Covid-19 Vaccines - What Multiple Myeloma Patients Should Know?

Multiple myeloma patients are often immunosuppressed for months following treatments such as maintenance therapies, immunosuppressive drugs, hematopoietic cell transplant (HCT) and CAR-T therapies. They are at higher risk for serious complications from the SARS-CoV-2 virus leading to hospitalizations and ICU admissions. There is no data available on the efficacy and safety of the currently available vaccines in this population and the myeloma patient community is confused whether they should or should not get vaccinated.

However, the American Society of Transplantation and Cellular Therapy (ASTCT) and the American Society of Hematology (ASH) supports that this vulnerable population of patients should be prioritized to be vaccinated as early as possible along with their caregivers when vaccine supply permits. We are talking to infectious disease expert Dr Zainab Shahid of Levine Cancer Institute / Carolinas Healthcare System to understand the various nuances around Covid19 vaccinations in multiple myeloma patients and learn more about the appropriate time of administration.

Full Transcript:

Shweta Mishra: Hello everyone and welcome to Cure Talks. I'm Shweta Mishra and today we are discussing the Nuances of Covid-19 vaccines in multiple myeloma patients with Dr. Zainab Shahid who was a member of the team that helped develop the covid-19 guidelines. Dr. Shahid is an Infectious Disease Specialist, Medical Director of Bone Marrow Transplant Infectious Diseases at Levine Cancer Institute and Clinical Associate Professor of Medicine at University of North Carolina, Chapel Hill. Joining us on the panel are myeloma patient experts Gary Peterson, Jack Aiello and Cynthia Chmielewski. It's my pleasure to welcome you all to Cure Talks Dr. Shahid, Gary, Jack and Cindy, thank you for being here on the panel today. We will be taking in questions at the end of the discussion based on the availability of time. So, please send in your questions on the talk page on curetalks.com or on the YouTube chat window or you can also email them to shweta@trialx.com. To begin with the discussion, Dr. Shahid it will be great if you could begin by giving us a very brief overview of the technology used and the dosage regimen of the available and soon to be available covid-19 vaccines.

Dr. Zainab Shahid: Totally Shweta. Good evening, good afternoon, good morning, everybody. It's a pleasure to be here being invited with such esteemed panellists. I'll start with just very basic three mechanisms, which are currently very close to being approved or are already approved for the mechanism of action for the vaccine which are currently available. We all know about the messenger RNA technique,

where what is done is that a messenger RNA is injected into the body. It is like a code that goes into the host which is the recipient of the vaccine and generates proteins using the host machinery to generate protein just like the virus. Currently the protein that has been utilized for this decoding is the spike protein of the Coronavirus. And so, the Moderna and the Pfizer vaccines are the two vaccines which are already approved under emergency use authorization in the US and being administered. That's one mechanism of action. We know that they're safe. This technique has been investigated actually for decades. There are other vaccines such as___vaccine that have been designed and being studied. So, it's been studying this technique. However, we were lucky that this was utilized for the SARS Covid-II virus and it is pretty safe. The other two important mechanisms, which are very close to being approved would be the vector vaccine. What happens is that you have a vehicle which is the adenovirus, that takes the gene coding of the part of a protein of the virus, that combination goes inside the human body and then the vector which carries the code is taken inside the cells. The vector allows entry into the cells and then that gene, that code has a particular protein, is coded by the human body and then the immunity is generated. So, AstraZeneca is the vaccine which has been used for this and then also the Johnson and Johnson, which hopefully will be approved by the end of this week is made with the vector technology. And lastly would be what we called a protein conjugate, meaning you have a protein and then you also have a protein of the virus and something that is attached to the virus protein and is given to the human body and when it is identified the human body generates immunity against that protein. So, these are the major three mechanisms which are being utilized amongst others.

Shweta Mishra: Right. Thank you so much for that comprehensive overview doctor and I have read that the timing of vaccination is of great importance while planning to vaccinate myeloma patients. So, we have gotten quite a few questions from the audience that are asking about the timing of vaccinations. So, I'll read a couple of them to you so that you can answer it collectively. So, the first one says should maintenance therapy of by weekly Velcade injections be withheld before or after two vaccine injections. I have seen information suggesting not to have maintenance therapy until after the second vaccine is received, please advise? And the second one talks on the same lines about revlimid maintenance therapy. So, if you can answer those.

Dr. Zainab Shahid: Certainly. So, this has obviously been a very important discussion because all myeloma patients are very much concerned if they do receive the vaccine would there be benefit and what would be the best time to do so. I can tell you that no myeloma patient is the same. They're all at the different stages of their treatment. There are different durations and the treatments. A lot of timing of the vaccine is also dictated by states when it becomes available. So, there has been no would say consensus because certain people would say it's better to hold but can you really do that giving what the timing of the vaccine would become available. Because that's not dictated by many medical centres is dictated by the state. You have to get the appointments. So, there is no right answer to this if we are able to hold and if they're in a discussion between the patient and the physician that it is safe to hold therapy, I think we can and if it is believed that we just don't get go around the cycle, it is important to continue chemotherapy and it is also important to get the vaccine. I think that we should proceed while they're on maintenance. So, there is no right or wrong. We do know that the current vaccines, the messenger RNA vaccines are good vaccines. They're very immunogenic, meaning that they would produce a good response and we hope that they can do so in our immunocompromised multiple myeloma patients as well. So, I can give you one clear answer, it has to be the discussion between the patient and the physician but either approaches are fine. And for the revlimid like that the 21 Day cycle patients, it is also recommended if possible, you can give the vaccine in the off week. However, it may not be possible each time. So, should we not get the vaccine. I think it is okay to get the vaccine at any point at that time. So, it's going to be a very tailored, individualized approach knowing that overall at any time the vaccine can be given, better to be not on chemotherapy. But if you are, it's fine. I hope that helps.

Shweta Mishra: Absolutely. Yeah, so it has to be an individualized approach. That's what you said Doctor. So, I will read out the next question which is again on the same lines, timing of vaccination and it relates to Stem Cell harvesting. So, the person says I'm scheduled to have my first Covid vaccine on Feb 28 and my second on March 20th, and I'm having my stem cells harvested for freezing on March 11, 12 and 13. I'll be

taking zarxio and mozobil on March 10, 11 and 12 and my doctors think that it is okay to take the vaccine. Should I be concerned? And he or she also says that I've been off chemotherapy since January 27th, and I remain to do so until after the harvest. So, if I do everything as planned how soon can I start treatment again?

Dr. Zainab Shahid: So, there is no contraindication or in this clinical particular story in my opinion there's nothing holding or their patient should be able to get the vaccine. There is no reason not to get the vaccine. Now again, I would say treatments are so individualized maybe it is important for the patient to be on treatment. Then that patient should have the discussion with their physician how important it is to continue chemotherapy after the harvest. So, I do not know the stage of their multiple myeloma, what risk factor do they have, what is high risk myeloma, low risk myeloma, how important it is to receive chemo before they get to transplant. So, there are so many unknown scenarios. But as an overall it is okay to receive the vaccine with the timelines that is described here. And the Harvest shouldn't be interfering with the vaccine or vice versa.

Shweta Mishra: Sure, thank you doctor. With that I will hand it over to Gary. Gary, the floor is all yours. Go ahead.

Gary Peterson: Thank you very much and doctor thank you so much for talking about one of the most troubling things that are confronting myeloma patients today. And because we know based on some information that I've seen that we are probably one of the very highest risk groups meaning if we get covid, we have a part of 33 % chances of not living through the episode. So, obviously things like the vaccine are very very important to us. Now you talked about whether we should or shouldn't get the vaccine and it's pretty much that you along with many other doctors including Dr. Fauci that we should get it because any immunity is better than none at all, which is kind of good. But given that, is there any evidence that myeloma patients can obtain immunity and that's during treatment, after treatment, several years after treatment, is there any evidence? I'll preface it by saying that I know that and I mentioned it to you before that Johns Hopkins just started a study where they're testing after the first shot, after the second shot and then later to see whether or not there are robust anti bodies developed in those patients. So, I ask you is there any evidence, have you witnessed a robust response from the vaccine today?

Dr. Zainab Shahid: So, the evidence for specifically for multiple myeloma patients is being generated as just as you mentioned the Hopkins study and there are other institutions which are developing protocols to test antibodies after the vaccine. We know that the antibody data that we currently have exists only in mostly healthy individuals of different ages based on the studies that got this UA approval. So, it is important for us to understand that we are generating evidence as we are receiving the vaccine. I cannot go to a single study to this day that would say this is how a multiple myeloma responds. So, there are two important things as we measure levels in these patients as they get the vaccine, it will be also very important to interpret what that level means, at what level of immunity do we really have protection from the infection. So, there is much to be known, these are exciting times. What I can tell you is what I really recommend even after the vaccine: make sure hand hygiene, social distancing and face masking are very important because we do not know for very vulnerable multiple myeloma immunocompromised patients what immunity means, what vaccine efficacy means. So, while we are big advocates of vaccine and immunocompromised patients at the same time protection with these measures is also very important.

Gary Peterson: Well, thank you doctor. And the other thing that I think is important to us is in the case of the flu virus for example, they found out that older adults need a mega shot I guess or something that has far more of the bigger dose or I don't know exactly what the thought is there, but they decided that because for immunocompromised people at least with respect to the age that they have to modify the delivery and the dosage for flu. You see the same kind of thing might be required for covid-19?

Dr. Zainab Shahid: It's a very good question because as we get to know more about the responses in immunocompromised patients and also we also have to take into account the fact that there could be some mutations within the virus that may require the virus components be change in the near future, we do not

know. So, I do believe that there is going to be some form of revaccination as we know when the immunity actually wanes off. So, we would never know from the clinical trial patients only because everybody who was participating in the clinical trial on the placebo arm actually got the vaccine afterwards. So, it would be checking levels thereafter and collecting real-world data, which is of so importance to us. So, I better understand how soon reimmunization would be required. Is it every year, every two years, every six months, do we know boosters or do we need to change the ingredients of the vaccines just like influenza.

Gary Peterson: Thanks again. So, given that I think that what I read if we're looking at somehow solving this issue, it seems like 500,000 people have now died from this which is more people than somebody said that have died in the military action in World War I, World War II and the Korean conflict which is beyond belief. And the question is how do you stop the deaths, right? That would be the important thing. I mean that's probably the most important thing you want people to quit dying. And in the UK, they have a nationalized health system, in that system they've now determined that people who died from covid-19, 96% of those people have to have a pre-existing condition, and given that only than 4% or 5% are of the patients which don't have a pre-consisting condition died. It looks like the target population, if you want to eliminate 95% of all deaths, is that particular group of people. Now, I know there are four examples of at least allowing people 65 or older but only probably 50% or so though that group has a pre-existing condition. So, it seems like in some cases we might be over killing that population on the other hand, those that have pre-existing conditions that might be 50, might be far more likely to die. So, I guess my question then is if this is so important and we can get control of this virus by stopping the deaths and the deaths are with people with pre-existing conditions, I'd say why the HE double hockey sticks, are we doing that like they happen to be doing that all in one place that's in San Diego where they are looking at people over 65 with pre-existing conditions. So, that would be my question. Sorry for the long.

Dr. Zainab Shahid: No, it's a very important question to be asked and also is of high impact meaning we can achieve more by targeting the most vulnerable. So, this speaks two things: number one is decreasing the spread in the community because everybody lives in the community. Number two is vaccinating the people number one who spread the virus number two who have adverse outcomes in this. So, I think the so far I heard it has been that each state has had their own way of distributing the vaccine. For example, in the state of North Carolina, we already vaccine 65 and above we started with 75 and above and health care workers. So, it has been a different state wide approach and the distribution of the vaccine has been handled by the state and we are for example as a healthcare system following the mandate. So, it would be if we can just vaccinate quicker the more people with more before morbid conditions, I think it would have a very high impact in preventing it. The only thing is that different states have done it differently and I think it depends on the supply, development of the resources that they invest in in trying to vaccinate because vaccination programs also require resources. And then also what's interesting what we have found in our institution is the optic. So, no matter how much you want to offer the vaccine that act optic started only at 30% and then went upto 40%, then up to 50%, so it's been a complex problem. It's not as simple as a vaccine we saw offered was an optic by people as well because of some of the misinformation out there. So, I hope there is hope I think we're closer. I do believe that more and more people are vaccinating platforms such as these we are speaking of educating more. I think it will get better for sure. Yes, but I do believe that 500,000 is a staggering number.

Gary Peterson: I've got a call from one of the people that follow my website and he says my wife is stage IV in multiple myeloma under treatment and she is like 65 years old and he can't get her vaccinated because it's 75 and over and he's trying but he can't get it done and he's asking me what to do. And I said I understand I'd be going crazy.

Dr. Zainab Shahid: In this scenario looking at the state where they are living and their website would be the most information that they would be able to get and we have sometimes reached out to the representative state, representative we have done that where we are trying to get vaccinations for our household members. The best way to protect immunocompromised patients as old is to build immunity rings around them with the household members being vaccinated. So, speaking up, reaching out, trying to speak to a representative would be another way that they can advocate for that person to be vaccinated.

Gary Peterson: Why don't they answer my emails?

Dr. Zainab Shahid: I do believe that the State Health Department would be the best. That's what we are approaching. We are reaching out to the local State Health Departments.

Gary Peterson: Okay. Thank you so much doctor. I think it's Jack, are you up?

Jack Aiello: Dr. Shahid first of all, it's very nice meeting you virtually and I appreciate you are taking the time to be part of this conversation. When you began you talked about the different mechanisms of actions and while I don't understand them completely I keep hearing the Moderna and Pfizer vaccines which had the same mechanism of action, don't prevent one from getting the disease, but rather reduce the impact, the effects of the disease. First of all, I want to clarify is that true and then secondly are the others' mechanisms of action meant to eliminate or reduce the ability to get the disease?

Dr. Zainab Shahid: So definitely, it's a very good question and so there is one number: does it decrease the acquisition of virus, number two doesn't decrease the acquisition of symptomatic illness. So, the studies that were designed were not designed to study the acquisition of viruses meaning people did not get tested till they have the symptoms. So, what it means is that we don't have data to say that it decreases the acquisition of viruses. We just don't know, and so it does all the studies have been geared in the pandemic setting to look at the morbidity or mortality as opposed to the acquisition of virus and subsequent morbidity and mortality. I do believe that there is going to be studies designed, there was some published data from moderna that did decrease the acquisition. But obviously those studies weren't powered or designed to study it. So, I think there would be more information in the future. We just can't say anything without the presence of evidence.

Jack Aiello: Got it. Do you expect the other trials for the other vaccines to show anything different in terms of acquisition?

Dr. Zainab Shahid: The trials that I know that currently are in Phase II or Phase III or close to aren't designed but obviously I haven't looked at each individual protocol. I know that Johnson & Johnson and then even Novavax which are currently being there while Johnson & Johnson is close to approval. Novavax is being done, they are only testing when symptoms occur, so they're not doing swabs on asymptomatic patients. So, we would never know if the acquisition of infection was decreased because there's so many resources that it requires so much money. And then there is this pressure to look at the high impact morbidity and mortality, but I do believe that there will be studies in the near future because obviously with this data, this huge question came up because that would take us away from not wearing a mask and not getting all this virus within the community, but I do believe we will know in the future but not currently what is being presented in the near future.

Jack Aiello: Thank you and in your answer to one of the questions that came in from the listeners, I think you answered one of my questions almost completely in terms of dosage adjustments, when you should get the vaccine. Except as it relates to transplant, I have heard that if you get a transplant, you should wait a couple months afterwards before getting a vaccine. Can you confirm or deny that?

Dr. Zainab Shahid: So, we looked at the data extensively and produced the American side of transplant and cellular therapy and American Society of hematology guideline. We recommend receiving the Covid vaccine three months after the transplant that would be the earliest that one should receive because at that time we believed that the immune system had recovered enough to mount a good immune response to the vaccine. And so those are the guidelines. Now, there will be studies in the near future, we are discussing different platforms where you can actually study the immune response post transplant, so there will be more data forthcoming in a year or so or in six months or so as people receive vaccines.

Jack Aiello: And my last question has to do with the various institutes like John Hopkins, and I know UCSF or IMR are doing their studies of antibodies after receiving the vaccine for myeloma patients. One, are they

sharing data with each other and two does the study include, I suspect it does information on the treatment the patient was on during the time of the vaccine?

Dr. Zainab Shahid: I will answer the second part of the question. I do believe that when the databases are created, they are created in context of the treatment stages. The multiple model must stage in treatment that is being done and I can tell you what one thing we have learned with covid-19 especially in cancer patients is that sharing data is the biggest power that we could use so that we can benefit many. So, I cannot imagine anybody not sharing their data as it becomes available because I think we can tweak the timing then we can also tweak to see if they need more doses. So, there is a lot that will be understood by these studies and I'm sure that the institutions will be sharing these data.

Jack Aiello: Thank you very much. I appreciate it. I will turn it over to Cindy.

Cynthia Chmielewski: Hi, Dr. Shahid and welcome. And I guess we talk way back in the beginning of this virus when we were just wondering how we should protect ourselves. There was no vaccine. So, it's nice to now talk about the vaccine and my first question was some patients are concerned that after they get the vaccine, they really aren't experiencing any side effects. They're not getting a headache or anything, does that mean that the vaccine is not working, do side effects equal response?

Dr. Zainab Shahid: When you look at the trials that are presented and look at the incidence of side effects, they're not 100%. But we do know that they are anywhere between 50 to 60 depending on what side effects that we are looking at and we know that for example efficacy is more than 90% in both the vaccines after 95 with Pfizer. So, the presence of adverse events or side effects after the vaccine does not translate into immunity or your body immune response. So, you're right, so I got this question so many times already and there is this conception that it means that you have to have side effects, which is probably not true.

Cynthia Chmielewski: Okay. Well that's good to hear since I didn't have many side effects. And the next question about the vaccine is does the Covid vaccine or could the Covid vaccine impact any of your myeloma act labs? For example, if you got the vaccine and right after had your light chain drawn, could they be elevated unusually just because the virus is working and also in that respect, could you talk about the vaccine and women? I think I read that women should not be getting mammograms right around the administration of the vaccine because it may involve some of the lymph nodes. So, any insight you could give us on those areas?

Dr. Zainab Shahid: Happy to, it's a very good question because we do come across in our inpatient setting with this scenario. I do believe that after the covid vaccine one may and there is data unlocking may experience an increase in the inflammation in the body, not everybody. Maybe a selected few people who have an inflammatory response. One of the side effects is actually injection side irritation and some irritation of the lymph nodes on that side of the body.Outside of those rare scenarios, I do not believe that the multiple myeloma, specific multiple myeloma labs will be affected and I also believe that when you're looking at mammograms and mammograms look at obviously lymph nodes, but the basic thing that they look at is breast tissue. I do not believe there would be impact on the breast tissue. Outside if somebody has experienced lymphadenopathy that might show up and could be misread or misrepresented did but as a rule, I do not suspect that it would interfere in either of the testing.

Cynthia Chmielewski: Okay, good to know that too. Now you might have answered this question when you were speaking to Jack, but I wasn't quite getting everything you were saying so I'm going to ask it again. Could you explain what like viral load is and can it be measured and how is it measured and if someone was diagnosed with covid, if they had a lower viral load doesn't mean they're less sick and then would they not spread the disease as quickly and finally then would having a Covid vaccine lower your viral load if he got the virus, so anything about viral load to make me understand it a little bit better?

Dr. Zainab Shahid: Definitely. It's a great question and I believe that there is not a lot for me to tell you only because we don't have any FDA approved tests that actually look at viral load for SARS Covid II. Viral load

means the amount of virus in any given specimen, in a given amount of specimen for example per ML, per amount how much virus is fabricating in a given tissue. We do know that the SARS Covid II can be present obviously in the respiratory tract but for sicker patient inside and when this studies were performed in academic settings, we know that the bars can be president the heart, the brain, the lung every tissue and there are ways to quantify the virus which is called the virus load but there are no standards for it. What does high viral load mean versus a low viral load mean. We do know that the amount of virus can be present in asymptomatic individuals similar to the symptomatic individuals. These are studies which are done looking at the respiratory samples. What it means, do we believe that the viral load would be higher in a sicker and hospitalised patient, we do believe but we haven't proven that yet because there are no standard testing that is available in the outpatient setting or in the inpatient setting. So, we're really learning much more about what we called the kinetics of the virus, how it gets acquired, how much it replicates when we actually get rid of it. There is some data around shedding meaning just the presence of viruses in the DNA. There is more data around how long we can shut the virus, but what is the quantity of the virus, it is still being studied and there's nothing standard. So, we would believe based on what has been published people with the low viral load may be less infectious, but it may not translate into sickness. I wish it is my one of the dreams are Covid that I can actually test people, so that we can cater antiviral treatment based on the amount of virus, but we're not quite there yet.

Cynthia Chmielewski: Okay, they were my questions, but I do have another if there's no other questions.

Shweta Mishra: Yeah, go ahead Cindy.

Cynthia Chmielewski: Okay. Don't get mad at me Jack. He's like laughing like she always has questions. It's for the antibodies. Now does the amount of and obviously if you make more antibodies you have more protection, but does everybody need to make the same amount of antibodies to make protection and I make 10 and be protected but then Jack needs to make 50 to be protected or is there a like a certain threshold that you need to be protected? Does that question make sense?

Dr. Zainab Shahid: It's a wonderful question. And it is being studied. So let's put it that way there is immunity or let's say development of antibody because we do not know what amount of antibody means immunity, that is we haven't developed what we called threshold or cutoff points that after 10 means protection and below 10 does not need protection. So I just want to make sure that we understand that there are no thresholds being developed. However, we believe based on the data, that one does develop some protection after natural infection because the raids of reinfection within three months of original infections were low in-patient population. So, their immunity does develop what antibodies so they're also there's one patient that doesn't have antibodies that are multiple different kinds of antibodies that develop. So, which particular antibody to study and despite protein neutralization antibody. So, there's so many antibodies to study. So, we do not know where we would draw the line of the threshold but I do believe as we are developing studies, especially after the vaccine we would reach a level we would know that after this amount of antibodies that are being developed they would need protection from reinfection. So, great points but we're just getting there, we're not there quite yet.

Cynthia Chmielewski: Well if I make antibodies, but because I have myeloma in the way, my myeloma makes antibodies is sometimes messed up. Will the antibodies even that I made they get measured that I have antibodies be functioning antibodies or don't we know that?

Dr. Zainab Shahid: We are hoping to know that, we don't know that yet because there isn't studies that are done where we have looked at the level of the antibody and then for example, your IGG levels whether they were good and somebody got the infection, so did they really function and that would also be true for specific for covid-19 antibody. So, there's lots to be learned and especially in immunocompromised, or patients on chemotherapy, there is still much more to be learned for this and there is a lot of interest in testing antibodies because we want to know more especially in immunocompromised patients. So, we hope to study that and follow patients clinically at what level they actually get the infection. So, there's much more, there's exciting time. The good news is that we have the vaccine and the vaccine we believe works very well, and so we

hope that because it works so well, it will work well in our immunocompromised patients as well.

Gary Peterson: One question I have is well as I've gotten those shots now and as a myeloma patient we know that we can get a cold, like for me I can get a cold before I know it I'm in the hospital with ___ because we just don't have immunities. But now I've got these two shots and I'm getting a little cocky actually, as far as yeah, I may go up to a restaurant. We went out to a restaurant. We social distance and that kind of stuff now is there an issue with that can we do more things, now that we've got the shots? And Professor have you got your shots?

Dr. Zainab Shahid: I got both my vaccines.

Gary Peterson: I hope so because you got a bunch of covid sneaking up on you there in the background.

Dr. Zainab Shahid: Yes. I did get my vaccine but I still recommend using caution only because I do believe that the vaccine would really decrease the severity of illness in any given patient I mean if they didn't get the vaccine, I think anybody developed would be severe. I have complete believe in that based on what I have studied. However, I would still recommend all the social distancing. I still hesitate to recommend everybody to get out and be more free because when I see the level of community spread in our state at least I'm telling so it has to be in context of what's in this community. If most of the people in the community are vaccinated or the level of spread is less than 5% for example, it's a different precaution or ease that I might have said having somebody to get a readout. Compared to if somebody is having a community presence of 15% or 10 % and then it means it's still developing; the community is still being spread. And so, what immunity means for my vaccinated immunocompromised patients, I am still learning. So, I believe that it has to be a multifaceted approach rather than one person getting a vaccine and now they are protected, but I do believe that people around them and the community around them also provide a big safety net for immunocompromised patients.

Shweta Mishra: Thank you Gary, thank you Cindy, thank you Jack. Before we move on to the audience questions in the interest of time, we do have Dana Holmes, smoldering myeloma patient advocates joining us, who have joined us via telephone and she has some questions for Dr. Shahid. So, Dana if you could unmute yourself and ask your questions. I think she just dropped out. She was here waiting for us. So, I guess I'll just move on with the questions that are posted on the page and maybe she'll join back. So Dr. Shahid, there's one question that was posted on the page and it asks is it okay to take non-steroidal, anti-inflammatory drugs for pain or fever after getting the vaccination?

Dr. Zainab Shahid: There is no data that they would interfere with the production of immune response. We generally do not recommend our patients to do so as a routine unless they're becoming debilitated and they're unable to do what they need to do. So, I believe that it's okay if the symptoms require attention. Some people would say oh I'm going for the vaccine. I'm going to pop in a few more trends that we do not recommend, but we don't know any data that you cannot take any of the non-steroidal.

Shweta Mishra: Okay. I think we have Dana back. Dana, could you please unmute yourself and would like to ask a question?

Dana Homes: Hi Priya, I'm sorry I'm so technically challenged. I'm hoping that you can hear me.

Shweta Mishra: Yes, we can hear you completely, yep.

Dana Homes: Oh goodness. Thank you so much. It's Dana. Hi, Dr. Shahid, how are you today? So nice to chat with you and listen in on your discussion, learning so much. Piggybacking on Jack's and Gary's question. I appreciate you finally fine-tuning the messaging regarding the impact that vaccines would have to actually prevent infection, you shared that we don't really have evidence of that yet. So, we would need to expect this in the myeloma patients who are vaccinated as well. So even with a potential blunted response to a vaccine due to the very inherent nature of our cancer would we at least expect to not progress to a severe

disease course of covid, if we did become exposed and infected to it. Is there hope atleast, the minimal hope for the myeloma community?

Dr. Zainab Shahid: Oh, very much. So, I truly believe based on what the studies show. I do believe that it will provide protection. I just can't tell what would be the level of protection. So, for example, if we did this study solely on multiple myeloma patients with the advocacy be 95% I think it would be less than that. But I do believe that people would get, individual people would get benefit even with the a ____ response to the vaccine.

Dana Homes: Great. That's very helpful for us because we just like everyone else we've been held up in our homes and Gary's luckily out and about now in his double dose. Be careful Gary.

Gary Peterson: Yeah.

Dana Homes: Regarding dexamethasone, obviously patients receive last-minute notice about coming in for a vaccine. So, if they're unable to modify any of the other meds, revlimid, velcade anything else would Dex be at least an important one not to take on the day of the vaccine or the day after or any other additional time after that if they potentially could avoid taking it?

Dr. Zainab Shahid: Yes. So, we hope that there is time to allow a discussion with the patient but we do believe that we could hold Dex if possible it's individualized like I said, I can't comment as a whole. But yes, even in our institution if we can hold Dex that day off or the next day we are holding it. And I think the International Myeloma Society guidelines also recommend that and when we look at the NCC and all the guidelines, the basic focus has been to just get the vaccine no matter what that's the bottom line. It would be great to have the opportunity to hold things and to modify things but most of the time we won't be able to. The message is just get the vaccine wherever you are, in what state you are, what stage you are, no matter what scheme you're receiving and talk to your doctor. So yes, if possible hold Dex but it's not absolutely 100% necessary.

Dana Homes: Okay, great. And what would the reasoning be to hold a drug like dexamethasone? Is it known to dampen the immune response of someone to a vaccine?

Dr. Zainab Shahid: So, we have not studied the messenger RNA vaccine and it's steroid effects on the mRNA vaccine responses. Well what we know is that dexamethasone it's a very important immunomodulator, immunosuppressant and anti-inflammatory. So, there is hypothetical risk that it would attenuate or dampen the response, but we do not know that for sure and I could be completely wrong because we haven't studied in particularly with mRNA vaccine, but the thought is that if you can for example for graft-versus-host patients we don't immunise patients when they were getting ____ because of the same reason, because we believe that the response would be attenuated.

Dana Homes: Oh great. Thank you for that explanation. And thank you so much for your engagement in our online Covid Facebook group. It really has been very helpful along with the other myeloma specialist who signed on to our group. Appreciate it very much and thanks Priya so much for the time.

Shweta Mishra: Thank you. Thank you, Dana.

Gary Peterson: And thank you so much for rattling my cage as well as three amendments in order to have this specific cure talks on covid-19. So, thank you for doing that.

Dana Homes: You bet Gary, you bet.

Shweta Mishra: Yeah, so I'll just continue with the audience questions that have been posted on the page quite a few. In the interest of time, I'll just think the antibody question Cindy just asked, thank you for asking that Cindy there was a question that somebody wanted an answer for that. So, the other one is asking how

long after getting the second vaccination would it take if one wants to find out how much of an antibody load was generated? I think that part was left in your answer doctor.

Dr. Zainab Shahid: So, usually 30 days not before 30 days we would like for you to get the antibody testing done. If somebody is checking different institutions may do a different protocols to look at what would be the response like for two weeks or 30 days or 60, but outside of those protocols looking at it to response would be 30 days after at least 30 days after the first vaccine maybe 60 depending on where patient is and when you can get it done.

Shweta Mishra: Okay. Alright. So, I'm reading out the next question with says should a multiple myeloma patient in remission, but on treatment with Dara/Pomalyst/Dex for instance try to get one of the RNA based vaccines with higher efficacy rate, since it's unknown how well our immune system will respond or if the patient is offered Johnson & Johnson vaccine, they should take that?

Dr. Zainab Shahid: So, the sooner you get it whatever you've hands on just get the vaccine. It doesn't matter which one it would be, but I won't say do this the second dose for sure. So, if you're getting the Pfizer, please make sure that everybody understands we need two doses even though there is data published that even one dose is good. Just make sure we need to understand that, we need to form memory cells. We need to have a robust immune response, and we know that the two doses would do that. So, making sure that whatever dose recommendations are for that vaccine, just get that vaccine and whatever you get to just get to it.

Shweta Mishra: All right, thank you. Yeah, you mentioned memory T cells, so we have a question asking are we developing tests for memory T cells responses to the vaccine?

Dr. Zainab Shahid: There are actually__ which are developing and are looking at specific T Cell responses for SARS Covid II. Obviously, nothing is FDA approved. This is all in the context of research, but just like antibodies there are assets that are being developed to look at specific T Cell responses.

Shweta Mishra: Alright, thank you so much doctor. I think we have covered most of the questions that were posted and thank you so much for all the information that you shared with us today, and I'm sure it will be helpful to the myeloma patient community and their caregivers. Gary Jack and Cindy, thanks for joining the panel today, and this talk and transcript will be available on curetalks.com for everyone to read. Stay tuned for more upcoming talks on curetalks.com. Until next time, thank you everybody and have a great day. Stay safe.

Thank you.