, that they were not bearing that entire financial risk. That really, it was the government that was bearing that risk and having the companies move forward, build the factories, produce the vaccine, even before knowing whether we might use it. Because there was a very real chance that some of these vaccines might not have

worked, might not have been safe, and that we would have had to dispose of them. And so that also gave us a head start.

Normally, that manufacturing would not begin until after you have completed your phase three clinical trials and have your FDA authorization or approval. Finally, as I mentioned earlier, the mRNA vaccines are easier to produce, which allowed us to bring these vaccines to market and manufacture them in large supply more quickly. It's important to understand that the COVID vaccines are being held to the same safety standards, as all of our other vaccines. It's just that we did cut some red tape here and grease the wheels to make things move more quickly so that we could get a vaccine more quickly. Next slide, please.

So, are these vaccines effective and are they safe? Next slide.

So, this looks at vaccine effectiveness of the Pfizer and Moderna Vaccines. These are both two dose vaccines. The Pfizer vaccine was given three weeks apart, first dose then you wait three weeks and then the second dose. The Moderna vaccine is also two doses, also, with a delay between the doses, the second in four weeks. The Pfizer vaccine, there were over 43,000 participants in that study. In the Moderna clinical trials, over 30,000. And both vaccines were 100% effective after hospitalization and death.

I do think it's important to note here that your immune system does not react to the vaccine as soon as the needle hits your arm. It takes some time and it takes really about two weeks after you get a vaccination before your immune system responds fully. And so, to get to that 100% protection against hospitalization and death, you really have to wait for two weeks after the second dose of Pfizer and Moderna vaccine. They also looked at how likely you are to get COVID at all. So, the most important thing is that we want to be preventing hospitalization and death. It's less important whether you're preventing the sniffles or mild cough. But, that said, the Pfizer and Moderna vaccines were both about, you know, 94, 95% effective in preventing all forms of COVID. Not just severe COVID so, highly effective vaccines. And we have seen that your risk of transmitting virus as a result with either of these vaccines is also very low.

So, some people could, potentially, be infected with COVID, or have a COVID infection, maybe with very mild symptoms, or no symptoms after vaccination, but if they've had the Pfizer or Moderna vaccine, they're very unlikely to pass that on to someone else. Next slide, please.

So, this is looking at the Johnson and Johnson vaccine. Again, a different vaccine technology, but one that's also highly effective. This is a one dose vaccine and this was studied in over 40,000 people. The efficacy of the vaccine in preventing hospitalization and death was also 100%. And here they looked at that efficacy about four weeks after the first dose. So we're not entirely sure, you know, should you wait two weeks, four weeks, after your dose of Johnson and Johnson, to really reach peak immunity. But in the study, they looked at it at four weeks, and you had peak, you definitely had peak protection at that point. With respect to preventing all COVID. So, this includes mild COVID, COVID with, without symptoms, with no symptoms. In the United States, the Johnson and Johnson vaccine was 72% effective, which is still highly effective. You're still preventing your hospitalizations and your deaths at 100%.

One difference with respect to the how the clinical trials were done for Johnson and Johnson versus Pfizer and Moderna is that Johnson and Johnson was studied later in the pandemic. And at that point, we had seen the emergence of these mutant variants. And Johnson and Johnson was studied in some of the places where we have those variants, including Brazil and South Africa. And so

what you see where the Johnson and Johnson vaccine, in particular, in Brazil and South Africa, is, it is less relatively less protective against all COVID.

It is still protecting against hospitalization and death, but you are seeing some breakthrough infections where people may have milder symptoms. And this is really for scientists, doctors, epidemiologists, to be tracking because as the virus mutates, we do need to stay ahead of it, not wait until the vaccines are no longer effective or become less effective. And so for us, this is a sign that we need to be developing updated vaccines.

But for now the Johnson and Johnson vaccine does remain effective, and so I think that's sort of the take home point, is that right now it is effective. We should absolutely be using it. It also helps, probably not to the same degree as the Pfizer and Moderna vaccine. But it's also effective in reducing the transmission of virus from person to person. Next slide, please.

Often people will ask me, “Well, okay, I've heard you know, about all these vaccines on TV, or read about them in newspaper, but, will they be safe for me? Will they work for somebody like me and some of the questions they specifically ask about are, well, will they work for, you know, people of color, will they work for women? Will they work for somebody who's diabetic or obese?” And so, let's drill down on that a little bit, in terms of who was in the different studies the Pfizer, Moderna, and Johnson and Johnson Studies.

So, the Pfizer vaccine, almost 30% of people in the clinical trial for their vaccine were Latinx. Almost 10% were black, and to put that in perspective, about 13% of the US population is black. 4% of the people on the Pfizer trial were Asian, and 1% indigenous almost 50:50 male versus female. And over 40% in the Pfizer trial were over age 55. In addition, you had people who had lung, heart, liver disease, obesity, diabetes, cancer, and HIV in the Pfizer vaccine trial, and the vaccine was safe and effective across all of these demographic groups and groups of people who had various different underlying medical conditions. With respect to the Moderna vaccine, 21% of their clinical trial percent, participants were Latinx, 10% were black, 5% Asian, 1% indigenous, close to 50:50 split in terms of sex, and a quarter were over age 65.

So, that gets at, you know, does the vaccine work in older people? They also had people with a range of chronic underlying medical conditions, just like in the Pfizer vaccine. Then finally, the Johnson and Johnson vaccine, which, as I mentioned earlier, was studied in multiple countries, the United States, South Africa, as well as Brazil. The race breakdown for their US participants, which were about almost half of the people in the trial in all.

15% were Latinx, 13% black, 6% Asian, and 1% indigenous. So, really a good representation of the different racial groups here in the United States. I have not seen the sex breakdown reported for the Johnson and Johnson study. However, from the perspective of age, about a third of their study participants, clinical trial participants were over age 60, and 40% had underlying chronic medical conditions. Next slide.

So, just to summarize, the Pfizer, Moderna, and Johnson and Johnson vaccines are effective in all racial and ethnic groups. All age groups, all genders and all people with, excuse me, and in people who have underlying medical conditions, including heart and lung and liver disease, diabetes, obesity, and more. Next slide, please.

Are the vaccines safe? So we saw no significant safety issues in the clinical trials. And it's really unusual for somebody to have significant vaccine side effects more than eight weeks after

vaccination. And I think this is an important point here that the pharmaceutical companies waited until they had at least eight weeks of safety data after vaccination on participants in the clinical trials before submitting their data to the FDA.

And this is also why, unfortunately, they were not able to submit their data more quickly prior to the election. It really just came down to, they needed to have at least that minimum of eight weeks on everybody in the trials. And the timeline is the timeline on that one. So our real-world experience has also been really reassuring here, as of May 5th when I compiled this slide set for ASPR, we had had 250 million COVID vaccine doses administered here in the United States and over one billion with a B doses administered around the world. So we really have gotten quite a lot of data on the safety of these vaccines in very short order. And the vaccines do appear to be safe. Next slide.

So what are some of the common side effects that you might see. With all of them injection site pain. So pain where the needle goes into your arm. Not surprisingly, is pretty common. Fatigue is also common, perhaps more so, with the Pfizer and Moderna vaccines. Headache you see with the Pfizer, Moderna vaccines also a little bit more than with the Johnson and Johnson vaccine. Muscle pain. Ditto. And then, joint pain, chills and fever are not uncommon as well. Some patients will report some nausea after the Johnson and Johnson vaccine. Some unique side effects with the Pfizer and Moderna vaccines, which were reported very early on, are these serious allergic reactions. But, if you look at the, the probability of these or risk of these, it's 0.0005%. So extremely low risk. And I'll talk about that side effect in just a moment.

With the Johnson and Johnson vaccine, we also see these very rare blood clots, which is why there was a pause on use of the Johnson and Johnson vaccine, but again exceedingly rare at 0.0002%. And I will also dig into that in just a moment. Next slide please.

So the side effect that you see with the Johnson and Johnson vaccine is called thrombosis with thrombocytopenia syndrome. So this really means that you have low platelets, which is what thrombocytopenia means, and you have blood clots, which is what thrombosis means. And the symptoms of this can begin 1 or 2 weeks after you get vaccinated. Because, again, it takes time for your immune system to see the vaccine to respond. The symptoms people have had have included headache, shortness of breath, abdominal pain, leg pain, and swelling.

But the rate of this is really quite low. If you look at women between the ages of 18 to 49, which are the most likely to have this particular side effect, the risk of this kind of blood clot was 0.0007%. Among women who were over age 50, the risk was 0.00009%. So still, really low, and none of these were seen in men. In contrast, the risk of blood clots, if you're hospitalized with COVID, is 20%.

So you can see there's a huge difference in risk. You know, and so when we talk about blood clots yeah, that might sounds scary. But the reality is that the risk of blood clots, if you're hospitalized for COVID, are so much higher than from getting a J&J vaccination. You're 10 times more likely to be struck by lightning than to get the thrombosis with thrombocytopenia syndrome or these blood clots from the J&J vaccine. The key things are really for healthcare providers to be aware of this in the event that they have a patient who has one of these exceedingly rare side effects, if they know, to look for it, and how to manage it. And it's really important that these not be treated with heparin. Heparin is the most common blood thinner we use in these situations. And so it's really important that we not use heparin for treatment here. The overall numbers were, and this is what

gets you to the, the percent risk in that table. There were 15 reports of blood clots with low platelet counts out of four million doses that were given to women. Next slide, please.

And is it safe to get vaccinated if you have certain underlying medical conditions? So, say you've already had COVID, You've have or had cancer. You've had an organ transplant. You have HIV or AIDS. And many of my patients have HIV or AIDS. Maybe you have a food allergy, like eggs or peanuts or shellfish, allergies. You absolutely are safe to get vaccinated, and what about if you're trying to get pregnant or pregnant or you're breastfeeding or you're a cancer survivor? Yes, you are you are safe to get vaccinated with all of the COVID vaccines.

A couple of specific notes about this. If you have COVID or had COVID and recovered, the immune response that we see, the immunity that you have from natural infection is less predictable. Often less robust and less durable than the immunity you get after vaccination. And so we all we are strongly recommending still that even if you had COVID, you should still get vaccinated. Another reason is that with the rise, with the emergence of these mutant variants, your natural immune response to an earlier infection may not be protective against these mutant variants. Whereas if you get vaccinated, the vaccines are still protective against the mutant variant.

So we still strongly recommend, again, that you get vaccinated for COVID, even if you've had COVID. With respect to pregnant women, breastfeeding women where we've collected data on this after the clinical trials were conducted. And many of these women who were in these trials were healthcare workers who are among the first eligible to get vaccinated, who signed up for these trials because they wanted to help provide data for other women who were in similar situation as themselves, pregnant and breastfeeding.

And so, we have accumulated quite a lot of data on that as well. Next slide, please. So, who should not get a vaccine? And I mentioned earlier that with the Pfizer and Moderna vaccines, there is a risk of an allergic reaction. The reaction is to a compound, or a chemical called polyethylene glycol or polysorbate. These are found in many different medications, laxatives, antacids, toothpastes, skincare products.

So these are allergies that most of us, if we had this allergy, would be aware of because we're so exposed to it in so many different common over the counter and store-bought products. But some people do have a severe allergy to this. And anyone in general who had a severe allergy, immediately after receiving their first dose of vaccine, should consult their doctor and possibly an allergy specialist before seeking the second vaccination.

In the case of people who have had immediate allergic reactions to other vaccines or other injectable therapies, there needs to be a bit of risk benefit weighing again, with your, with your personal physician. Next slide, please.

And I'm going to close here with a discussion about the variants. I'm not going to go through every single one. These are probably the most important ones for you to know about, but there are others.

The UK variant, United Kingdom variant is the B.1.1.7 variant. We do see this variant is more infectious than other variants, so it means that it spreads more easily from person to person. This is the variant that began to surge in the United Kingdom in the fall and winter of last year. This is what resulted in a surge in cases where they had to reimplement strict lockdown measures in the UK over the winter holidays. This same variant then spread to Europe, where they saw a surge in cases also as a result of this.

And then that same variant has spread here to the United States. We were lucky that it spread to us later where we were farther along in our vaccination rollout. And so we did see an uptick in cases, but that seems to have come down, and I think we were just very lucky in timing, that more people had been vaccinated by the time the B.1 1.7 variant hit our shores. That said, this is now the dominant variant here in the United States. So that means the vast majority of people who have COVID in The United States, who, where we sequence their virus, we find that it is the B.1.1.7 UK variant.

Another aspect is, you know, does this cause more severe disease? The UK variant does seem to cause perhaps slightly more severe disease. And does your immune response to prior infection to an earlier strain still protect you against the UK variant? It seems to still be protective, but not as protective as against the original strains. The vaccines are also still protective, but we do see a slight trend in the direction of being less protective against the UK variant.

And again, this is more of a red flag to people who are working on the vaccines in terms of needing to update the vaccines to stay ahead of the virus. But I think the key takeaway, and this really applies to all of the variants on this slide, is that the vaccines remain effective in preventing hospitalization and death across the board.

The South Africa variant, the B.1.351 variant, we are less sure about whether it is more infectious or more virulent. There's been some mixed data on that, and again, virulent means does it cause worse disease. We do certainly see that the immune response, the natural immunity you get from an infection with a prior strain is much less protective against the South Africa strain and so people do get reinfected and can get sick with that second infection. The vaccine remains effective, but we do also see a trend towards being less effective, and particular in preventing all disease. So it will still protect against hospitalization and death.

But the vaccines may not protect against all disease in the face of the South Africa variant. The Brazil variant shares, much in common with the South Africa variant. The Brazil variant is P.1 variant. And if you've been following the news, you may have heard reports of a surge in Manaus, which is a city in the Amazon, where they were hit very hard. Both first time around, first wave, and then even harder in a second wave. So, a lot of people who had been infected, the first time around, got reinfected with the P.1 variant and got very sick.

So we know from that experience, that the immune response to earlier strains to the original strains of the virus were not protective against reinfection with the P.1 mutant variant. We also see that, while the vaccines remain effective against hospitalization and death from the Brazil variant, there is a trend towards being less effective, in particular against just all disease, all COVID.

And so this is something else we're all keeping an eye on. In New York, we have this B.1.526 variant, which does seem to be more infectious, so more easily transmissible from person to person. But between the New York variant and the UK variant, the UK variant seems to be winning out. And so, must be more even more infectious than the New York variant. The immune response that you would have gotten through prior infections with earlier strains of the virus, are also slightly less protective against the New York variant. And vaccines remain protective against hospitalization death of the New York variant, that you do see slightly less protection against all COVID of any kind. And then finally, the India variant, which has been making the news, and they're actually more than one, there's B.1.617.1 and then there's B.1.617.2. .2 seems to be the one that's more concerning.

The India variant. Here, I have a question mark, and I think, based on some of the data that has been coming in, the India variant is indeed more infectious. And we are seeing a competition, a race of sorts, between the India variant and the United Kingdom/UK variant, in both India and the UK. And it's unclear, which is going to win out, which is more infectious. This certainly is one factor, not the only factor, but one factor that's contributing to the surge in cases in India right now.

We're not entirely clear on whether the India variant causes more severe disease. It does seem that earlier infections with earlier strains of the virus, they may not be quite as protective against the India variant. But the good news is, the vaccines remain effective against severe disease, hospitalization, and death, but not entirely protective as with the other variants against milder forms of the disease. So, I believe that's the last slide. So I'll stop there and turn it back over to you.

Sorry. I do have one other slide. So, just to summarize what we went through in the table. The Pfizer Moderna, and Johnson and Johnson vaccines all remain effective against the known variants in terms of protecting against severe disease, hospitalization and deaths. The Pfizer and Moderna clinical trials were conducted before the emergence of variants. So, the data we have on Pfizer and Moderna versus variants is really data from the real world. The Johnson and Johnson vaccine was more formally tested in clinical trials against the variants. Really stress tested in a way that the other two were not, and here is the breakdown that we saw with respect to protection against severe disease. Johnson and Johnson in the United States was 86% protective. Brazil, where that P 1 variant was widespread, 87% protective, and in South Africa, where the B.1.351 variant is widespread, 82% protective.

So as you can see, even where you have widespread variants, the Johnson and Johnson vaccine, remained highly effective in preventing severe disease. All right. I think that's the last one, back to you, Meghan.

Meghan: Thank you so much for this incredible overview of these vaccines.

So we'll now turn to Dr. Syra Madad to talk about approaching vaccine hesitancy in our community. Dr. Madad.

Dr. Madad: Great. Thank you so much, Meghan, and I'm going to try to go through my slides a little bit faster in the interest of time. If you can go to the next slide, please. So, very briefly, I will cover evidence based and effective communication strategies to talk about the vaccines, build confidence, and empower others to make informed decisions. So this includes how to start a conversation, word and phrase choice, motivational discussions, debunking myths and misinformation using that, choose the sandwich approach, and then the importance of keeping the conversation on ongoing.

Next slide, please. So I'm going to first start off by parting, just some high level survey data because it's really important to kind of frame where we're coming from. So, as you heard earlier, all adults, you know, first, can now go to COVID-19 vaccine, and majority over 90% live within five miles of a vaccination site, which is amazing news. Based on the recent Kaiser Family Foundation surveyed, more Americans want to get the COVID-19 vaccine, but one in 3 are still unsure. So, while the number of Americans in the wait and see category has improved, and there's been a decrease by 2% over the last month, percentage of those that completely refuse has stayed the same since January.

In addition, the daily number of COVID-19 vaccine doses administered per day, has also decreased by 30% from where it was just a couple of weeks ago. So, with three safe and effective and lifesaving COVID-19 vaccines, authorized in the United States, we need an all of the above approach. All hands on deck to encourage and enable people to live their healthiest life possible.

The COVID-19 Vaccine Champion webinar that you're hearing today is just one of the ways to build confidence and increase uptake, including other initiatives within the healthcare system that I'm part of we are kind of championing, and I will just mention a couple of them towards the end of my presentation. Next slide, please.

So we also know that the acceptance of getting a COVID 19 vaccine varies by age, race, and political beliefs. Vaccine access still remains an issue for communities of color, even with all adults now eligible. So, there's a whole host of other issues, but we're just going to get into the communication aspect, and how to communicate effectively. Many young Americans between the ages of 18 to 29 want to wait and see.

It's important to note, you know, individuals in the wait and see category are open to getting the COVID-19 vaccine, but are often looking for more information, additional motivational factors, et cetera. For myself, being out in the community, in the healthcare system, and helping build COVID-19, building confidence in COVID-19 vaccines, when I often ask how much time, you know, it would take for you to feel comfortable. For those that are hesitant, there's no real timeline that, often people express, it's more often, what are others doing around me? Seeing a family member get vaccinated, it's an important factor for many people in their vaccination decision. So being a role model, getting vaccinated yourself, and encouraging others around, you can influence your friends and your family to also get vaccinated. Next slide, please. So, now getting to some of the root causes of those in the wait and see category, we find concerns in experiencing side effects in thinking that the vaccines are not as safe as they are said to be are the two top concerns, both of which are addressable by providing science and evidence-based information, and through effective communication to convey it. Next slide, please.

So, this is just an important survey that was conducted in New York, but it highlights, I think, one really important thing. So, it's become common knowledge. Now that providers, such as one's primary care physicians, are some of the most trusted sources of vaccine information, and a strong recommendation from one's own doctor goes a long way. But what's equally as important are other trusted messengers, like you and I, we may not be direct healthcare providers.

Based on a New York survey. 71% of New Yorkers trusted their own family members to provide reliable information about the COVID-19 vaccine. So, all of us are able to use these communication strategies and help empower people. Next slide, please.

So, now let's get into the effective communication strategies. So I'll start off by guiding principles. We should all abide by, as we talk to anyone about the COVID-19 vaccines. So oftentimes, the hardest part is just breaking the ice and starting the conversation. It's important not to be judgmental or use judgmental language, to lead with empathy over shame. And so for example, when we lead with empathy, we can say last year has been really hard for all of us. Do you want to talk about your experience? Or you may have heard a lot about the COVID-19 vaccines. Tell me what you think about them? Being an active listener. See what the root cause of concern, and then provide tailored information. So, can you tell me more about your concerns, and when they do, don't use judgmental language, like, that's silly or you shouldn't be worried about that.

Also, ask open-ended questions to give more than just a yes or no answer, and validate their emotions and concerns. Like, how did watching the news report make you feel? What did you do next?And then validate their concerns and feelings like you're not alone in thinking that. Several of my co-workers, friends and family members have similar concerns and then end with a strong recommendation to get vaccinated. Next slide, please.

Word Choice. So, use simple, clear words that are positive and proven to be effective. A poll conducted on language of vaccine acceptance had tested words and messages related to COVID-19 vaccine and found emphasizing the benefits versus the consequences resonated more with people.

Word choices like family versus community, saving lives versus death, had more profound impacts? Next slide, please.

Phrase composition. So, similarly, framing sentences to be more positive, such as getting vaccinated will help you and your families stay healthy and safe instead of, you can get really sick and die if you don't get the COVID-19 vaccine, can help motivate people to get the vaccine, Sharing the benefits of getting vaccinated, such as spending time inside, like we used to with family and friends, are also great ways versus you'll never be able to get back to normal if not enough people get vaccinated.

And then, lastly, when you talk about the development of the vaccines, share how America's leading scientists and medical experts research and led the development of these life saving vaccines versus the drug companies develop the COVID-19 vaccine really fast to help in the pandemic. Next slide, please.

So, this is one of my favorite graphics that our division of population health steered, and it's actually quite spot on. And this is a graphic on the, right and it's showing that we're often inundated with information, data, numbers, efficacy versus effectiveness, you're seeing 66%, 72%, 95%. So, it's really hard to understand what do these numbers mean. How do you sift through and make sense of what these numbers are?

And then when you actually talk about them, distilling it down and communicating it effectively to help individuals understand and make informed decisions. So, for example, next slide.

So, here's a great way of just trying to cut through the noise. One way is, all current COVID-19 vaccines are extremely effective in preventing serious illness and death. Next slide, please. So, I'm going to give you some examples of how to address many of the commonly asked questions and concerns, and those in the wait and see category. So, starting off by explaining the vaccine development process, and why we had an accelerated timeline with all the safety measures in place.

While Dr. Gounder provided a really great overview, these are just highlighting some of the key terms to use that are positive like researchers have been studying Coronavirus and many vaccines and adenovirus for years. Clinical trial started through groundbreaking collaborations between researchers around the world, overlapping phases of vaccine development, and then government agencies made COVID-19 vaccines their number-one priority. Next slide, please.

So, explaining variants and impact of vaccine, this is the most topical question that we get all the time. So, given most of the news about variants, it's normal for people to ask the effectiveness of the COVID-19 vaccines. So, while we're still learning about the effectiveness of vaccines against

currently circulating variants, the COVID-19 vaccines still offer substantial protection against these variants, including the prevention of severe disease.

It's important to get vaccinated to prevent continued community spread and the introduction of new variants. So by saying this, we're sharing what we do know. Next slide, please.

So use simple sentences about side effects and safety, when we do talk about side effects and safety, which is a number-one concern. So, all COVID-19 vaccines were tested in clinical trials involving tens of thousands of people to make sure they are safe and effective in protecting adults in all ages, races, and ethnicities, Over 150 million Americans have been fully vaccinated, and real world results show the vaccines are extremely effective and safe.

Mild side effects are normal with any vaccine, and lasts for few days. Severe allergic reactions are extremely rare. In my experience, as I talked to many people, when I talk to community members within my healthcare system, healthcare workers, many people think that they may be that outlier, or that unique person who will have an adverse event. So, again, validating their concerns and sharing information, including that these really severe allergic reactions are treatable, they are rare, but they are treatable is also an important message, And then lastly, safety monitoring is working, and the government is prioritizing the safety of Americans as seen with the J&J vaccine pause.

So, concerns about long term effects can also be addressed similarly, by explaining adverse side effects from vaccines appear within two weeks, and certainly within the first two months and millions of people are vaccinated. And so we haven't seen any significant safety signals in the mRNA vaccines, for example. Next slide, please.

This is one of my favorites, and it's the truth sandwich to debunk myths and misinformation. And the concept actually comes from George Lakoff, who is a retired distinguished Professor of Cognitive Science and Linguistics at the University of California at Berkeley. The idea is to state, what is truth? Then introduce the myth or misinformation as kind of the meat in-between, while we try to avoid amplifying the specific language if possible and then return to the truth. So, that the falsehood is neither the first impression nor the takeaway. I see you're giving two key facts, and then you're, you're adding in that missing between. So here's an example in one that I often hear.

Getting the COVID-19 vaccine gives you COVID-19. Right. So, that's a myth. To address it using this truth sandwich approach, you can first start off with a key fact, a truth. The vaccine for COVID-19 cannot and will not give you COVID, then add in the misinformation in the middle. The vaccines do not contain the live virus. So, you cannot get it from the vaccine, it only contains a short code to make one piece of the virus called a spike protein, which helps the immune system build protection against COVID-19. And then leave with another key fact in truth. Getting vaccinated reduces the risk of severe disease, hospitalization, and death, and you can use this for so many different misinformation and myths to continue to debunk it. Next slide, please.

So, motivational discussions and benefits. So, focus on the positive, rather than telling someone why they should get vaccinated.

Sharing why you got vaccinated can help them feel more comfortable with the reasons that you're sharing. So emphasize new benefits of getting vaccinated, like vaccinated adults can freely mingle with other vaccinated adults. Gather indoors with low-risk, unvaccinated people who were engaged in activities outdoors without wearing a mask in non-crowded settings. And, really,

importantly, that peace of mind, as I mentioned, to you and your own reason and story. So for me, my reason is protecting myself, my family, those around me, to get back to normal, and really enjoy the activities I love doing like hosting dinners. And again, hoping to end the pandemic that's really, really important to me and those are some of my reasons why I got COVID-19 vaccine. Next slide, please.

So I'm going to just briefly highlight my COVID-19 Battle Buddy story. So, first, let me just tell you what the Battle Buddy program is. And New York City Health and Hospitals started this amazing program for mental health support to share our experience and support one another, As you know, a battle buddy, and really just be a shoulder to cry on or a hand to hold. And so, we were randomly assigned throughout the entire healthcare system. We have over 50,000 employees and we just did a quick profile, what role we play. I'm an infectious disease epidemiologist and Patricia here my COVID-19 battle buddy is a healthcare worker also on the frontline.

So we talk on the phone, we constantly send text messages to see how we're doing. We finally met just a few months ago in March and she shared that she has not gotten the COVID-19 vaccine as she's hesitant, she wants to get some more information. And while I continue to provide some information, she recently just made this, to get the COVID-19 vaccine. And the person that actually influenced her to get the COVID-19 vaccine was her own family member. So, the concerns that she had was addressed through her own family member, who's not a clinical provider, or a healthcare worker. And so, she was able to get vaccinated based on them, addressing her concerns. And also looking at the benefits of getting vaccinated. She has a family member who is a cancer survivor, and she wanted to make sure that she's protecting herself and her family member. So, really great story that I wanted to highlight. Next slide, please.

So really, importantly, is keeping the conversation ongoing. These are not one and done conversations. And so the willingness to accept a vaccine really falls in a continuum. They may not be ready today, but maybe next week or the week after, they'll feel more inclined to get the COVID-19 vaccines so just continue to chip away at it and help make their vaccination happen. So you can offer to make their appointment, to provide transportation, offer childcare services. These are all great ways to help encourage individuals and help make them make their vaccination happen.

Next slide, please.

So, my last two slides, it's going to talk about some of the resources that we've made available in New York City and what we've developed and this is, one of the booklets we've made.

It's about understanding COVID-19 vaccines, and I provide some really great, easy to understand and follow information for the non-clinical crowd, if you will. So this is not where providers or healthcare workers, but really just for the general public. And it takes a lot of the key concepts of, for example, natural immunity and vaccine induced immunity, and provides you with some really great information in ways that you can understand. So when we talk about natural immunity and vaccine induced immunity vaccination is important.

Even if you already had COVID-19 infection and vaccinations provide more durable and strong immunity, decreases the chance in the re-infection and helps with the various variants of concern provide some really great and easy to even use as you're talking with other people. Next slide, please.

Then, another booklet that we have is for providers, for healthcare workers, those that are dealing with patients. And it talks about all the safety profiles as a COVID-19 vaccines. And then in section two, these are tips for communicating effectively, with patients about the COVID-19 vaccines. So, all the different strategies that I've mentioned. There's additional ones that we talk about, and it provides you with a lot of other myths and facts that you can also use. So, really great for sharing and downloading and giving it to providers, as well as to the general public.

The last thing that I'll mention before we open it up to Q&A is there's a couple of other initiatives that we've launched at New York City Health and Hospitals. And as the lead for the COVID-19 communications and outreach workgroup. Today, you've heard about we have a COVID-19 vaccine champion. This is a series we run all the time, and it's actually made for non-clinical staff. So, it gives them that information of all the COVID-19 vaccines and communication strategies. Because I know you've heard family members and non-providers are also really big in terms of influencing people to get the COVID-19 vaccine. So, we have these sessions on an ongoing basis. But we also have developed two really amazing e-learning modules. We've already had over 7,000 employees take it and we paused it because we're updating it now, we're going to resume it. But these are also available for anybody that's interested in taking it, so it's on communication element, as well as on the safety profiles of the COVID-19 vaccines and how they were developed. And lastly, this is something that I'm hoping to launch next week and I'm happy to share all these resources.

It's an initiative called COVID-19 Vaccine Ambassador and ask me about the COVID-19 vaccine. That's the name of it, it's a bit of a mouthful, But we're going to have a workforce, both clinicians, non-clinicians, anybody that's interested, They'll get a shirt, and it says, ask me about the COVID-19 vaccine, and we're training them on all they need to know about the vaccines. And they could be trusted messengers going on in, community within our healthcare system, and helping answer questions that people have about the COVID-19 vaccine. So we have a lot of different initiatives. There's no reason to reinvent the wheel if you're a healthcare facility or a system. We're more than happy to share all the resources that we're putting together. So feel free to contact us and we can provide that. With that, I'm going to hand it over to Meghan to start the Q&A portion.

Meghan: Great. Thank you so much to both you Syra and Celine, for this incredible presentation, incredibly informative. And thanks, Syra, for offering your resources. We will, when you provide us those links, we can make those available to our participants. And we do have questions. We have a lot of questions today. So as a reminder, due to the number of participants on this webinar, please submit your questions through the question section of the GoToWebinar console and I'll ask those on your behalf.

If we do not have time for all your questions today, we will follow up with the presenters, and we will get written answers to those questions, and we'll follow up with you directly via e-mail with the answers to the question. So, we do have one last poll, while you're all feverishly typing in your questions, and before you drop from the webinar. We would like to ask, did this session give you enough information to help you be a COVID-19 vaccine champion? So, yes, I feel better prepared to be a vaccine champion, or no, I do not feel prepared to be a vaccine champion. Go ahead and submit that answer right now.

And we'll give about five more seconds. 5,4,3,2,1. All right, let's go ahead and close that. 98% of our attendees feel better prepared to be a vaccine champion. So, go ahead and ask some questions and see if, maybe we can get that one percent ready. And obviously, we will post, for those of you

who asked, we are posting both the recording, and the slides will be up within 24 hours or so of the webinar, so you'll be able to get those. Okay. Let's jump into some question.

So, one question, we are seeing many people who are not returning for their second dose. Can we talk a little bit about how effective their Pfizer, Moderna vaccines, are with only one dose? How perhaps we can persuade patients to come back for the second dose, and sort of on top of this, we're also hearing a lot of patients that have had COVID previously, and they feel they don't need that second shot. They're using the first shot almost as their own booster is what is what clinicians are hearing?

So to Dr. Gounder and Dr. Madad, what say you?

Dr. Gounder: Sure, I can jump in on that one. This is Dr. Gounder. So the first question is, “Can you get away with one dose of Moderna or Pfizer vaccine?” I would strongly recommend against that. What we are seeing is that the level of neutralizing antibody so, the strength of the immune response you have after only one dose, is significantly lower than what you get after two doses. And particularly with the emergence of these new variants, you really want the protection of two doses. You know, the data I presented earlier on, that, yes, the vaccines are still effective across the board against all the variants. That no longer remains the case if you only get one dose of Pfizer and Moderna.

So you really would be leaving yourself with less protection, probably weaker protection, and less durable protection. So you really need two doses with the mRNA vaccines. In terms of, do you need two doses if you already had COVID? There's two different ways to look at that. Medically speaking, biologically speaking, probably not in people who had an earlier infection, who then get one dose of vaccine, that does function as an effective booster. Where it gets, or, in those people, their level of immunity is comparable to what you would have after two doses of vaccine.

It seems it’s durable, but where it gets to be an issue is in terms of sort of more day-to-day life and the logistics of that. And if we start to see employers or others requiring vaccination, which may start to happen in the fall, especially once a full approval from the FDA comes through, and Pfizer has already applied for that. If you start to see employers, maybe schools requiring vaccination, it may be difficult for you to present evidence of, you know, yes, I had COVID, and then I just got one dose. No. It's unclear what that system is going to be for assessing people's status. And so that may be one reason just to save yourself the headache of dealing with that, to get that second dose even if you had COVID.

Meghan: Great. Thank you so much,. Any recommendations on approaching the discussion of booster shots? So it's difficult to get them to come in for one shot. Definitely difficult for two shots. How can we start counseling patients on the need or preparing them psychologically for the need for a booster.

Syra: It’s Syra. I'm happy to start, and then if Dr. Gounder wants to add anything. So, I think, right now, the COVID-19 vaccines we have, as mentioned, are highly effective and safe, then down the line, we will most likely need a booster shot. And I think this is akin to some of the other vaccines that we provide like tetanus. So I think it's just first emphasizing that the current vaccines are safe and effective. And again, and they look at future variants emerging, we may most likely need a booster shot, is sometimes it is a bit of an unchartered territory. But I think that, as you mentioned, providing just that information that this is something that, based on data and science and time,

we'll find out more information if and when they will be used. But love to hear what Dr. Gounder also has to add.

Dr. Gounder: Yeah, the other thing I would add is a lot of times, people will compare, oh, is this going to be like the flu, where we need a vaccination every year? This is not going to be like the flu because the way the flu influenza virus mutates is very different from the way Coronavirus mutates, and I think what we will see is yes we will probably need at least one booster. But I think Coronavirus, or SARS-Cov2 , is going to play out as more similar say, to a virus like HIV, where most of the mutation happens early on after spillover from animals into humans. So, the first couple of years, you'll see a much higher rate of mutation, which will then plateau.

And so, after those first couple of years, I don't think we're going to see as much of a need for boosters. So maybe we'll need one booster or maybe we'll need a couple, but I don't think this is something where for the rest of our lives we're looking at yearly booster shots.

Meghan: That's helpful. Thank you. Here's a sort of general question with a couple of specifics. So a lot of the common vaccine misconceptions surround proving a negative or disproving an unprovable hypothesis like altering your DNA, or microchips ,or turning people into zombies.

So do you have any suggestions for debunking those types of concerns? When there isn't science to prove something, perhaps, because there's no scientific need to conduct such a study. How do you recommend approaching those sort of situations? I think the one thing that I'll highlight, again, is that truth sandwich, that I mentioned before. So I think it's important to address all misconceptions you know whether they're there based on any merit or or not, and you could use that truth sandwich to provide key pieces of information. I think that there's a lot of bad information out there. In fact, one really great website that I often tell folks to go to the World Health Organization has a page dedicated to debunking so many different myths.

And I think it's like, know, at least 40, 50 already on there. And it provides some of those key facts to some of the commonly heard myths and things that are unproven hypothesis, as you mentioned. So it has all that information, and it provides key facts on them.

Meghan: Great, that's helpful, so that truth sandwich. And I'm sure there are resources in your pamphlets that can help with some of that data, And we can certainly pull together some additional information. So, there are quite a few questions that we will follow up with our presenters when we end the webinar. So, thank you very much, Syra and Celine, for this information. It was timely, extremely valuable to our stakeholders. I know I can tell by the questions that we got. So, this is all the time we have for today. Again, this webinar will be archived and posted on our website at asprtracie.hhs.gov, and we do want your candid feedback on today's webinar and how ASPR TRACIE can better serve your needs going forward. To that end, we've started a few threads on the ASPR TRACIE Information Exchange to continue the conversation from today, and to get your feedback on future webinar topics. On behalf of the ASPR TRACIE team, thanks for joining and have a great day!