



Multiple Sclerosis

Association of America

## Webinar Transcript

**Program Title:** “What You Need to Know About COVID-19 and MS: Program 8”

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**Presenters:** Barry Hendin, MD and Carrie Hersh, DO, MSc, FAAN

**MSAA Host:** Peter Damiri

Peter Damiri: Hello, and welcome to the Multiple Sclerosis Association of America’s Live Webinar: What You Need to Know About COVID-19 and MS: Program 8. I’m Peter Damiri, Vice President of Programs and Services for MSAA, and your host for tonight’s program.

On behalf of MSAA and our presenters, we greatly appreciate the opportunity to keep you updated on this very important topic and please know that we hope you and your family are staying safe and healthy in these challenging times.

MSAA is extremely honored to once again welcome back our two MS expert advisors who will update us about the coronavirus pandemic and its impact on MS and answer your questions during our expanded Q&A session.

At this time, I would like to introduce our Guests Presenters, Dr. Barry Hendin and Dr. Carrie Hersh.

Dr. Barry Hendin is a practicing neurologist, MSAA’s chief medical officer and director of the MS Center of Arizona. He’s also the director of the multiple sclerosis clinic at the Banner University Medical Center, and clinical professor of neurology at the University of Arizona Medical School.

Dr. Carrie Hersh is a practicing neurologist and the chair of MSAA’s Healthcare Advisory Council. She’s an assistant professor of neurology at the Cleveland Clinic, Lou Ruvo Center for Brain Health in Las Vegas, Nevada.

Thank you both again for being here tonight and providing us with such timely and important information about COVID-19 and the new FDA-approved vaccine.

Barry Hendin: Peter, Dr. Hersh and I are delighted to join you once again for what we believe is a very important topic and a very important ability to talk with the MS communities throughout the country.

Peter Damiri: Great. Thank you Dr. Hendin. Before we begin, I want to take this opportunity to thank our supporters, Bristol Myers Squibb, EMD Serono, Genentech, Novartis, and Sanofi Genzyme, for making this webinar series possible.

As you may know MSAA is a national nonprofit organization dedicated to improving lives today for the MS community. Listed here are just some of the many free programs available to the MS community including our COVID-19 and MS Pathfinder Tool which provides ongoing updates and resources on the coronavirus pandemic.

Also please note that MSAA has expanded our helpline hours to 8:00 p.m. Eastern between Mondays and Thursdays. To learn more please visit [mysaa.org](http://mysaa.org) or give us a call at 1-800-532-7667. And lastly please note tonight's webinar will be archived on our website within a few days.

For the Q&A session please type your questions into the chat box on the screen and we'll address them at the end of the presentation. Also, if you're having any technical issues please type those concerns into the chat box as well.

So at this time I would like to turn the program over to Dr. Barry Hendin to kick off tonight's presentation.

Barry Hendin: Thank you again Peter. I -- you'll see the first slide is "Summary of Key Points to Remember" and what is notable about this first slide is that much of this we began saying early in 2020 when we learned about the virus so that some of the things we'll be talking about are unchanged, that is how we should as a community try to reduce the risk of COVID-19.

Some of course is rapidly changing and that's the reason why had updates, Dr. Hersh and I have joined each other and you all with updates because although on one hand we are learning about a new virus - that new viruses mutating rapidly therefore our need to keep up to date is really front and center, we're very aware of it.

So what are the things that we've been saying all along, that COVID-19, the coronavirus is a highly contagious and potentially serious inflammatory disorder that targets the respiratory system but a lot of other systems are involved and that means -- and that includes the central nervous system and peripheral nervous system so patients who have gotten COVID-19 have also suffered some other -- some other complications and they've included strokes and seizures and loss of sense of smell and taste, so it's a respiratory focus but involve multiple systems.

The thing that has not changed at all is how do we as a community reduce the risk of infection. It is wear a mask, wash your hands, practice social distancing, and maintain wellness and good health and that means this virus is particularly difficult when there are comorbidities and when those comorbidities are poorly controlled. So uncontrolled diabetes, cigarette smoking, obesity, all those things that it just reminds us of for and need not just to wear a mask, wash your hands, practice social distancing, but really to focus on our own good health habits, our own wellness habits.

Remember this is the best time to stop smoking if you do; to get your weight under control; to begin a regular exercise program; to maintain emotional wellness, et cetera, et cetera.

So we are aware that having MS in and of itself does not create a greater risk for COVID-19. The risk factors relate to comorbidities and age so if there is a high level of disability in MS or other conditions - that creates risks. Aging in and of itself creates risk, 60-year-olds are greater risks than the 50-year-olds; 70-year-olds, greater risk than 60-year-olds; 80s and 70s, et cetera, et cetera.

And the other comorbidities that we always watch are chronic renal disease, chronic heart disease, lung disease, diabetes, cancer. Don't forget those that are controllable and that mean things like obesity and smoking.

We've said all along that disease modifying therapies shouldn't be stopped or changed unless it's clinically appropriate after discussion with your MS clinician. Partly it reminds us that we should be collaboratively thinking about this clinician and person with MS.

But we also know that for some of the disease modifying therapies, stopping the medication actually runs the risk of a rebound or increase in inflammatory reaction or relapses.

So currently we have two FDA-approved and available vaccines for COVID-19. One from Pfizer. One from Moderna. As you probably know we have others on the way, but this is the current state of affairs so all these slides except the last, I've been saying in each of the previous sessions that the very hopeful new addition is that we currently have two FDA-approved and available vaccines for COVID-19.

I'll now turn to some questions that we have, that have been written in for Dr. Hersh and for me and we'll begin to answer those and then make ourselves available for those questions which you may put into the chat box. So Dr. Hersh, the first question is for you.

Carrie Hersh: Sure. Thank you so much Dr. Hendin. And first I would like to thank the MSAA, again for hosting such a timely and informative program for all of our listeners. I would also like to thank you for your time and attention this evening.

I'm hoping that this will be a pragmatic and useful array of information that will help with decision-making. And of course, Dr. Hendin and I look forward to answering your questions at the end of the program, so please feel free to continue typing in your questions for us.

I see some are already starting to come in. So the first question, "Is it safe for a person with MS to take one of the available COVID-19 vaccines?"

And overall the simple answer is, “Yes.” We do feel in the MS community that it is safe for someone who is living with MS to take one of the two available vaccines which are mRNA vaccines, the Pfizer vaccine and the Moderna vaccine.

Neither of the vaccines contain live virus and they will not cause COVID-19 disease. And the vaccines are not likely to trigger an MS relapse or to worsen chronic MS symptoms. And we feel that the risk of getting COVID-19 far outweighs any risks of having an MS relapse from the vaccine.

But it is important to remember that any vaccine can cause side effects and this is a natural reaction to the immune response starting to develop a reaction to the vaccination itself, it's building an immune response which is what we want.

Some of those side effects can include local injection site reactions; an arm pain; and it can include mild headaches; mild fevers; chills; and every now and then it can also cause some side effects that include flu-like symptoms in addition to that.

Any kind of fever can make MS symptoms feel worse temporarily but we do anticipate that any of those pre-existing MS symptoms that may temporarily worsen during one of these systemic reactions to the vaccine will go away once those vaccine response symptoms resolve.

And even if you do have side effects it is important to get the second dose of the vaccine, if it is indicated to get a second vaccine which it is with the two existing available vaccines to date, in order for it to be considered fully effective. So Dr. Hendin, the next question is for you.

Barry Hendin: Sure. And I think -- Dr. Hersh, I think you've already begun to answer some of the questions that would be part of this. “How does the vaccine affect my MS?”

So I would agree entirely with what you've said and I'll probably just reiterate, there were very few MS patients in the research trials and so it's hard for us to state exactly with certainty how will the vaccine

affect my MS but the information we have so far is that exactly as Dr. Hersh said it, that is that we do not expect the vaccine to worsen a person's MS or to cause any exacerbation or relapse in MS.

And so we do not specifically believe based on the limited available evidence that it will affect your MS in any permanent way.

On the other hand, number one, as Dr. Hersh said, if you have a fever associated with the injection, first or second, a fever will do what's often called a "pseudo-exacerbation," that is while your temperature is up your MS symptoms may heighten, when your temperature goes back down to normal, those will go away.

The second thing is that to the extent that the vaccination produces aches and pains and the flu-like feelings, it may be just added onto your MS symptoms just as a second layer would be added on if you had the flu.

I will tell you, I told Dr. Hersh that she and I are in an unusual way vaccine experts, because Dr. Hersh has had her first vaccine and I've had my first and second vaccination. For a lot of people the first vaccination is pretty simple although some will have aches and maybe a fever. The second one can be a little more difficult but again only in a short-term basis.

So can it make you feel a little flu-ish or off in the first 24 hours, the first vaccine? "Yes." The second vaccine? "A little more likely." But it will not affect the long-term course of your MS. Dr. Hersh, the next question I think is yours.

Carrie Hersh: Okay. Thank you. So the next question, "Will different MS DMT affect the vaccine's effectiveness?"

So this is a very common question that is coming to us in the clinic and we felt that it would be highly important to address that during tonight's presentation.

So if you have been listening to our webinars throughout the course of the middle of 2020 up until recently, Dr. Hendin and I have both been communicating that continuing the disease modifying therapies for long-term MS outcomes is highly encouraged and to not stop any disease modifying therapies unless

this is a decision that is made between you and your healthcare provider because of individualized reasons.

The reason for this is because stopping a disease modifying therapy can -- and if it's done abruptly, can cause severe increases in disability or a severe relapse or a new MRI lesions especially if they are certain disease modifying therapies, that if you stop them abruptly one could be more prone to rebound disease just because of the way the medicine works.

And some of those medicines include natalizumab, and some of the S1P modulators such as fingolimod, siponimod, and ozanimod.

But to answer the question at hand from what we can gather from previous studies of other vaccines and certainly these modifying therapies, getting a COVID-19 vaccine while on any disease modifying therapy is considered safe.

However, some DMTs may make the vaccine less effective but it will still provide some level of protection. And how much that response will be attenuated or lowered and whether or not this will yield a difference in clinical response we just don't know at this time.

And as Dr. Hendin and I have mentioned before, this is a very quickly and evolving environment with COVID-19 and now the vaccination responses and not only do we anticipate, we expect there will be Phase 4 clinical trials data, there will be observational studies, and there'll be registry studies looking into the biological and clinical effectiveness of mounting an appropriate COVID-19 vaccine response on certain disease modifying therapies.

And some of these therapies that we think, there may be an impact on the effectiveness include medications like the anti CD20 therapies or what we call the "B-cell depleting agents" such as ocrelizumab, ofatumumab; other medications that are global immunosuppressive therapies that we do anticipate will have an impact on the B-cell population which is important for creating antibodies; those

include cladribine and alemtuzumab, and of course rituximab is another anti CD20 B-cell depleting therapy.

So right now there may need to be some coordination in the timing of the vaccine with the timing of the disease modifying therapy dose. But right now we do not have any formal consensus guidelines that are spearheading global decision-making protocols amongst MS clinicians so this may be very well patient specific and provider specific.

And this is where we do encourage to have a conversation with your MS provider, when determining when it would be the best time to get one of the available COVID-19 vaccines, when it is made available for you.

But we do feel that with any of the disease modifying therapies there will be effectiveness. It just depends on whether or not an individual is on an immunosuppressive therapy that impacts the B-cells that lower antibody response and verify the vaccination response, how much of that may be something we need to look into.

But other disease modifying therapies like glatiramer acetate, any of the interferon betas, teriflunomide, any of the fumarates or the S1P modulators, where there is no evidence of significant lymphocyteopenia, we do not believe that there's going to be the necessity to make any changes in the timing of disease modifying therapies and coordinating the vaccine.

So if you do have any specific questions when it comes to your particular scenario, I certainly encourage you to follow up with your MS provider for specific questions. And Dr. Hendin.

Barry Hendin: Sure. This one I'll -- I can answer pretty quickly. It says, "Is one vaccine better to take than the other?" So currently we have two vaccines. They both have high levels of effectiveness and efficacy and there is no clear winner or loser between the two of them.



I certainly was -- I received one of those two. I received the Pfizer. And on the other hand would've been equally happy to have received the Moderna. We have other vaccines coming around the corner. They have slightly different mechanisms or slightly different vehicles. One of them will be a two-injection formula.

One will be a one-injection formula. There are some discussions as to whether or not we may need another additional booster at some point in time because the virus keeps him mutating, and we may want to have a booster that deals with the later mutations.

So the answers are current answers and they may change the next time Dr. Hersh and I are on the phone with you, I may be in early April, the next time that we are on the webinar with you.

The thing that I would like to say to make clear. The MSAA in conjunction with the National MS Society, and the Consortium of MS Centers has put out a statement about the vaccines and that is, "We recommend that people with MS be vaccinated."

And there should be of course be a discussion with your clinician, your healthcare provider, where some exceptions might be acknowledged and further discussions may be necessary, but the joint statement is that, "We do believe people should be vaccinated." Which vaccine you get is which one is available.

And as I was delighted to get the one that was available for me first, I would say the same for you, and that is, "take the one that becomes available." The sooner we are vaccinated the healthier the general community. Dr. Hersh.

Carrie Hersh: Okay. Thank you. So the next question, "Should I first take my vaccine or my upcoming infusion?"

So this is actually a nice segue into the question that I just answered, a couple of minutes ago. And you know, again this is a very common question that comes up in clinical practice and certainly one that deserves you know, us to be very aware of.

The simple -- the simple answer to this question is, it depends on, "When in the upcoming infusion, where in the infusion course you are, and whether or not the vaccine is readily available."

And of course it also depends on what kind of infusion this is, whether or not this is an infusion with natalizumab or we're not necessarily making any recommendations for specific timing of getting the vaccine and getting the infusion, simply because it doesn't impact a B-cell level or whether or not this is one of the anti CD20 B-cell depleting agents.

So as Dr. Hendin had mentioned, we are taking a stand in that we do feel that folks with MS should get vaccinated. And if one is being offered the opportunity to go ahead and get vaccinated, and they are within a specific time frame of being able to get the vaccine with a good window before their next infusion is due then I would say, "Yes,. It would certainly make sense to go ahead and get vaccinated."

Now with that being said we again do not have any formal guidelines when it comes to timing of getting vaccinations, when it comes to certain disease modifying therapies that we had just reviewed; the anti CD20 therapies are some of the most commonly approached you know, medications in terms of whether or not there needs to be a specific timing.

And some healthcare professionals are of the impression that there does need to be specific timing and others do not feel so.

So you know, I certainly have my own theories and anticipations based on how B-cell depleting therapies work but I certainly would encourage anyone to have that conversation with their MS provider in terms of whether or not it is an appropriate time frame to get the vaccine before their upcoming infusion, whether it is a B-cell depleting therapy or another disease modifying therapy because that particular provider may or may not have particular knowledge in terms of the person's immune system and then of course any other comorbidities that may increase their desire for the individual to get vaccinated versus getting the infusion. So it really just depends on the individual.

In my clinical practice you know, I would just go ahead and throw this out there, that I feel that it would probably be a good time frame to get one of the vaccines at least 12 weeks after having one of the anti CD20 therapies infused, and that would include rituximab or ocrelizumab.

And then to have the second vaccine injection no sooner than four weeks before the next infusion is due, to make sure that the person is able to mount an appropriate immune response. But like I said, there are no formal guidelines and this is based on our best clinical judgment.

Barry Hendin: So I'm going to summarize a little, and this is a little redundant but what I -- before I answer the next question, what you've heard so far simplified, might be the following. "Should you be -- if you have MS should you be vaccinated?"

The answer is, "After a discussion with your clinician," we are really advocating for "vaccination for the general community and equally for the MS community." And to the question, "Might it depend what medication you're taking as to whether or not you should be vaccinated?"

The answer is, "No." We are not -- we are recommending that people with MS be vaccinated, with rare exceptions and that -- although obviously there should be a discussion with your clinician, that we are really recommending for vaccinations: "if you've got MS;" "if you don't have MS;" "if you're taking a disease modifying therapy,;" "or not." And that's a message I want to leave you with despite the complexities, there is that simple message.

So the next question, "Can a person with MS who previously tested positive for COVID-19, still get the vaccine?" And the answer is, "Not only can they but we are recommending that people who have tested positive for COVID-19 be vaccinated."

There is a question as to when that should be done. We don't have clear-cut answers but right now the recommendations generally are, without a lot of evidence, that it might be optimal to wait a few months after you've tested positive for COVID-19 to get your vaccination.

The question that you all might ask, is, “Why would I be vaccinated, if I have already developed immunity based on having gotten COVID-19?”

The answer is, “You will have developed some immunity just from having COVID-19 but we’re not sure if the degree of that immunity, which is to say, how much immunity or how long-lasting.”

So the vaccination would really be an extra layer of protection. And I keep emphasizing, the protection is not only for you but for your community. So we’re doing two things. We’re protecting ourselves and we’re protecting others. Dr. Hersh.

Carrie Hersh: So the next question is, “Should I get the flu shot and if so do I need to wait between getting the flu and COVID-19 vaccines?”

So the simple answer is, “Yes.” It is recommended that folks who are living with MS should get the seasonal flu vaccine. These are inactivated vaccines. They will not cause an influenza infection nor will it cause MS exacerbations.

It’s considered a little bit later in the flu season but I do encourage my patients still, if they have not gotten a the seasonal flu vaccine to go ahead and get that done. The second question, is, “Whether or not there needs to be a specific amount of time in between vaccines?”

And it’s not just the seasonal flu vaccine, this is any vaccine such as the shingles vaccine or pneumonia vaccine, but the general recommendation is to wait at least two weeks in between immunizations and this comes directly from the CDC.

Barry Hendin: So the next question is, “Is it safe for me to access medical care, doctor visits, MRI, bloodwork, infusion, et cetera?” It should not surprise you that Dr. Hersh and I, talk about each of these questions before we ever address them to find out how much we agree and how much we disagree.

This one I remember Dr. Hersh's comment which was, "Please get medical care. Treat your stroke. Treat your heart. Treat your ..." So it's -- we've both agreed that one of the things that happened in America, in addition to the problems that have occurred due to COVID-19 infection itself has been an increase in other medical problems which have been unattended, the strokes, the heart attacks, et cetera, for which people have been unwilling to go to emergency rooms for the medical care for which they have been unwilling to seek follow-up, et cetera, et cetera.

So the first thing is really nothing about COVID-19 makes you immune from the rest of your medical health. It's important to pay attention to all the rest of your general medical health and that means heart, lung, liver, kidney, et cetera, et cetera, et cetera.

The next question is, "What about doctors' visits?" And I'm going to go one -- sort of one by one, doctors' visits? Interestingly for many of you and certainly in my own practice there is a hybrid so much of the care that I'm providing - I'm providing by telemedicine to reduce risk of coming into a medical facility.

I still see patients face-to-face. I still see patients on telemedicine. I find that this hybrid is one that will probably continue into the future.

I'm sure Dr. Hersh as I do have patients who are -- live a hundred or two hundred miles away or for whom getting out of the house is both a general difficulty and a risk so I have been very, very happy to be able to provide telemedicine visits, but a good medical facility will keep you safe as you visit. And that means, wear the mask, maintain social distancing, maintain good health habits when you make that visit, and expect your healthcare facility to do the exact same thing.

What about MRIs? I get MRIs as appropriate. I do admit, I asked myself before the MRI. I think a year ago or two years ago I might have more reflexively ordered the MRI.

I now still order the MRI when needed but I find myself being a little more questioning of myself and that is, "Is this particular MRI really necessary?" Bloodwork? The kind of bloodwork we get to make sure that the medicines were using are not creating increased risks, remain necessary.

I think of JC virus-testing when people are on Tysabri or liver testing when they're on Aubagio or CBCs when they're on fumarates or B-cell -- or immunoglobulins when they're on B-cell depleting therapies. Those things are how we keep you safe. And so to not do them, really may change the risk of your medication. Don't avoid doing so. Infusions? The same. And so I have been keeping people on their regular infusions, their regular bloodwork, their regular MRI, and the regular visits even though I will ask my cell on each occasion, is this in fact really necessary.

The things that you may wonder about our how do you get to the doctor visit. Most of the people in my practice get to my office, if they do have to come by car but there's a second layer of risk if they needed to take public transportation, et cetera. Remember the current advantage in telemedicine when those risks are too high. So simple answer, "Yes it's safe to accept medical care."

It's also unsafe not to access medical care, that means neurologic care and general care but keep thinking about what's necessary and what isn't and hope that your clinician will do the same. Dr. Hersh.

Carrie Hersh: All right. And I will go ahead and I will close out at least the frequently asked questions. And then we'll make sure that we get to all of your questions because I see that there are many coming in and we certainly want to address as many as we can.

So to close this out I wanted to give this more of a positive spin because this has been a highly challenging time for all of us whether or not one is living with MS.

At times if you feel isolated and it certainly can be discouraging and disheartening when you're unable to spend time with your love ones especially as we just finished up with the holiday season.

So I do want to make sure -- and I know that Dr. Hendin is a huge proponent of this, that we will certainly continue to encourage the importance of healthy living. And you know, that certainly includes physical health and it also includes mental and psychological health as well.

So we continue to stress the importance of eating healthily, that does include an anti-inflammatory diet, three square meals a day, Mediterranean-style options are nice for an anti-inflammatory nutritional regimen that certainly has had high benefits for general health but also for MS health as well.

Routine physical activity and exercise is also very important. Not only is it good for general health and MS health but it also is a releaser of endorphins which are your feel-good hormones, so making sure that you are moving about and having some form of physical activity throughout the week should certainly be stressed.

And speaking of stress, this is certainly been a very stressful time. And so I continue to encourage people to reach out, reach out to your loved ones, your family, your friends, even if it's a telephone call or you know, a face-to-face through virtual means you know, just a simple connection for a few minutes a day you know, can certainly help feel that connectedness with your love ones and it can certainly lower the feeling of isolation, that I know a lot of us have felt over the past year.

And of course a lot of this can be even more challenged by the fact that we are in the middle of winter and it's very cold out and learning how to be creative about how we can remain connected and how we can be physically active you know, without going to a gym where we may feel that the risks of COVID-19 exposure you know, may be more -- may be higher than the potential benefits.

So I would certainly encourage you to continue to live healthily, live your best lives for general health and for MS health. And if you do feel that you are continuing to struggle despite lifestyle strategies, please reach out to your healthcare provider.

There are mental health specialist who are available. There are certainly programs that are available through the MSAA, the National MS Society. And certainly do not hesitate to reach out if you feel you are continuing to struggle and need some extra care.

So with that Peter, I think we can go ahead and move on to the frequently asked questions. I think we only have 20 minutes left.

Barry Hendin: ... I might -- I might jump in if I might. Although this is a -- I'm going to let you take over, Dr. Hersh requested but I saw that there were a couple of questions that related to age. And since I may be a specialist also in age in MS, I thought I'd try to answer that a little bit.

One was the question of "age and risk of COVID-19." And the answer for that one is very clear, and that is, although COVID-19 has risk at any age there are children who have died from COVID-19 and elderly people who have survived, it's still true that the risk of mortality and the risk of hospitalization and intubation, all go up with age, particularly after 50, particularly after 60, and particularly those people who are both elderly and in confined environments like nursing homes, and so that's the first.

The second question about age, was, "Does age affect your likelihood of having a relapse?" This isn't a COVID-19 question but an age-related question, that I thought might be nice to just remind ourselves about.

Dr. Hersh and I have had this discussion on many occasions. I think we see it much same way as our general practicing community. MS is always inflammatory from before you are ever diagnosed throughout the course of your MS. MS is also always degenerative, from before you ever have your diagnosis through the course of MS.

It varies in individuals, but the question is, is the likelihood of an attack, and that is the likelihood of the inflammatory component, the same at every age. And the question is -- the inflammatory component of MS progressively diminishes in most people as they age. The power of immunity and the power of autoimmunity diminish as one ages, and so the likelihood of relapse does go down, decade by decade by decade in populations.

Every individual's a special case and so I've certainly have had people in their 60s and 70s with a relapse and people who are quieter in their youth but by and large, a newly diagnosed patient, a newly diagnosed person with MS, the younger person with MS is the most likely to have relapses and inflammation, and we treat accordingly.



As one ages the likelihood of an attack, the degree of inflammation, generally goes down and our medications should be considered accordingly. So that's an answer to a question that I wanted to dive into.

Peter, if you take over. And I think since I gave a long-winded answer, I think I'll let ...

Carrie Hersh: Actually I -- while Dr. Hendin was talking -- and I'm sure Peter will appreciate this, I found three questions that are all related to the COVID vaccine that I think that I can go ahead and tackle, one right after the other.

So I will give Peter a little bit of a break, and I'll just jump into that. So one question that I see, "Can you still get COVID after getting a shot and can you spread COVID after getting a shot?"

This is a very good question. So the way that these vaccines work, at least the ones that are already authorized on an emergency-use basis, those are the Pfizer vaccine and the Moderna vaccine. The way that the vaccines work is that there is a little piece of genetic material called mRNA that is encapsulated in a lipid vector and that gets injected into the arm as part of the vaccine.

Once that piece of genetic material is injected, it gets taken up by the host cells which are your white blood cells or lymphocytes. And within that host cell, the host cell is then able to read that little piece of genetic material and create the spike protein that actually gives the coronavirus or the COVID-19, the SARS-CoV-2 virus the virulence; those are the little spikes that you can see on the molecular picture of the virus.

Once those spike proteins are created, they then are able to lead the host, and what happens then is that a new white blood cell can grab onto it and another white blood cell can then latch onto it, learn what that looks like, and that is how the antibody response is created.

That is how the immunization process starts, where there is recognition of this new protein, and then multiple antibodies are created that are then able to recognize what that looks like so if a person is infected with that coronavirus, the host, the person, is able to mount a quicker immune response to lower the risk of actual virulence or infection.

Now that takes time, meaning that immediately after you get your injection, and you start getting some of those reactions, that means that your immune system is getting to work. That doesn't mean you're sick. That means that your immune system is starting to activate so it can provide that immune response, but it does take time.

So the simple answer to that question is, "Yes." You can actually still get sick right after you get immunized. It does take a few weeks for that immune response to work.

And then with these two mRNA vaccines that exist you need a booster shot at least three to four weeks later. Now if there's some delay because there is a delay in the vaccine roll out, that's Okay. If it's a few weeks later that's Okay, still go ahead and get your booster shots.

But yes, you can still get the coronavirus, and you can still spread COVID after getting a shot. Now how long that immunity lasts for, we still don't know. And that's the evolving process here where we're still learning about how long this immunity will last for.

But we do anticipate that there will at least be an annual booster shot that will most likely be required especially when there are more mutations, and the variants that comes to play, just like the seasonal flu vaccine.

And so that you know, that's the answer to that question in terms of whether or not someone can still get infected.

And we still don't know, with someone who does get vaccinated, whether or not they're still going to be able to pass on, if they actually do get exposed to the COVID-19, whether or not they can still pass it on to someone else.

We still don't have a clear answer to that, which is why we recommend that everyone in the household eventually does get vaccinated and to continue wearing masks and abiding by the CDC precautions to lower the exposure rates.

Barry Hendin: And Dr. Hersh, I think -- following along with that question there is one question from Karen, that is, "What if you can't get the second vaccine?"

As many of you know, the testing has really been -- at least for our current two approved medications, the testing of how much -- how effective they are, which is roughly the 95% level of effectiveness, that's based on getting both of two vaccines.

But we do know that there is significant immunizations at a lesser level than 95% even with a first vaccine so the first vaccine, as Dr. Hersh told you, not in the first few days but by 10 to 14 days later, creates a significant level of immunization which is boosted by the second.

But there is still some degree of -- a significant degree of immunization even with the single one, so some countries such as England are wondering whether or not the strategy is to vaccinate more people with fewer shots. The American experience is to go by the science and that is to try to get the second vaccine in for everybody that we can. Peter, we...

Peter Damiri: Great. Thank you both...

Barry Hendin: ...we -- Dr. Hersh and I have been so excited about answering the questions that we've left you out of our circle so what are the questions that you want us to consider?

Peter Damiri: ...Sure. Not a problem. Similar where you were combining different questions, I'll do the same because there was a question, "Is MS considered an underlying condition?" And another...

Carrie Hersh: ... "Yes. It is considered an underlying condition," but, "Yes. I did see that question and I -- and I did want to make sure that we answer that."

Peter Damiri: ...Great. And kind of Part B to that is, "Are MS patients considered a high-risk population in terms of registering for the states' vaccine phasing plan?"

Carrie Hersh: ...Yes. So yes, we get that question quite a bit because we certainly understand that you know, a lot of our folks who are coming in to see us are actually quite excited and anxious to get their vaccine.

Each state is doing things differently in terms of roll out and where they are in their rollout. Some states are still just vaccinating healthcare workers and those who are living in -- living -- assisted facilities.

And other states have already been able to move on to other populations of folks who are considered first-line workers, those who are over a certain age and have certain comorbidities.

As of today, multiple sclerosis has not been listed as a significant comorbidity that elevates the risk of COVID-19's susceptibility and this is what we have been discussing for some time now. There are other comorbidities that folks with MS can have which Dr. Hendin outlined earlier, and of course, age as well.

So having MS alone is not considered an elevated risk factor and therefore an individual may not be able to get the first vaccine until the general population.

Now of course that is pending the CDC guidelines and what they are listing as comorbidities and whether and or not they are listing being on an immunosuppression therapy as a reason to be bumped up in line for a COVID-19 vaccine.

So what I would recommend to everybody who is listening in, to make sure that they are going on to their local and state health district website to check in to see where they are in terms of vaccine rollout, what tier they are in, and what guidelines they have in place in terms of folks were living with certain conditions and uncertain immunosuppression therapies.

Barry Hendin: And Dr. Hersh, I agree entirely. So it's a good news bad news statement, a yin and a yang. The good news is that MS in and of itself does not increase risk for COVID-19, and we've been saying that consistently through the past year, so that's the good news.

The bad news is that that may mean that people with MS have to wait a bit longer to get their immunizations, whereas I would prefer anybody be able to be moved earlier in line.

It's been my experience that people with MS in my practice have been almost -- to a person, more fastidious about mask wearing, hand washing, social distancing, working from home when possible et cetera. Although we say that MS does not increase risk in and of itself, MS with high level of disability creates the risk because of the disability.

MS, as you age, creates risk because you're aging and that is to say the risk goes up with age. It does appear that the greatest risks aren't the MS, aren't the immunosuppression but the comorbidities and age which is why we pay so much attention to general health and trying to maintain wellness and exercise, healthy diet, healthy weight, stopping smoking, et cetera.

Peter Damiri: Great. Thank you. Another question, "Does COVID-19 change of course or progression of MS?"

Barry Hendin: And I can answer that, simply, "There is no evidence that COVID-19 changes the course of MS." Now the thing that -- many of you have been aware of is what's called the "long-haul syndrome," and that is, there are people who have MS, sometimes mild MS, sometimes more severe MS, who really do have a particularly prolonged recovery and some of the symptoms they're having mirror the symptoms of MS.

And so if you said, “What is a long-haul syndrome and what are the enduring months of symptomatology after you’ve recovered from COVID-19?” It’s often brain fog or cognitizant symptoms. It’s often fatigue.

It’s sometimes a sense of just malaise, not feeling well. If you’re already not feeling well because of MS it can compound those symptoms but simply stated, “COVID-19 does not appear to either cause MS, cause MS attacks, or change the progression of MS in individuals.”

Peter Damiri: Okay. Great. I’ll ask one more question, and then I’ll defer to Dr. Hendin and Dr. Hersh who are monitoring the chat box to see if any -- more particular questions jumps out of them that they would like to pose as we are coming up against the hour. In terms of -- has there been any information on pediatric MS and COVID-19?

Barry Hendin: Dr. Hersh, would you like to jump in and I’ll be happy to join you if not?

Carrie Hersh: Sure. No. That’s -- that’s a great question. So just like the you know, the general data on the general population, on the pediatric population with COVID-19 and with COVID vaccination, certainly are limited including in the MS population as well.

Right now we don’t have any data to report on the effectiveness of vaccination in the pediatric population as of yet but we certainly are attempting to gather information on the pediatric MS population, in all kinds of different registries.

So off the top of my head I don’t have any special pediatric data to report. I know that we are trying to collect data through not only registration in the United States but also in Europe as well. But I’m not aware of any special pediatric MS data, today.

Peter Damiri: Great. Thank you. So either Dr. Hendin and Dr. Hersh, did you see any remaining questions in the chat box that you wanted to pose?

Barry Hendin: I -- rather than answer your question, I -- maybe a comment that I would like to make and an overview.

First is, how delighted I am to see such a wide participation for this MSAA webinar. It -- it's something -- this subject is one that have caught the attention of the nation and people who don't have MS and people who do have MS.

I'm also delighted that we are learning more. Delighted that for the first time we have a vaccine available. We didn't when we began talking.

What I began saying when we had our first webinar and I would say again - we're still learning. This is a problem which has evolved over the course of one year. We mostly have gotten it right. Most of the things we were saying a year ago, are true today but we're still learning and developing better strategies for dealing with this unexpected pandemic.

But I can't tell you how delighted I am to be paired up with Dr. Hersh, and with you Peter, to be able to talk about this in a forum, what we know today, while we're still puzzled about the future. And delighted that we'll be doing this again in a few months.

Peter Damiri: Great. Thank you. Dr. Hersh?

Carrie Hersh: No. I echo Dr. Hendin's sentiments. And again I continue to thank that the MSAA for the opportunity to get this important and timely information out to the public.

You know, there are still a lot of unanswered questions. I know that you know, there can be frustration you know, regarding the fact that we still don't have certain answers yet to give.

But I do want to preface that by saying that there are many an effort to answer some of these questions in terms of the effectiveness of the COVID-19 vaccines in certain populations of folks on disease modifying therapies and classes of disease modifying therapies.

How long does that immunity last for? How good is that immunity right off the bat? How many times are they going to need a vaccine in the future? How many boosters are they going to need this year with new variants and mutations coming into play?

And what are stats -- more stats when it comes to the MS population, COVID-19 and vaccines. And I do want to provide an uplifting message to everyone on the line that efforts are in place. There are many large databases that are currently being compiled so that way we can answer these questions.

And hopefully when we meet together again in April, just like today when Dr. Hendin and I were able to provide information on two vaccines, hopefully when we come back together not only will we be able to provide more information on the existing vaccines but also new vaccines and maybe some new data as it pertains to the MS community. So I will say stay tuned.

Peter Damiri: That's a great message. And thank you both so much. Really appreciate it. Well that does conclude tonight's webinar which will be archived to our website within a few days.

So I would once again like to thank Dr. Barry Hendin and Dr. Carrie Hersh for keeping us updated on this very important issue. And thank our funding partners Bristol Myers Squibb, EMD Serono, Genentech, Novartis, and Sanofi Genzyme, for supporting this webinar series.

Also we ask you to take a brief survey that is coming up next. Your feedback is important to us and will help us secure funding for future programs. So on behalf of MSAA, Dr. Hendin and Dr. Hersh, thank you so much for watching. And please stay safe.