

June 11, 2020 Patient Education Call- COVID-19 Follow Up

Becky: Welcome, everyone! This call is now being recorded. I would like to thank you for being on the call this evening and to our Sponsors Genentech, Principia Biopharma, Argenx, and Cabaletta Bio for making today's call possible. Today's topic is a Q&A on COVID-19 with 3 of the IPPF's medical advisory council members.

Dr. Payne serves as the Albert M. Kligman Associate Professor of Dermatology, Director of the NIH-funded Penn Clinical Autoimmunity Center of Excellence, Core Director for the Skin Biology and Disease Resource-based Center, and Associate Director of the Medical Scientist (MD-PhD) Training Program. Dr. Payne's clinical practice specializes in the diagnosis and treatment of patients with autoimmune blistering diseases.

Dr. Mary Tamayko is a physician scientist who specializes in the diagnosis and treatment of autoimmune blistering disease and other immune-mediated skin disease. Dr. Tomayko is a director of dermatology education at Yale University School of Medicine.

Dr. Maverakis an immunology researcher and an Associate Professor at the University of California, Davis Department of Dermatology. There, he runs a clinic that specializes in the treatment of patients with severe immune-mediated diseases involving the skin.

Now, it is my pleasure to introduce Dr. Aimee Payne, Dr. Mary Tomayko and Dr. Emanuel Maverakis to answer your questions about COVID-19 and Pemphigus and Pemphigoid.

The doctors were kind enough to put together another slideshow for us. I'm ready when you guys are.

Dr. Payne: This is actually our third seminar, we thought that we would jump right into it as we're not doing as much review as before. So if we go to the next slide, this is an overview of what we're going to talk about so you know first just the basics on how the virus is transmitted. We'll talk about COVID-19 precautions, hygiene, distancing, screening, and masks. Dr. Tomayko will talk about specific questions that the IPPF community submitted and then we'll leave time at the end for additional Q&A. So, if we go to the next slide. These are just real basics on terminology. So, coronaviruses the general term for the family of viruses that cause respiratory illness. So things like SARS, MERS, SARS-CoV-2 which is the topic of tonight's discussion. And there's also seasonal coronavirus that occurs every year that makes people sick. SARS-CoV-2 is the term for the virus that's causing the global pandemic. It stands for severe acute Respiratory Syndrome. Also called the novel coronavirus to distinguish it from

the SARS 2002 to 2003 outbreak. And then COVID-19 is coronavirus disease 2019 since the official name of the disease caused by the virus.

One question we received from the community was, how much longer if we advance will the coronavirus outbreak last? And why are people saying that it will be worse in the fall?

We think that COVID-19 will be a public health concern in the US throughout the rest of 2020 and into 2021. It's a highly infectious virus, so essentially until we have an effective vaccine, that becomes available. So, something that can basically prevent the rate of spread. It will be with us in some form. And COVID-19, when they say it's going to be worse in the fall and the winter is because when it came out in the spring, flu season was largely over. But if it comes back in the fall, that's exactly when flu season hits, so it'll basically overwhelm healthcare resources, and the severity will be predicted to be much worse if somebody is unfortunate to contract, both viruses, at the same time.

OK, so if we go forward.

We decided to organize this around to what we thought were really great articles that were in the lay press. That really just sort of explains really well how COVID-19 is transmitted. And second, which is what Dr. Emmanuel Maverakis will cover how to protect yourself as communities re-open. So, the first one was a blog post that was written on the link. And the real theme of this is, basically, successful infection of the virus is what exposure to the virus you've had times the time of exposure. And that's the general concept. And I'll explain that a little bit more on the next slide.

So just to remind you about the basics of COVID-19. The major route of infection is from respiratory droplets that are released and in decreasing order of risk sneezes are the worst, coughing, somebody singing or shouting, talking. And then breathing really, only 6% of infections are thought to result from touching infected surfaces and then touching yourself. Most respiratory droplets don't travel farther than six feet. So, if you're more than six feet away from somebody the risk is low. However, some viral particles can remain in the air for hours due to airflow patterns, and it can travel farther than six feet, if there are strong airflow patterns, and people become infectious up to five days before developing symptoms. That's what's called asymptomatic transmission. And that is really why the precautions are so

important, because they estimate that. Over 40% of infections, a result for people who spread the virus before they actually know that they're infected.

We got two questions related to if just drinking extra fluids will help wash away COVID-19, like if you wash it down really quickly? No, the virus often comes through the nasal passages or other areas. Fluid wouldn't help directly with that. And then another question was, should I continue to clean my groceries when I get home? The CDC states, it's not the main way that diseases are transmitted. It's not really a major concern. It is reasonable to do if it's not a problem, but it's actually not absolutely necessary. What's more important is just washing your hands after returning from the grocery store. And after you put everything away, it doesn't really live on those types of surfaces for very long.

So this one gets to be a little bit mathematical. So, infectious dose. The minimum dose of virus to become infected is unknown but may be as low as one thousand viral particles. Here is the timeframe for potential successful infection. If you sneeze your sneezing out 200 million viral particles. So, if you're within 6 to 10 feet of somebody who sneezes all over you, and you're both unmasked that's just a risky situation. A cough is up to 20 million viral particles. So, again, you know, one cough, if you're close enough is somewhat dangerous, especially as we're in allergy season, people are sneezing and coughing a lot. Talking can be up to 200 viral particles per minute. So, about five minutes if you're in less than six feet. But that's less if you're shouting or singing which actually can put more into the air or if there are a lot of people around you that are shouting and singing. Breathing actually expels somewhere between, say, 3 and 33 viral particles per minute. So, that's about 30 to 60 minutes if you're sitting less than six feet from somebody, or even less if there's a bunch of people around you who are sort of breathing and sharing the same spot.

These concepts here are what underlies most public health precautions regarding COVID-19 because they're trying to figure out what's the likelihood that someone sneezes or coughs, talks, sings, shouts. And that's basically what's shaping most of the guidance. So no reason why dining at restaurants. Densely populated indoor spaces, choir's, indoor sports, where people are shouting for their team or against the coach. Weddings, birthday parties, funerals, where people might be hugging a lot and face-to-face business meetings, where people might be shaking hands, These are really what's governing all of those sorts of things. And if we advance for just one click, that's basically what Dr. Tomayko will cover in part and her section.

In regards to how to judge risk as communities open up? So, volume of airspace is really critical, because if you know people are talking or breathing, and it just sits in a trapped environment, where you're certain to breathe it in, that's a problem. But if it kinda just spreads

throughout a larger airspace, that's a little safer. That's why the outdoors is vast. And very large indoor spaces are decent. Cramped is bad number of people. The fewer, the better. So, some communities have said less than 10 people, less than 25 people. They set certain limits on the number of people that can show up. It's just a statistical argument about what is the likelihood that at least one person is infected, Time of exposure-grocery stores, shopping malls, etc. For the customer, if you're just running in, and you're there for 10 to 15 minutes, your risk is actually somewhat low. But for the workers who are there all day the risk is much higher because so many people are coming into the space. The ability to physically distance when you're there. Greater than six feet, that's thought to be best. But you might need more distance, actually, if there's a very strong directional airflow in that space, personal risk factors. So, these are things that the CDC has identified, age, greater than 65, chronic kidney, lung, heart, and liver disease, diabetes, severe obesity, and being immunocompromised, which of course is very relevant to a lot of the Pemphigus and Pemphigoid Patient Community.

We got a lot of questions about whether or not Pemphigus or Pemphigoid in it of itself, meaning, like if you have Pemphigus or Pemphigoid but you're only on topical steroids or you're actually off therapy, that's actually not thought to affect the risk of infection. So, in that case, your baseline risks would be about the same as anybody in your age group with the same medical conditions. For example, if you had diabetes.

There was also a question about whether or not people with overactive immune systems would actually be safer from infection. So far, we don't have any indication that that would be the case, unfortunately.

There were a couple other questions- What are the recommendations for engaging in the community? Leaving home? Going out in public? Really whether you're on or off immunosuppression, there's the risk. Whether or not you're going to come into contact with the virus. Hopefully this will give you a little bit of a framework to try to think about the risks with individual activities. If we go forward one, really it's dose times time. Generally you need to spend greater than 10 to 15 minutes less than six feet from somebody who's infected for infection to occur. And of course that's not including an unmasked sneeze or cough.

If we go forward, if you develop COVID 19, call your doctor if you have concerning symptoms. They don't want you going in and potentially infecting people in the waiting room, fever, cough, shortness of breath, loss of smell, diarrhea, red eyes, tender bumps on your toes. These are all potential symptoms if you're severely short of breath, that is a time when you want to call 911. Don't stop your medications, unless directed by your physician. The NIH recommends that if you're on prednisone, don't suddenly stop. The risk of stopping a high dose of

prednisone suddenly is medically dangerous. Always talk to your doctor before you change your medications.

The final slide for my section is next and one person had asked, is there any study yet on the recovery of Pemphigus and Pemphigoid patients who contracted COVID19? There is no large-scale published outcomes data yet. In the community we've been sort of comparing stories of individual patients that have become infected and so far our experience is variable. And I think it's because the outcomes are affected by so many risk factors, such as age, and other medical problems. In an early study done by the CDC, the risk of being immunocompromised was actually not any worse than, say, having diabetes or hypertension or one of these other conditions, such as chronic, kidney, or liver disease. This is actually something that I think may be interesting for the IPPF community to think about. Maybe even with the Natural History Study attacking it onto that because Pemphigus and Pemphigoid is rare and they estimate that the total population might be around 2% to 3% total. So any one doctor may not have enough patients to actually really have a really good case series. But across the country, we can probably gather some outcomes data to basically understand how it is in the community. I'll stop there and pass on to Dr. Mavarakis to talk about an important thing, which is how to protect yourself with all the various methods.

Dr. Mavarakis: Thank you, Dr. Payne. It's great that we have some more people coming on now. The crowd is getting bigger. The idea here is that everything has to be done together, because if you don't, if you'd leave one out, then basically it doesn't work as well. We're gonna talk about hand hygiene, distancing, screening and masks. Each has flaws, skip one, and they won't work. But, when taken together, and taken seriously, together they shut down the virus.

Next slide- Hygiene measures, the idea here is that you want to frequently practice hand hygiene. The CDC recommends this 20 second wash with soap and water. The most important thing is that you do this as often as possible. Now, a lot of people won't be able to tolerate it. Everybody's hand-washing tolerance is going to be different. So, I don't want you washing your hands until they're raw and cracked and you can't basically do anything because you've damaged your hands. But you should get an idea of what your hand-washing tolerance is. Then, you should wash your hands. When you're outside, as often as possible, to your hand washing tolerance. You can augment that with hand sanitizer. You could use your hand sanitizer basically, as often as you want it. These hand sanitizers are moisturizing and they don't dry your hands out as much as washing your hands. Now, you should try to avoid touching your eyes, nose, mouth. This is very difficult to do. If you come into a surface that you think is contaminated, of course, then you could focus on not touching your face or mouth until you wash your hands. But subconsciously, in day-to-day activity, it's very difficult to stop

touching your nose, mouth and eyes. So, that's why you should, as frequently as possible, practice good hand sanitization and you should also disinfect commonly touched surfaces. If it's a business, they should be disinfecting that handle to the door. If it's something at home. You disinfect your common surfaces, like the refrigerator handle, things like that.

Distancing- the six foot rule is what the CDC recommends and also limiting encounters with people which is what Dr. Payne said. Now obviously the farther you are away, the better and so six feet is not like a hard fast rule where if you're absolutely, 6.1 feet away from somebody, you're protected, it just means that your inoculation will be less and you're much more protected than if you're in close contact. And that's the same with the amount of time you spend with somebody.

Let me answer some questions so let's stay here. We have had some questions submitted that are relevant to this- is antibacterial soap effective, does average soap work as well as as antibacterial soap. I would say that the goal is the frequency in addition to how thoroughly you wash your hands if you could wash your hands more frequently using a milder. I would recommend that, more than aggressive harsh soaps.

Tammy says, how long can coronavirus live on clothes? Coronavirus will have a differential lifespan, depending on the surface. From other studies of coronavirus it's highly variable. So, it can last quite some time. But, in general, if your clothes aren't heavily contaminated, the amount you're gonna get inoculated from is not going to be very high. Of course, you should wash your clothes. And if you have an encounter with somebody who's coughing or something like that then it's pertinent to take those clothes off and put them in the washer right away so you don't contaminate other surfaces.

Brenda says, my family wants to resume activities, but I'm anxious about going out and about. How to handle it, what precautions? So, the precautions are going to be the same, social distancing, hand hygiene. In general, doing outdoor activities are much less worrisome than indoor activities. And I think Dr. Payne just said most of those things. So, just a really quick recap is that of your indoor activity where you're like, eating and talking to people and in close contact. Or if you're at a sporting event where you might even be shouting, yelling at the players and the referees, That is going to be much more dangerous than if you're outside where you could socially distance much better. I would encourage you to go outside with family, but you should be taking all the precautions we are talking about. I don't think it's time

to hide inside unless you are immunocompromised and you have other effects. But if you are otherwise healthy, you should go outside and exercise and do some normal activities.

Screening- symptoms, fever, cough, sneezing, sore throat, loss of taste or smell, and nasal congestion. You'll see a wide range of symptoms that have been reported like domino symptoms, diarrhea, things like that, but those are probably much less common.

Temperatures might vary between the different areas but if your temperature is above 99.5, many people run around there. But if that's not normal for you, then then you should be aware that you might be infected. The reason being is that elevated temperature is often not a thing in patients who initially get coronavirus early on in their disease course. You can have no fever or just a low grade fever. So if you check your temperature regularly and you know this is not your normal, then that's something to call your doctor about. Possibly get tested depending on the area. Testing in every area is different. The best testing for screening would be RNA based PCR tests. This is not a blood test. This is the nasal swab test. If you have an exposure, or if you're symptomatic, that's when we would recommend getting tested. If you are asymptomatic and have no exposure, then it's probably not a good thing to get tested. This allows people to know that they are infected so they could self quarantine. Their close contacts could quarantine. Their close contacts get tested early on because, like we said, it takes some time for the peoples symptoms to develop. So, the earlier they know they are infected, the less likely they are going to go out and infect other people. There are antibody testing and the antibody testing is very variable. It's getting much better, and it's getting much more reliable, but that's more of a testing, to look at a population, and see how many people were infected. It's not really a great test to see if you're infected and if you're contagious because the antibody response takes a long time to pop up, whereas the PCR will be positive much sooner.

A couple of questions, what is the test looking for? So the test is looking for shedded RNA particles in the nasal cavity. That's why they have to go very far back and they have to leave it in there for a little bit. It's not necessarily testing for intact viral particles. This to be somewhat of an issue because let's say you've had your coronavirus and then now you've been asymptomatic for a couple of weeks after you've recovered from your infection, but your test is still positive. So, what does that really mean? Are you infectious at that stage? People don't really know. But it's pretty safe to say if you've had a couple of negative tests, and you've completely recovered from your symptoms, that you're probably not gonna be able to give it to anybody. And it's also not known that if you are asymptomatic and you have an exposure, and you test positive, it means that you're probably able to spread it to other people, so you should self quarantine.

Maxine says, How can I find out the status of my immune system, to gage the risk levels around COVID-19? There's no test that says, oh, your immune system is very susceptible to this disease or not susceptible. There are some papers on blood type that says people with blood type O are not gonna get very severe diseases. I don't know how that translates in the US, mainly Asian studies. I don't know if they've been replicated in the US yet. I have to look into that.

Questions on masks. Should I wear a mask when I go out? There are so many conflicting opinions. What should the mask be made of, if a cloth mask recommended, what kind of fabric? How many layers? Should they have a changeable filter? These are all excellent questions. I know that people are giving you conflicting results. And we'll answer some of these questions on the next slide, and then I'll try to remember these and answer as many that aren't answered in the next slide, or two. Let's go to the next slide.

So basically, cloth masks are not going to be able to stop all the particles, we know that. So some people will say, cloth masks are not effective. People wearing cloth masks still got influenza. There is no difference in cloth masks with health care workers. Those things are not really relevant to what we're talking about. What we're talking about now is if we master all of these things, hand hygiene, masks, distancing, in these types of things that we discussed. Now a cloth mask. Yes, it won't be able to knock out all of your viral particles and all the droplets from you and it won't be able to filter out all the particles from the other person. But if you're wearing your cloth mask, you're going to be cutting down 60% of viral droplets from you. And if the person is wearing the cloth mask it's going to lock down 60% of the droplets from that person, and also it's going to protect you from 40% of the droplets from that person. So, if you combine those two together, then it turns out to be pretty decent protection. We have here that if these are used in conjunction with each other, you block basically 24% of all the viral droplets. Now, can you still get infected? Yes, but imagine this, if you infect an animal with coronavirus, the severity that that animal is gonna get the disease depends on how much viral particles they were inoculated with. So if you could drop down the viral particles in the disease you get in theory is going to be not as much. And also as Dr. Payne said, there's a certain number of viral particles you need to get exposed to just to get sick. So, if you're able to bring down the amount of exposure by 24% and then if you're able to not spend so much close contact with people closer than six feet, this altogether will protect you and protect the entire community from viral spread. Surgical masks on the other hand, block a lot more, But they're not as comfortable to wear and, and they're not as readily available. So, a surgical mask blocks about 99% of the droplets of the wearer. And it protects the wearer from about 75% of the droplets from other people of close course. The tighter fitting masks you have, the more it's going to prevent air from coming in and the more it's going to prevent your droplets from coming out, but surgical masks are better than cloth masks. However, you also have to take into account how much the mask bothers you, how much are you going to be bringing your hands to your face to adjust the mask, and how available they are and what the shortages

surgical masks are for the medical community in that area. So cloth masks are an excellent option. If you wear surgical masks, that's great, but if you're wearing a surgical mask, make sure you're practicing good hand hygiene because if you're constantly monkeying with the mask, then that's also putting you at risk. So you want to have good hand hygiene with your hand sanitizer and your hand washing as frequently as possible. And then surgical masks will work a little bit better than cloth masks. But we recommend both. Now, a lot of people will have the N 95 mask and the N 95 mask is something that offers a lot more protection to the user. The user wearing a N 95 mask will be blocked and be able to block 95% of the droplets that are coming from the outside, and they're basically able to block all the droplets that they're generating. This is great, but the problem with the N 95 mask is that they're very tightly fitting. In fact, as health care workers, when we wear them, we have to be fitted. So we know the size that we are in and we're taught how to press them down. So of course, they work really well, but if you're not using them appropriately, then, they're not going to be as effective. And much more importantly, your compliance is not going to be very good wearing these in 95 medical masks, because it can be hot, it's going to be difficult to breathe inside, you know, when we're doing procedures, I'm like, oh my God, I'm dying in here inside this mask. So, it's not something fun, where at all, and if you're gonna spend all day at your job wearing this, it can be pretty hard. But, again, another problem is that you're going to be constantly adjusting the mask, and contaminating the mask on the inside and taking it off and wiping yourself. I see all these things when I'm outside and I'm like, great, you really did mask on, but unfortunately, you're contaminating it with your hands. So, you have to really balance the mask with your tolerance, and you have to not just have the mask, you have to also do really exceptional hand hygiene.

Some of the questions were, What type of cloth should the cloth mask be made out of? So, obviously, the more layers, the more protection you're going to have, and the more protection you're gonna give to other people the more tightly woven into the fabric is, the more protection it is. So if it's something that you hold up to the light, you can see right through it, then it's not going to be giving you much protection. But if you hold it up to the light and not so much sunlight is going through, then it's going to be blocking a lot of the respiratory droplets that you're generating.

And then there was a question, should you have one of these masks that has the filter in it. And I think those are pretty cool. people you see on the Internet, people are sewing these masks and they're having a little space for N95 filters that they get the N95 filters from like vacuum cleaner bags which are in N95 or some type of filter apparatus that you can buy from like Home Depot. And they will filter and put into the cloth mask. You know, that's pretty good. Of course, it's not going to work as well as real in a N95 mask. But, if you're creative and you

want to do something like that, and you know, that doesn't impact health care at all, because you're using the filter from other sources.

Let's go into these questions, should I wear masks in the car? Wearing a mask in the car is not really necessary unless you have passengers with you.

Should my grandchildren wear masks? So, the CDC recommends masks for children above the age of two, And in Asian countries the children are wearing masks and it seems to be going ok.

How many times can a procedure mask be worn safely? I think this is a lot to do with how much you contaminate the mask. I think a lot of masks are going to be highly contaminated by your hands and by interacting with other people. And if you're in a situation where you're working in a restaurant, or where you have a lot of close contact with people, of course, that mask is going to be more contaminated than if you were just outside on a morning walk. Soiled masks obviously should be discarded. There are videos on how to disinfect masks, The virus doesn't last forever on surfaces, so if you had like 10 masks and you wanted to cycle through them, by the time you get back to that first one, it's probably going to be pretty safe to wear.

What is the best way to store my mask and take care of it? Lots of people store them in plastic bags and Tupperware. Cloth mask you should wash.

Dr. Tomayko: Now, I'm going to answer some additional questions that didn't have an answer and thus far. Somebody asks: what precautions are doctors taking to keep me safe? What questions should I ask my doctor about their sanitization procedures? And is it OK to ask? The important thing to realize is that many, many precautions are being taken and you should absolutely ask. This is a partnership and we have to be working together. So, what sorts of precautions are being taken- telemedicine, doing things by telemedicine, limiting the numbers of patients who are in the office, when for the patients who are in the office. Increasing the time between patients. So that, again, there are fewer patients in the office at any one period of time. Screening patients for symptoms before your appointment. So, you should expect that you'll get a telephone call asking about if you have a fever or you have a cough. Have you not been feeling well? Have you had any known exposures to COVID-19 before your appointment. Checking in outside of the office building. So checking in in your car, meaning going through your insurance and your medicine list in your past medical history can take place outside of the office itself to decrease the time that you're in the office. Another precaution that you should expect is requiring masks on everybody on every patient and every staff member.

Hand-washing, again, by everybody, cleaning surfaces very carefully between you and between the other patients. Absolutely ask.

What precautions need to be taken when receiving infusions at the center. These are the same precautions. They fall into the same category.

I've had a telemedicine visit but my blisters or getting worse, is it safe to go in? How do I know if I really need to be seen in person? Your blisters are getting worse, that means you need care. That may be in person. It may be that you and your doctor can handle this via telemedicine, but this is, again, it's a partnership, so you need to talk to your doctor. Just like you are concerned about not contracting this virus. Your doctor is also concerned that you don't contract this virus. So, telemedicine versus in person is going to depend on a lot of different factors. For example, how familiar is your doctor with your particular situation? Are you able to send high quality photographs? Do you need a procedure or a biopsy which would have to take place in the office?

And then Teresa says, I'm having trouble with insurance covering that telemedicine for an out of state provider. What should I do? No, this is really tough, there. We would recommend that you call your doctor's office, speak to your doctor's office, also call your insurance company, because sometimes things can be done at that level as well.

So, some questions about Rituximab and COVID-19. Rosy says my Rituximab infusions are postponed due to the pandemic. When is it safe to resume? So, there is no one right answer for everyone in this situation. So, this has to be a discussion with your doctor. It's gonna revolve around questions like, how stable is your Disease? What are the COVID rates in your area? Or are they coming up? Are they coming down? Is your infusion center functioning normally? If you get Rituximab you will be immunosuppressed, are you going to be able to work at home? Are members of your household also able to work at home, or are they working jobs that are going to put them at high risk for exposure?

If at some point there will be a vaccine and then when we have the vaccine question that our calculations here will change, but right now, we can't make plans around a potential vaccine. There are too many uncertainties.

So, Jenny says, My brother has Pemphigus and COVID19 requiring ventilator support, and is now working towards rehab. When is it safe to resume Rituximab? Are there long term

considerations, you know, this is a really difficult situation, and I'm really sorry, and my heart goes out to you and your brother. What you need to do right now is to concentrate on this recovery. That recovery may be prolonged. It can be quite prolonged. These decisions are going to be complicated. You're going to make them with your doctors. If his skin is under control, you're most likely going to be closing off on treatment for the Pemphigus right now. Again, focusing on the COVID 19 and on the Recovery team.

So now somebody says, I have mucous membrane Pemphigoid in January but my spouse needs surgery and has MRSA. So, what precautions should we take? So, you can start by speaking to the hospital and investigating what the hospital is doing to prevent infections of patients and staff in the hospital. Are the hospitals screening all patients before they're admitted to the hospital? Screening all patients before they actually have surgery. Are staff being screened meaning, patients and surgical patients might be having actual COVID19 RNA tests to determine if they have the infection before they enter the hospital. Are staff being screened for symptoms? Are visitors limited in the hospital? Hopefully, they are. Maybe they're even prohibited. Can somebody else take the spouse to the surgery? As far as the MRSA, MRSA is an infection that is simple to transmit, skin to skin some precautions to take are washing towels, washing sheets, bedding, clothing, please don't share personal care products, especially things like razors.

So, there are some questions about IVIG and COVID19. So, is it possible to get COVID19 antibodies through IVIG, we don't think so right now. So, because we just don't think that there are enough donors who have recovered from COVID19 to have antibodies that they would be contributing to the IVIG. In the future, as a large part of our population has been infected then there may be antibodies in the IVIG source.

Someone else says, I've heard that there's a risk of an IVIG shortage due to decreased donations, what should I do now to prepare? So, you remember that IVIG is always a precious resource, the supply is monitored carefully to reserve it for those who are most in need. So, this is something that is being thought about and planned by the blood banks that are going to produce the IVIG. And right now just continue on. If it's worthwhile considering, with your doctor, what would be your backup plan should it not become available right now? That's probably not a necessary concern.

About dining and group activities. So, William asks, restaurants and bars are open. Is it safe to go? This can be a question that can be filled with a lot of emotion, because these are activities that bring us so much pleasure. A way to think about this is: will your eyes, nose or mouth come into contact with respiratory secretions from other people, right? So, just physically

break down the problem and think about what you can do to decrease that. As Dr. Payne mentioned, outdoor spaces are the safest, large indoor spaces are next most safe and small indoor spaces are going to give you a higher chance of having these respiratory secretions come into contact with your nose, eyes or mouth. Physical distance from other people. Are you more than six feet around distance from other people? How long will you be there? The longer time that you are present in an environment around other people, the higher the chances that you will contract enough viral particles to give you the disease. Will other people be covering their noses and their mouths with masks? Well, when you're eating, you can't cover your mouth. So that, by definition, is a risk. It is something important to be thinking about when you're debating whether or not you should be eating at a restaurant. Generally, outdoor dining is going to be safer than indoor dining. Is it safe to get takeout or fast food? What precautions should I take? Take out food is probably much, much, much less risky than eating in a restaurant. Do wash your hands when you're returning home, you may consider disinfecting the surface of the packet but it's probably a much less risky proposition than eating in a restaurant.

Can COVID-19 be transmitted in a community swimming pool? Well not from the pool water itself. The chlorine in the water will inactivate the virus. Your risk at the pool's gonna really be the other people who are around you. How close are you? Are they either shouting or spitting did they or did they sneeze?

What about sports? Is it safe to play sports with my friends if I'm on Cellcept or Prednisone or Rituximab. What outdoor activities are safe? The guiding principle is that you would like to remain at least six feet away from everybody else. If they're shouting, you probably need to be further. Contact sports, are probably not going to be so safe; but things like tennis you can maintain a pretty good distance. Hiking, walking, running, cycling are going to be safer or less risky activities.

What about church? Is it safe to attend church, if I'm wearing a mask, but others are not really? That's kind of the same principle that you can think about in regards to eating in restaurants. Will your eyes, nose or mouth come into contact with respiratory secretions from other people? Will there be touching in the church? Will there be singing? Will there be loud speech? As Doctor Payne discussed, more viral particles are going to be expelled if you're speaking loudly, singing or coughing. Will other people be wearing masks and wearing them appropriately? So appropriately means I have to cover the nose and their mouth. If you look around, because masks are uncomfortable, often people will have them fall below their nose or below their mouth. In that case, it's actually not protected. So if other people are not wearing them, the risk is going to be much higher. What's the amount of time and exposure? As Doctor

Payne discussed, It's about the amount of particles and the length of time. Church is likely to last longer than 10 or 20 minutes, so that does increase the risk.

Grant asks "I've heard that vitamin D is being used to treat coronavirus, should I be taking it and at what dose?"

So, there is clearly speculation that low vitamin D levels, vitamin D deficiencies, might be a risk factor for severe COVID-19 disease. But that's, that's speculation. There is no solid data. Again, the speculation is that vitamin D deficiency is a problem - not so much that hyper levels of vitamin D are going to be protective. Vitamin D is something you make yourself. Your natural source of vitamin D is your skin. Your skin makes vitamin D in response to sunlight. Those are people who are at high risk for being vitamin D deficient are more likely to be living in Northern latitudes. Where there's not a lot of sun in the winter. Where it's cold. Where they're covered in heavy clothing. Those are the people who are going to be at higher risk for deficiency. What should you do about vitamin D? It's probably reasonable to take the recommended daily dose, which is going to be somewhere between 600-1000 international units a day. But there's really no reason to be taking more than that.

Another person asks about sunlight, does sunlight kill the virus on the car, door handles, kids toys. Should I increase the amount of time that I spend in the sun? We'd really have to say no. There are different forms of UV light, right? So it's true, you have read that UV light can inactivate the virus, and it's true that UV light can, but there are many kinds of UV light types. It can as UVC, which is comes from the sun, but does not make it through our atmosphere, so it does not make it to the Earth's surface. It is not in the sunlight that touches you, or your car, or your kids toys. As a result, it is not going to be a helpful measure for inactivating this virus,

OK, so that is it for the questions. Becky, maybe we should go back to you.

Becky: Great. We are getting a bunch of questions about recommendations for travel. Is there recommendations for staying in a hotel, is there recommendations for flights and being safe.

Dr. Payne, would you mind answering that question?

Dr. Payne: Sure, travels are really difficult questions. It's about judging risk at every step of the way. How are you traveling? Who will you be seeing? What activities will you be participating in? If we sort of break it down. One thing that you want to think about is, what is

the rate of local spread in your community? And then what is the rate of local spread in a community where you'll be traveling.

For example, if you're coming from New York City during the peak of the epidemic and you're traveling to somewhere that's very low, then you're actually more of a risk to the people you're visiting than the other way around potentially. Whereas, if you're going from somewhere that's very low to somewhere that's very high, then you know, definitely the people around you will be more of a risk. So consider those factors. Also consider how you are traveling. Basically, the question is how well can you wash your hands? How well can you be more than six feet away from people? What is the total period of time that it will take? That's why air travel is thought to be bad, because you'll be in a lot of waiting rooms, public areas, you know, during that whole travel process.

Trains and busses are the same sort of thing, sometimes that's a shorter distance, but chances are, you're going to be closer than six feet from somebody who's near you. If you're driving yourself in a car, that's actually considered to be fine because there's no risk to you from the travel itself other than if it's long enough, like if you're driving halfway across the country and have to you guys stay and stop at public bathrooms and stuff like that then you'll be exposed there. You know, some people are saying now's the time to buy an RV if you want to, because that's like the one way you can avoid public restrooms being handled by RV the whole way through. In that case, that's probably your safest way of travel. You got to think about the means of travel. And then, it's really about, like, what activities you will be doing and who you will be seeing. I know that this is an incredibly challenging time. We haven't been able to see our family, our loved ones. I'm facing the same thing. My parents are 83 and 88. We missed both of their birthdays. And you wonder if you can never see them again.

And I have to say, I'm, I'm a little nervous about doing that and the risk, because, like, what risks do I pose to them? Because I am going into the clinic and seeing patients and things like that. I actually do worry about that. So for right now, we're not doing that, but we're thinking maybe on father's day to drive down there in a car and buy takeout and then set up tables outside and eat it outside and have our masks on whenever we can I can and don't have any, You know, we're going to elbow with them and see today so that's kind of what we're thinking about for that. So, yeah, I think that that's what you want to take into account when you're traveling. In regards to hotels. The hotels are basically saying like we are sanitizing, we need the money you know and no one is staying here the coronavirus will only live on the surface for a certain period of time on the order of days.

I mean many of these rooms probably haven't been occupied for days, in that sense you know there's not a lot of risks necessarily from that and they and these hotels have been sending out

a lot of messages that they're religiously sanitizing and as long as you're washing your hands etcetera I think you just have to judge the overall risk.

Becky: Great. Thank you. You were talking about what you're doing with your parents. We have in our families, what we refer to as, driveway picnics. My mom likes to check an awful lot of high risk things will sit at the top of the driveway and then like our family at the bottom to make sure we keep our distance. So that's a great tip as well. Our next question comes from Carol and she says it's already hot here in North Carolina and we use ceiling fans to keep cool. Are they advantageous and diluting the aerosol viral load? Or do they actually make it capable of spreading farther than six feet?

Dr. Maverakis: I was gonna say you know there's probably no study that could tell them, you know, how fast that fan is spinning, and all these other things. In general, even if you have the ceiling fan, like if it's an inside fan for your house. If you're not distancing yourself from your close contacts like your husband and your children which is reasonable then I don't think the fan would increase or decrease the risk of exposure.

I think it gives other people inside the house that are coming in, that you're trying to distance yourself from then could have some impact, but I would still think that it's not going to be a huge difference as long as it's not going super fast and blowing everything around.

Becky: Great. Thank you. Is there anything known about the risk of serious complications from an MMP patient taking Cellcept with no other comorbidities?

Dr. Tomayko: You know we are all as a community collecting data on how our patients with mucous membrane pemphigoid and other skin disorders and autoimmune therapies have done. We do not have a large enough data set right now it's hard to say. Some people have done well, other people have not done well.

Becky: Great, Thank you. Joe asks "I've read vaccines based on mrna have a higher likelihood of causing autoimmune problems. If true, how will this affect those of us with Pemphigus and Pemphigoid?"

Dr. Payne: I don't know that data off the top of my head, do either of you know?

Dr. Maverakis: I would think that those vaccines are the new experimental vaccines. So they haven't been used by a large number of people. I would be a little bit wary of any data on their side effects. I believe, turning to some of these companies that were invested in by the government, the new vaccine technologies. I don't think those have been used and why you know studied clinical trials, they've probably been used a lot in animal support. But I don't know of any, like, 5000 patients or something like that being incorporated in a trial.

Dr. Payne: I wonder if due to inflammation like nucleic acids can activate, like toll receptors that can stimulate certain immune responses. I think that that might be it. But, yeah, I think that that's a little bit challenging. This is basically why people are saying that we shouldn't necessarily rush vaccines through because, let's say the rate of a complication is one in a thousand patients which is, you know, a decent number if you're proposing to immunize, you know, hundreds of millions of people, that may not come up in an early phase study, right? Like, if you heard that 800 people were treated in this study, and you had zero side effects, and, you know, people got immune you'd be rushing for it. But then, when you start rolling it out to a larger group of people, that's when you start picking up the more rare condition.

Dr. Maverakis: Yeah, I wanna second that. Usually trials are powered, meaning that they decide how many patients need to be in this trial, and they are powered for efficacy, like, is this treatment working?

They're not power defined, rare side effects or even side effects that are or not so rare, but much less frequent than the, than how many patients are going to benefit from the therapy. So a lot of times we have to wait a year, two, year, three, year, four, year, five year to know what kind of adverse events are associated with these new medications and new vaccines and things like that. But in general, vaccines are associated with autoimmunity at a very low low frequency. And that's why the government has certain things in place for people who have got autoimmune disease from vaccines but it's at such a low frequency that it doesn't outweigh the benefit that the population would get if it got the vaccine.

Becky: Great, thank you. It's been an hour. Do you mind if we take some more questions?

Elaine, do you have a question?

Elaine: I do. My granddaughter had a baby who's two months old and she works from home, but she's asked her mother-in-law and her mother, and me to come on a daily basis one each day. Well, they're having two days, but anyway, I'm the Friday one. They've asked us to help her while she is working. She has asked us to help during the day. How safe is this for the baby, the two month old baby? And for me, as a Pemphigus patient?

Dr. Tomayko: Your risks in the household are: is there another spouse or there other children? Are they in and out of the house? Who are they being exposed to? The mother and the mother-in-law, same thing. Who are they living with? What are they doing on the days that they're not in the house? Were they being exposed? What's their risk of contracting the virus, then you know so now there are essentially merging four households and the risks of four households.

Elaine: Each household is very stable and not at all testing society's goals to maintain a safe environment. So that way we are all practiced in being careful. I question whether I am putting her at risk, or she's putting me at risk. There are no other children, and there are no pets, or anything like that, and my granddaughter will be at home working in order to help. But that has nothing with COVID.

Dr. Payne: The daughter is actually just working from home so it's more just coming to give her a break. Is that right?

Elaine: It's a granddaughter and it would be from 10 until 5.

Dr. Payne: It's a little bit difficult, because, you know, at the individual risk level, it's a little bit hard to say, because sometimes it's random. You know, but, I guess it's a judgement, call it a sensitivity if you trust, and I don't know your personal situation in regard to whether or not you're on immunosuppressive medications and things like that.

The question is, what is the risk to the baby? What is the risk to you? I guess for you, will it be, you know, what are the age risk factors, whether you're on immunosuppressive medications?

Elaine: I am 80 years old, and I am on cellcept and Prednisone.

Dr. Payne: Can the mom and the mother-in-law, I started my recommendation for you.

Elaine: Yeah. Well, that's what I'm trying to fill out. I don't want to be, I mean, I'm honored and happy, happy, happy to do it. But is it safe for everybody?

Dr. Tomayko: Remember, you know, when we're talking about risk says Doctor Payne mentioned earlier, transmission often happens, asymptotically. People can be infected with the virus and have no symptoms, or they can be an end, but still spreading the virus to other people or they can become infected and spread virus before they themselves develop symptoms.

So the real risk is depended upon who everybody in all of those households is coming into contact with: grocery stores, restaurants, churches, friends, and other jobs. What is the risk that anyone in that the units of any of those households might have become exposed to the COVID-19 virus?

Because if they have been exposed, there's a risk that they are asymptomatic carriers. Then they can spread it, and then because you're all in that same house with the granddaughter and the baby, then you all are sharing all of those risks.

Becky: Great. Thank you. Our next question. How reliable are IGG and IGM tests for determining if you have the virus?

Dr. Tomayko: They're not, Dr. Payne. Do you want to answer this?

Dr. Payne: Oh, yes. So, there's been a few different generations of antibody tests and the early antibody tests were not very reliable. There are a couple ones that are more recent that are reporting, you know, greater than 99% specificity, which for actually this purpose is the most important. So what specificity is if you have a positive test, did you actually have COVID-19? Obviously that's really important because if there's a false positive, can you imagine somebody's gonna think that they're invincible? You know, and go out there and just do their thing and in fact that if there's, if they actually weren't exposed and they could still get infected, that would be dangerous.

Right now what people think is the best piece of C antibody test, because the challenge is that there's not a great gold standard, because you're trying to develop a brand new test, and they are testing it on a brand-new disease. You know, when we're trying to develop the tests for everything at once, you always need a gold standard. Where it's like a known, positive, known negative to validate your test. And they're just, you know, haven't been as many cases yet to really get, you know, thousands and thousands of samples to know whether that's the case. So what they're saying the best uses right now is to generally understand, what is the approximate rate of infection in the population. So I think you might have heard on the news, like New York City estimates, it might be about 20% in New York City.

If you look in other communities, it's hovering around 2 to 3% and a lot of the communities, elsewhere, which means that, like, actually, a lot of us have not been exposed, and why does not herd immunity that's occurred in those communities now? You know, people were talking about immunity passports. Like, that's something that they're thinking can't be true. Because what they can only do is retrospectively look back and say, OK, for everybody that had a positive antibody testing for everybody, that negative antibody test, if we follow these groups over time, you know, what was the rate of new infections and the antibody positive group versus the antibody negative group, and over time, will then know. So like by next year, we'll sort of know better how to use these tests. Right now, I think it's a little challenging, and Dr. Tomayko, if you wanted to add anything on that.

Dr. Tomayko: Sure, the first thing to add in is that if your test is positive, that is a strong indicator that you've had COVID-19. However, if your test is negative, it doesn't mean that you, that you didn't have COVID-19.

The chance that you're going to make antibodies are all with the coronavirus. In particular, the sars COVID-19 virus. It's variable, said most secure, the longer you are sick, or were you in the intensive care unit, were you in intensive care unit for 14 days, rather than just eight days, the sicker you are, the higher the chances that you're going to make antibodies that can be detected by the tests. The tests are very good if you have had a positive, you almost certainly did have the virus. But if your test is negative, antibody test is negative, it doesn't mean you did not.

Becky: Great, thank you. Our next question asks about the effectiveness of having a HEPA filter inside the car. Is it necessary? Does it help? I guess you can put it in your car to filter out air.

Dr. Maverakis: First, we'll have a cabin filter so they'll have the capital to filter already if they're Honda's. It's behind the glove box, usually. I think you can check to see how much filtration that would be but the ability just to filter the air in the car is how much is getting circulated through the cabin filter through the HEPA filter whatever you install in the car. So it's not gonna be like exchanging the whole volume of air in the car through there every couple of seconds to give you, you know, filter out all those droplets. These are all things you have to factor in. Such as, reading up on how much it's actually airflow going through the filter, but your cars already have a cabin filter, right? I don't know what I don't know how much filtration that provides, but that's similar to like the cloth mask, probably.

Becky: Great, Thank you. Our next question is asking, they're both 10 milligrams of Prednisone, and 2500 of Cellcept. Will they be able to take the virus vaccine when it comes out?

Dr. Payne: It depends on the nature of the vaccine that's approved. So when they basically say that you can't be immunosuppressed, It's usually because it's live attenuated vaccines, which means that it's, they take an actual virus and the heat, kill it or do something else to it so that it can't replicate. But there's always a tiny, tiny chance that you're getting a live virus and there, you know, with the mrna vaccines, you know, that's not a full virus. And they can't turn itself into a full virus. So they think, which is why it. But, you know, at the end of the day, I think that we can't predict that. Right, Now, we basically just have to wait to see which one gets approved, because I'm trying to remember. I think I heard the numbers on this or something. On the order of, you know, hundreds that are in development right now, something like 140 that are in development, and something like 15 have actually made it to some point in the clinical trial pipeline. So it's just really hard to know which one will ultimately get approved and get approved first.

Dr. Maverakis: Just to go back to the last question, I asked Google about these cabin filters so they can filter out zero point three microns, which is similar to what N-95 mask is capable of. So the cabin filter is able to filter out droplets in your car. It's just how much air is going to be circulated through that cabin filter. I doubt that you're going to have a heavy exchange rate between the air that's in the car and the air that's going through the cabin filter, a lot of that is air from the outside. So you don't get a lot of particles inside of you and there's going to be a little risk of COVID-19 getting you while you're driving the car that comes from the outside into the car. Also there's not going to be enough air exchange in the car to protect you from some passenger who has COVID-19.

Becky: Great, thank you. Seth, you have a question you are currently unmuted, Please ask your question.

Seth: I have the question. I'm 40 years old and I've had extended infusion done in two doses in November 2016 and 2019 last year. My question is, if I were to, unfortunately, have this virus, and having been through the infusion, you don't have me or more of a risk into fighting it in comparison to someone who has not had that medication. Do you think it probably does make you less able to fight the virus in the beginning?

Dr. Tomayko: We don't have the hard data for that. But it is a reason for you to be extra cautious to try to protect yourself from becoming infected, OK?

Seth: Okay.

Dr. Payne: So you had it about seven months ago, is that right? Yeah, so, um, depending on how you respond to it, you know, your B cells will go down, but then starting somewhere between 6 to 12 months, your B cells actually start to come back. The reason why we're a little bit worried about viruses with Rituximab. If you look at the label for risks and they always list out the black label you have items that confer risks, You know, two of them are viral infections. Reactivation hepatitis B and reactivation of JC virus, So the thought is that Rituximab in particular might impair your ability to respond to viruses. And COVID-19 is a virus. However, there was a study that was done by Ron Feldman's who I think some of you know, as he's done a lot of work with the ICPPF, and he worked with many great immunologists there at Emory who normally work on the flu vaccine, and they actually looked at pemphigus and pemphigoid patients as well as other patients who actually took Rituximab and then they measured at what point were you able to respond to the flu vaccine? The flu vaccine is a tiny bit different because the thought is that most of us have been exposed to the flu at some point in our life. So, it's a little bit of an easier response, what we call a recall response, rather than a brand-new response.

What they found was that, before 4 or 5 months, chances are not very good, like you're not going to really make a response at all to protect you against a virus, or vaccine, but starting at five months they saw some pretty respectable responses. The longer you went up to 6, 7, 8, 9 months you were getting close to normal responses compared to people who never got Rituximab. So, that's why, you know, when we're thinking about Rituximab now and kind of weighing out pros and cons. You need to think about how severe my disease is? What's the likelihood that it's going to occur? You know, am I staying at home, anyway, And I'm actually

pretty safe now. Everybody's approving work from home, so, you know, if patients have severe disease, are working from home anyway, it's really easy for them to stay at home and physically distance. Sometimes, the best answer is to just get Rituximab now. It's going to wash out within 6 to 12 months by then we should have a vaccine, right? We hope. So that's kind of one of my thoughts. But if it's kind of mild and you're doing OK Then there's no need to just rush unnecessarily to get something that might immuno-suppress you during a pandemic.

So that's sort of how I've been doing my counseling surrounding it, and I'll let Dr. Tomayko and Dr. Maverakis chime in as well.

Dr. Maverakis: I was just going to say it is possible a daunting task to answer this question in the presence of two B cell experts. But my answer would have been very similar to Dr. Payne's. The Retuxin is gonna wipe out your B cells, but you're still going to be left with your memory population and some other Retuxin resistant cells. The difference between being protected from getting a vaccine and being protected in fighting off an active viral infection is a little bit different because the vaccine is going to raise an antibody response to protect you from subsequent infections. But in the end, when you're getting infected with the virus, there's many components of your immune system that's going to be fighting off the virus that's just not going to be just your B cells. Your memory B-cells are going to provide some protection from the COVID. Even though they weren't raised to COVID. They're raised to some other antigen. They'll still have a little bit of protection there the Retuxin won't wipe out like every single B cell you have. Yes. you will have less than 1% left, but there are still going to be a little bit of B cells. I think in general, just regurgitating what Dr. Payne says the longer it's been since you have that Retuxin, the less immunosuppressed you are in, it sounds like you've gotten November. So you should have a decent immune response. I wouldn't say that it's gonna be as good as somebody who never got Rituxan but I wouldn't go around terrified that you're gonna get COVID and die from it because you got Rituxan seven months.

Becky: Great, thank you. Anthony asked, if we have a new patient suspected strongly to have Pemphigus or Pemphigoid disease based on clinical presentations during this covered pandemic, how urgent do we need to do a biopsy on this patient and can we just jump into corticosteroid treatment for this patient?

Dr. Maverakis: I would do a biopsy if, if he says, can you, I don't know about the other doctors on the panel but I think in general, we confirm the diagnosis, at least in parallel to starting therapy. Although, you could argue that, you know, your clinical suspicion is so high that its Pemphigus, or that its some other bullous disease and might have similar therapies, but two

things there is I don't know if the Prednisone only therapy would be appropriate and then and then starting aggressive therapy without getting a confirmation, I wouldn't do it.

Dr. Payne: Yeah, that's an interesting question. I mean, you know, and it's also different between Pemphigus and Pemphigoid, because there's a lot of pemphigoid mimics. I think it's actually harder to diagnose than a pemphigoid in some ways. There's a certain number of things where the biopsy alone may not be enough to diagnose it. And you need a confirmatory study such as two biopsies or biopsy plus bloodwork, et cetera. But at the same time, I think that, like during the height of the pandemic. so, you know, some hospitals canceled all of the patient visits from March 18th to March 31st, because it was just hitting like a hurricane. We just had to depopulate the health care system. And during that time, we had to cancel a lot of new patients. You know, some people were in dire circumstances, and we basically said, OK, well, right now, we are definitely back to the art rather than the science of medicine. So what you're doing is, you're weighing the relative risk. So, what is the relative risk of treating somebody that may not have pemphigus with a certain dose of steroids during this time? Versus, having that person come in and say, for example, if you need a mucosal biopsy to diagnose as opposed to skin biopsy, like I think a skin biopsy is going to be safer than a mucosal biopsy. Because that's just there's sort of no way to get around, aerosol generating procedures when your biopsy is in somebody's mouth. So I think people had asked about going to the dentist. And you know, I think dentists are concerned because if you think about going to the dentist in your mouth, as I explained they're opening your mouth right open there and they're just suctioning and doing all these things with water spraying everywhere and you're just generating tons of aerosol during those procedures. And so that's why it's a little bit challenging. So it's about weighing that out. But again, I think that some doctors are actually still doing telemed video to just lay out those risks and determine whether or not it's worth it to ask you to come in for the biopsy and that's sort of how we're doing that.

Dr. Maverakis: Yeah, I also think it's geographic because in our area we have very little COVID-19 cases compared to Dr. Payne's area it's much more prevalent. So me slipping in patients for biopsies and things like that isn't as much of a concern. B absolutely, if you're in an area where it has a very high incidence of COVID-19, then everything has changed. In terms of doing the biopsy for the healthcare provider, it's, it's very risky to do an oral biopsy compared to the skin biopsy, for the patient it's probably the same risk.

Becky: Great. Thank you. Our next question says, What are your recommendations for teachers in the classroom?

Dr. Payne: My husband is a high school teacher, we talk about it everyday.

Well, I mean, hopefully school is out now. I mean, and all of this is actually a very challenging situation because he basically says 38 kids in a classroom goodluck telling them not to touch each other or high-five or do whatever. That is an incredibly challenging situation, And actually, he was basically saying that the communications are changing constantly, but what most schools are commenting, that they are trying to figure out a way for education to resume in some form in the fall. And every school district is trying to figure out how best to do that safely and what that means, so that they can continue some things virtually, Because everybody's going to have a different risk profile. For example, if a teacher may have multiple risk factors, and it's not safe to return, know, then, actually, that is a pretty high risk place I mean, you've got a densely populated population in a closed space for a long period of time. But, yeah, that's definitely something where the guidance is constantly changing, and most people are are basically thinking that they're going to wait to see what the patterns of infection rates are in the local community, to kinda make the decision closer to the fall

Becky: Great, Thank you.

Dr. Payne: I guess it, you know, even if you do go back. And never be the same sorts of things. Hand-washing, hand sanitizer in the classroom. You know, they were saying that you can even avoid face to face discussions, which I know is exactly what you have to do as a student, they don't respond to just these video chats, So, yeah, it's a really challenging situation.

Becky: Yeah, and I imagine with the elementary school it's going to be even more of a challenge there, usually little vectors of illness and sickness. And so, anyway, on top of all of that's going on, our next question is- How does IVIG affect your immune system in relation to your COVID19 risk?

Dr. Tomayko: We think that probably affects your COVID19 risk normally. In terms of your ability to fight off the virus should you become infected, one area where it's possible that it could increase risk would be if you're a stroke risk. While there is an increased risk of stroke with COVID19 disease and IVIG. Probably very, very slightly also increases your risk for having a stroke.

Becky: Great. Thank you. Our last question, we'll do a live question. Christy, I don't know if you can hear me, but you are unmuted, but it looks like you are still self muted at your end. If you'd like to ask your question.

We have gone over by a half-hour and I just wanna thank all three of you for taking the time to be with us. It was definitely a quick time, and you guys provided the most amazing self presentation to get as much information to our listeners as possible, so thank you so much. Again, thank you, and it was extremely educational, having you here, I want to give a thank you, for everyone that hung with us. And listened to our call.

I would like to thank ***all of our speakers*** for being on the call with us today. It was extremely educational having you on our call. I would also like to give a huge thank you to everyone on the call for joining us today and thank you to Genentech, Principia Biopharma, Argenx, and Cabaletta Bio for helping to make today's call possible.

I have a few announcements:

Our next Patient Education Webinar will be on June 18 with Dr. Neil Korman, Professor of Dermatology at Case Western Reserve University in Cleveland, Ohio to answer your questions about treatments. Please submit your questions to Amethyst Yale at amethyst@pemphigus.org. You can register online today!

We want to thank everyone that has donated to the IPPF's Hope Fund and to our generous matching partners, Principia Biopharma and argenx for helping us raise over \$38,000. As you know, the IPPF's main focus is to improve the quality of life for all those affected by pemphigus and pemphigoid through early diagnosis and support. Day in and day out, we're here for you, whether it's by providing support through our peer health coaches, supporting the research of new treatment options, advocating on behalf of the rare disease community, or accelerating the diagnostic process. What you may not know is that we accomplish all of this with just 4 full-time and 6 part-time employees. Though our commitment is international in scope, the IPPF operates as a small nonprofit organization. With your generous support we are able to keep hope alive and continue supporting you and our community in the way you have come to expect. Principia Biopharma is still matching all donations and we have a few days left left to

reach our goal of \$40,000. Help us reach our goal by donating online at www.pemphigus.org/hope.

Also, for those of you that do online shopping through Amazon, you have the opportunity to give back all while shopping. Visit smile.amazon.com and search for the International Pemphigus and Pemphigoid Foundation as your charity. Amazon will donate 0.5% of all purchases made through amazon smile to the IPPF.

If you have not registered for the IPPF's natural history study we encourage you to do so. The IPPF Natural History study is a patient registry sponsored by the National Organization for Rare Disorders (NORD) and the US Food and Drug Administration (FDA). You can register today at www.pemphigus.iamrare.org. This online data system collects, stores, and retrieves patient data for analysis in research studies. The more data we can collect, the better the information we can give to researchers, the sooner they can find better treatments, earlier diagnosis, and one day – **A CURE!**

Lastly, If you have a question that didn't get answered on the call, or have additional questions please e-mail me, Becky Strong, at becky@pemphigus.org, or call (916) 922-1298 x:105, and we would be more than happy to help.

This call recording will be sent out with the survey following this call.