

StreamBox

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APSA Virtual Meeting

"The Role of the Physician Scientist During a Pandemic"

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*****DISCLAIMER*****

>> Good Afternoon.

>> Can you hear me okay?

>> I can hear you. Can you hear me? I'm good?

>> Yeah. Totally fine.

>> Thanks for inviting me to do this.

>> Yeah, effect. I don't have a web camera or I would share my face with you, too.

>> No problem.

>> We can't hear you. Sorry.

>> Is it working now?

>> Yep. Great.

>> Okay. Great.

>> For those on the call, I'll repeat, but the way this is going to work, we'll just have a conversation with Dr. Agnas and Parmar. For those of you who are interested in asking questions, you can go ahead and use the chat function and then we have somebody monitoring those that we can then ask, so you'll be muted on that session. And then for those who are joining us from their cell phones, you can also go ahead and use Twitter to engage with us. So we'll be live tweeting and you can ask questions that way as well.

>> And this is Sally. I'm on.

>> Oh, great.

>> Hey, Sally.

>> Hey, Dave.

>> Nice to be in the same virtual space with you.

>> I feel the same. I've been seeing your words of wisdom around lately on many media.

>> My apologies.

>> Maybe my camera is not on. Is my camera on?

>> I don't see you right now, but there's so many people on this feed, so I may need to scroll. There you are.

>> Hi, Dr. Aronoff. If you want to click, there's a button on the top of the screen that should say view everyone. If you click on that, you can select a view to active cameras only, which should help with the scrolling thing.

>> All right. Why don't we get started? So my name is José Rodriguez. I'm a physician-scientist trainee at Michigan State university in the MD-PhD. My degree is molecular biology and molecular genetics. I'm in Dr. Shannon Manning's lab. My cohost is Yentli. Go ahead and introduce yourself.

>> I'm Yentli Soto Albrecht second year MD-PhD at the University of in Pennsylvania. Since I'm a seconds year, I have yet to choose my lab, but I hope to spend my career as a MD-PhD fighting emerging and reemerging viral infections.

>> So the way we're going to continue the session is we're just going to have a conversation here. We have some prepared questions, and if you guys want to engage with us, you can go ahead and use the chat. This session is also being recorded and there's not any slides for anybody to look at, so that's not something to worry about. And at the end of the session, we'll post this on our website. And then for those of you who are joining us from your studio on your phone, you can -- audio on your phone, you can engage with questions on Twitter as well. What this session really is about is what is the roll of a MD-PhD during the pandemic that we're currently in. As we know, Covid-19 is an infectious disease caused by the novel SARS coronavirus virus. It was first introduced into humans or recorded as such in December, in the late weeks of December, from December 12 to 29 in Wuhan. And just under 400,000 infections have been detected and reported in the United States and alarmingly approaching 8,000 deaths in the U.S. just as of this morning.

And so this is really radically changing sort of everyone's reality. And in particular, for those of us in healthcare as well. And I think ever interest, too, it has changed the way that folks viewed infectious disease community and infectious disease physician scientists, and so we really wanted to highlight the work of infectious disease physician scientists, understand their reality, and discuss that for our membership. And so it's he my honor to introduce our two speaker. Dr. Dave Aronoff is an MD and Director of infection she diseases at the Addison B. Scofield chair in medicine and chair of pathology, microbiology, immunology, and medicine at Vanderbilt university Medical Center. And Dr. Sallie Parmar is an MD-PhD, a professor of pediatrics, molecular genetics, microbiology, immunology, and pathology, and also the associated Dean for business scientist development at Duke. And so -- physician-scientist development at Duke. They're both physician-scientists. They both have labs and study infectious diseases and immunology. The first thing we want to do is really understand what is your formal reality, what is your role as an infectious disease physician-scientist and how has that changed and what are you doing to sort of address this pandemic now?

>> Doctor Parmar, you want to start?

>> Okay. Sure. So like José introduced, a pediatric infectious disease physician and a researcher who spends time studying neonatal pathogens and how it can elicit immune responses and how it can be protected against vertical transmission of [Indiscernible] pathogens. My typical life is mostly involves leading a research lab group and working on several projects with many collaborators across the U.S. and even abroad to study how we can develop vaccines for HIV cytomegalovirus. I definitely jumped into the Zika outbreak when that happened with

research outbreaks and how maternal immunity function and how it can protect infants even better than natural immunity, and then how the infant immune system really differs from that of adults.

So I spent a small amount of my time working on clinical infectious diseases and seeing consults in the hospital, and then I spend some proportion of my time also working towards improving the landscape for business scientist development across Duke university and really across the U.S. as well.

But, you know, all of our lives were up ended somewhere around February-ish and certainly in March when, you know, it started becoming a reality that this coronavirus that was newly emerging in China was not going to just remain in China. I think I, like probably many others, thought this would go the path of SARS one and it wouldn't necessarily be something that would certainly be impacting us like it has, so I remember getting an e-mail early on from a friend of mine who develops non-human primate models in – human primate models in Wisconsin. He said I'm putting a group together around the new coronavirus. Would you like to join on and represent the antibody responses? And I thought, that's nice, Dave, you know. I loved working with you on Zika, but maybe my plate is too full. I don't know that I can take on one more virus. So I have to say that I initially thought, you know, at some -- (lost audio with speaker.)

Efforts, but you know, as time went on, it became increasingly clear that this is something we're all going to be [audio skipping] models, turning those into additional research opportunities for coronavirus. Also with pathogenesis, trying to understand why pediatric infections are seemingly mostly asymptomatic, unlike the severe pathology that's in adults. So certainly I've tried to bring whatever I had to bring to the table for this work towards coronavirus, and of course, you know, it became the only research that we could really pursue in a non-virtual way at Duke and many other universities. So my life certainly changed toward a large coronavirus push while trying to keep everything else afloat in the labs and support our trainees as best we can in these unusual times. I'm turn it over to Dave.

>> Thanks very much. José and Yentli, can you hear me okay? All right. Well, first of all, I want to thank APSA and particularly José and Yentli for inviting me and sharing time with Dr. Permar is an honor with me. I'm a big fan. We both work in reproductive health.

As a physician-scientist, I almost can't remember what I was doing before Covid, but I work -- I still work a lot on reproductive immunology and primarily understanding bacterial infections during pregnancy. And we work a lot on Group B strep and try to understand host microbe interactions in the context of pregnancy.

I'm the Director of the division of infectious diseases at Vanderbilt, which is a pretty good-sized division at a large tertiary care Medical Center, and so my job has completely shifted during the Covid pandemic. And you know, now I pretty much do all Covid all the time. My lab is shut down, but all the labs at Vanderbilt are shut down unless they're working on coronavirus relevant to Covid or diagnostics or vaccines. So other than that, pretty much all labs are shut down.

And that is obviously a whole big set of challenges that we can unpack during this session, but you know, we can get more into details about how Dr. Permar and I are responding to this pandemic, but it has certainly quickly made it so that, you know, I'm working a lot both as a physician and a scientist somewhat simultaneously. I'm involved in the clinical care of our patients with Covid, and Tennessee is pretty late to the game so far. We only have a little under 4,000 patients in our state, which is a big number, but pales in comparison to many states in the United States and many countries in the world. And we are still under 50 fatalities. So our healthcare infrastructure hasn't get gotten really bent or stressed or overwhelmed, but I'm very involved in making sure that our healthcare infrastructure is strong, that we have the capacity to provide advice on infection prevention, that we have the ability to be involved inpatient care. We also cover a network of hospitals

and clinics outside of the main campus at Vanderbilt. And so I'm on zoom a lot. I do a lot of meetings around what our treatment of patients is going to be, which as we know at a time when we don't have data, it's pretty much an evidence-free zone right now and we're trying to onboard a bunch of clinical trials, that this literally changes daily, so we meet everyday on those committees trying to put out the best guidelines and guidance documents that we can.

I sit on committees to vet and prioritize research projects, because as you can imagine, there's a lot of really important opportunities to understand what this virus, which is new to humans, is doing, and how best to respond. How best to test therapies. I think -- and I'll end this portion with what I think is my -- what I think is perhaps one of my most important roles as a physician-scientist is to be able to remind people we're working from a data-free area and where we need data and evidence and how we need to be careful and tempered in enthusiasm about treatments or preventions, just because they found good or we might want them to work. And so a lot of the role that I play is in communication and trying to get people to understand what we know and what we don't know.

I think my job has changed every single day since my attention got focused on Covid. And so if I'm not wearing this hat about division director, I'm wearing this hat about clinical response to Covid. I'm wearing this hat about public health communications. So I'm just walking a lot of hats all the time. I'll stop there, because I could go on.

>> Thank you so much, Dr. Aronoff and Permar as to what you're doing during this pandemic. This question is for both of you. And I think you touched, you both touched a little bit upon this. So how can multi-disciplinary research to find solutions for Covid-19 really progress when labs are being shut down all across the U.S. and the world?

>> Thank you. I moved rooms to try to improve the sound, but the picture is not as good. I'm avoiding my family members who are also, you know, taking up the [Indiscernible]. But thank you. Yeah. Collaboration has never been more important than this pandemic has brought to the table, because the way we're seeing it, we can't just wait for one solution to try it out and then go to the next solution. We have to, you know, pursue them all in parallel. And so all of that, you know, wading through what has been the necessary closing down of as many research operations that are nonessential as possible to contribute to the social distancing that's really the only defense we truly have against coronavirus right now.

So it is tricky. And our universities and all of our research systems are changing their policies daily to deal with this. And so, you know, what may have been it is policy one day has been changing. But I think it just really speaks to the importance of communication and openness. I think unlike anything ever before, what I've seen from this is that competition that often you know, can be a good thing in scientific research, but it could also mean that maybe unnecessarily duplicative things are going on at the same time. That seems to be out the window in the circumstance, and I think that is what we all have to do. We have to bind together to make sure that, you know, everyone is aware of what is the latest on, you know, both models, as well as treatments, as well as what the basic science is behind why some people get super sick and some people don't.

So I think that is really as important as quick information sharing and openness and collaboration that is unlike anything we've ever done

before in science. And so I think it will be one of the silver linings.

>> Yeah. I totally agree with that. I think actually in terms of collaborating around Covid, it's really incredible to see. I mean, first of all, there's some new funding lines available to help support that kind of collaboration. Second of all, in this current age of data sharing, it's been really neat to see people be so open with their data, putting things out in preprints, putting things out in realtime. That's been very exciting. And then just at my institution, because, you know, in some respects because so much has been shut down, it's put a lot of people into play. Biostatisticians, bioinformatics experts, experts who want to contribute, if somebody has a program going to fight Covid and they need somebody who has sequencing chops or something, it's actually been really nice.

I might also say that one of our larger research labs that does a lot of sequencing and has a lot of robotics and automation immediately pitched in all of their equipment to help us scale up diagnostic testing for our clinical lab. And so we were able to ramp up testing and conserve reagents, because investigators were willing to just completely shift what they were doing to address this as a public health emergency or crisis. I think there's some big existential questions about all the research that goes on that is not Covid, but I think I've been really excited and pleased to see exactly what Dr. Permar is doing, which is this collaborative spirit-decourage around Covid.

>> Thanks for that. And I'll remind everyone who joined the call that you can engage with us by throwing your comments in the chat and also tweeting with us @A_P_S_A.

Another question we have, I guess from your expertise, either for Dr. Permar studying sort of -- for both of you, the field of maternal immunity. What do you think are some of the front line translational research questions in terms of Covid-19 and in the pathogen? What are at least some of the questions that you see that need answering right away that might make a huge impact?

>> Dr. Permar, do you want to take that first?

>> You're going to have to go first one of these times.

>> You tell me when and then I will.

>> Well, I'll take this one first. You take the next one. So yeah. I mean, I already alluded to it a bit, but I do think that it's really remarkable how little disease we're seeing in the pediatric spectrum, and that's even with kids who -- we know we have a lot of complex children who are immune suppressed, who have complex medical diseases. And even there, we're not seeing a lot of disease. And so, you know, understanding what is different about a pediatric pathogenesis and immune response, compared to an adult, I think is something that may drive an understanding that we need for the vaccine and even for therapeutics. So that's an important question that I'm certainly proposing. Probably Dr. Aronoff is, too. And then I think we also know little about sort of what are going to be the critical immune responses. I think we are all focused on the neutralizing antibody responses, but in the chance that they may wane quickly, what are going to be the responses that are going to persist and even potentially offer some cross protection against, you know, circulating coronaviruses, but what about the next, you know, human coronavirus that newly emerges in the population? Could we develop vaccines toward that end? Is I think those are two of the many questions that I can think of. Dr. Aronoff?

>> Yeah, I'm just really surprised at how little disease my colleagues in pediatrics are seeing in children. That's shocking to me. And so I think that is probably the number 1 unanswered question. There's a lot of really important information that needs to be understood about transmission of this virus. You know, we're learning more about people shedding the virus for a long time. Is that important for transmission? Is there really an important aerosol component to this transmission? Is this grand experiment of wearing masks in public doing anything? And so I think people who are interested in viral transmission dynamics, this is presenting an incredible study opportunity that will be very important for the next time we're facing something like this, which I think is going to be a reality.

The second thing I would mention, and Dr. Permar alluded to this as well, is the numbers of people affected and infected by this virus are just enormous. And so we now have an incredible capacity to try to understand the genetic underpinnings of susceptibility and the clinical variation that we see, why we have 30 year olds dying of infection and sometimes 100 year olds that don't. And we're sort of his link away big chunks of risk factors, diabetes, hypertension, age. But I think there's a lot to be learned about genetic contributions to susceptibility. So that, I think, is going to be important.

And then a question I get asked quite a lot, which I wish we knew the answer to, and this, again, is something Dr. Permar mentioned with respect to correlates of immunity, how durable is this virus? And is it really going to be it is case that people that were infected during this pandemic will not be able to be infected by this exact strain of coronavirus in the future or will immunity wane? The number of research questions that are really top of mind and important about this virus are so vast. I mean, we could take up a whole day just white boarding really important questions. And I think that's what happens when you have a virus that's completely new to humans that's causing a pandemic.

>> Thank you. Dr. Aronoff, one could argue that it's difficult to study the transmissibility of a new pathogen such as this one if you use the same clinical disease manifestation and you're trying to apply it to different demographics. So this question kind of is along the same lines as some of the questions being asked in the chat box, but do you think that it's presenting differently in the pediatric population? And can it be fecal/orally transmitted in some populations and not others?

>> Yeah. That's a really -- even a better question for Dr. Permar than me. Since I'm not a pediatrician, I can sort of punt that question towards her, but you know, that's something we don't know is the extent of relevance of fecal/oral transmission of it's biologically plausible and we're learning that this virus seems to cause gastrointestinal symptoms in adults. Diarrhea we're seeing not I think frequently, nausea, and -- infrequently, nausea and vomiting. And coronavirus can manifest in the GI tract. And of course we're all being told by people like us to not touch our mouth and nose and eyes and for the possibility that we could get infected by merely contaminating our mucosal surfaces with the virus.

So I think that's a real important possibility. I don't know that it's been established firmly, and this is important, too, because I get a lot of questions about food safety. And I think there's a lot we don't know about the ability to get infected through food, for example.

>> Yeah. I'm maybe just add that I think it's going to be important to understand the role of children in transmission and are they the asymptomatic spreaders? Because there is a big implication for who we should target the vaccine towards. So of course we will, you know, have this rollout in mostly safety test and go healthy adults and even efficacy testing in adults where you're seeing the cases with disease, but in the long haul, should this be, you know, targeted towards the pediatric vaccine schedule? Part of the pediatric vaccine schedule I've, both for preventing disease in that population, but also for addressing the transmission routes. And of course we know that children are very good at sharing all of their secretions and even, you know, fecal/oral transmission. A lot of that comes down to changing diapers and things like that. So yeah, I think understanding the roots of transmission and who are the asymptomatic spreaders is going to be important for

designing the vaccine strategy.

>> I'll ask this one from Dan in the chat. He asks, do you have data on -- in terms of the symptomatology of diarrhea? And he argues that the published data shows around three or 4% in terms of how many patients are showing diarrhea as a symptom. Is that something that you've seen or other data that you've seen elsewhere?

>> Yeah. In the adult population, I think it's higher than that. There is a recent study that was published I think in either annals of internal medicine or JAMA. More than 15% of people's primary presentation was a gastro intestinal presentation. I don't know the exact percentage, but it was borderline 20% or so. We are seeing patients here who have diarrhea as a significant first complaint, but it's a minority for sure. It's not the majority of patients. But I get the sense from the literature that are out there now that it's not single digits who are having gastrointestinal complaints, but it's closer to 15, 20%.

>> So I think you both touched upon how important it will be to assay whether there is long-lasting immunity to Covid-19. How would you go about testing whether people can be reinfected with Covid-19? Are there any ongoing attempts to collect those sort of clinical data?

>> Dr. Permar, you should answer this one.

>> Ask well, maybe Dr. Aronoff knew that I would say I think animal models can play a big role here, in particular I work in nonhuman primate models that, you know, are some early data has shown that those animals can at least, you know, become infected, shed virus, develop some lung disease. And so that would be a setting in which you could really time the reinfection to understand whether, you know, immunity is protective in the long term and follow closely for whether you see any re-[Indiscernible] of viremia or viral shedding. But it's going to be important to show it in human populations, too, and so I think this is really -- we prepare now for our second wave and our third wave by setting up those clinical trials and I'm sure Dr. Aronoff has been very involved in this, too, that, you know, setting up the bases now for following patients that are infected during this wave in the long term is very important so that we can understand if they're at risk for a secondary infection or do you ever see virus shedding? How long is the initial phase of virus shedding? Do you ever see it pop up again? Hopefully those patients that we enroll now in the acute setting will stay in studies to be, you know, long-term assessed for those door ability of immunity -- durability of immunity.

>> Yeah. I think we're going to do the grand human experiment here, whether we want to or not, and I think we're going to learn a lot when SERO diagnostics are readily available. The extent of people who have at least antibody correlates of immunity to this virus, and we'll see if this ends up being something that circles back through who we thought were immune, even people who definitely had PCR positive Covid illness, whether they get it again. So I don't think -- I mean, exactly what Dr. Permar said, we're going to be in a position to see waves of this. I do think the nonhuman primate experiments are going to be really exciting in terms of allowing us to dig deeper into mechanisms and certainly human experiments with monoclonal antibodies and with vaccines are going to teach us quite a bit as well.

>> And also, I'm curious about your experience with seeing folks with the disease Covid-19 and how that has changed your sort of interactions with other teams in the clinical setting. So can you describe a little bit about what you've seen in terms of collaboration, in clinical management, and what your role as an infectious disease doctor is within that clinical team?

>> Yeah. Sallie, do you want me to start with this?

>> You start.

>> All right. You know, I think that I've benefited a lot from freeder ship at my -- leadership at my institution from a department chair and others to put us in a position to try to be prepared as our influx of patients increases and we think about what are going to be the multi-disciplinary care teams who are going to be needed to care for these patients? Right now what we're doing at Vanderbilt is we have two multi-disciplinary clinical huddles a day. One for patients in the intensive care unit and one for patients not in the intensive care unit. Representatives from the Division of infectious disease are present at both. I've been pretty much present at all of them and also to make sure that I'm aware of any kind of problems there are or any kind of continuity issues, but we also have pulmonary critical care specialists, immunologists, rheumatologists, cancer biologists, people who work with a lot of the immunologies that are being floated around as therapy. And we have clinical trialists, who are the PIs of some of the clinical trials going. And then the primary care providers for the patients be, I he wants e either the hospitalists or the critical care physicians participate in these huddles. And we just go right through each patient, look at their chest x-ray, look at their laboratory, learn about how they presented, how long since they were diagnosed, how long since they'd been symptomatic, what sort of treatments are they on? What studies do they qualify for? What are we doing today? Is this a patient that needs palliative care? We've got palliative care present.

And I have to say that that's been one way the technology has really Fostered efficiency, and I think actually increased the qualities of care, because we can use a format, we use zoom, but you can use any kind of format to have all of these different sort of experts from clinical care through really trials present and working in harmony to try and care for these patients. That, to me, is something I've never seen, I've never done that for a diagnostic group in our hospital, you know, whether it's patients with endocarditis or hepatitis C or tuberculosis, to have daily sort of online let's go through each and every patient. to me, that's a new model. And I hope it works and I hope we can keep up with the volume. I'm hoping the volume isn't so much that it swamps our capacity to do this.

>> And I'll add, you know, we work with our division with pharmacists, with the microbiologists, and really, again, because this is a changing picture everyday, you know, re-going over what is the latest this week? What are we doing about testing? What are we doing about our front line therapies? So it's really multi-disciplinary is the new norm and something that I hope bill continue. And and I would add to is that, every day at the end of each day we have a one hour meeting that's multi-disciplinary to talk about therapy and that's where our infectious disease pharmacists, immunologists and clinical trialists are not thinking about individual patients, like what's going on with Mrs. Smith today, but let's look at the evidence that's just swarming in and hoovering everywhere outside from the internet and from our colleagues.

The other thing that I think has been really great is that a lot of us in infectious * * diseases have very open lines of communication across institutions and are saying, what are you seeing at your institution and what are you doing at your institution? And okay, are you using this drug? If so, do you have criteria for that? Could you share them with us? How do you have those criteria? So we've been developing lots and lots of box folders of here's what they're doing over there and here's what they're doing over there. Whenever we change or update our treatment Al go rhythm, I -- algorithm, I push it out to the same listservs to say, here's what we're doing. What do you think? Is this reasonable?

>> Thank you. On the topic of translational huddles and this breakthrough research and discussions that are happening, somebody asked, some of us are the only medical-related person until our families. What would you suggest is the best information we can provide worried

family members who are asking where we stand with developing therapies against Covid-19?

>> You want to take that one, Dr. Permar?

>> That's a tough one. Well, I would first say listen to the scientific community and, you know, those who, like Dr. Aronoff just talked about, are thinking about this everyday and looking at the changing landscape every day, because it's not simple and it's not staying static. I would say look to the medical and scientific community, but I think there is so much change that pointing to one source. It may not be feasible in the short-term. But maybe I'll turn it over to Dave to see if you have any suggestions of places that are compiling evidence that you rely on?

>> Yeah. I mean, there are actually some really good compilers of information, even the national library of medicine has a link to the new sort of emerging Covid data. And there's a lot of really good online resources. I think it's always good in communications to stick to what we know and to stick to fund amender Go ahead, and it's not -- fundamentals and it's not wrong to say there are no proven therapies for Covid-19, that there are no vaccines available for this, that these are hot areas of research and programs where you're a student they're engaged in some of the research, and so you can reassure family members that at my institution, we're working on this, but right now the best offense that we have against Covid-19 is our defense, and that's really trying to prevent transmission and slow the epidemic.

This concept of flattening the sepiad curve I can't logic curve is one that it's really important for family members and the general public to understand. So being able to spend time on emphasizing why it is that we're having to communicate through the power of electrons and not in person is really important for people to get. So this is a good opportunity for students to really practice in communicating science to the lay public, particularly around things as fundamental as the transmission of a respiratory infectious disease and why is it that we have to stay 6 feet away from another person? Why are we limiting groups? Why are we advocating that our governors put in shelter in place sort of things? And why is it important to use hand sanitizer or soap and water? These are really basic, you know, influenza pandemic of 1918 sort of tactics, but that's where we are with this virus.

So I think one just message is don't -- I think it's important not to try to get too much into the angstrom level of where we are in our research about this and just, you know, explain to people some basic fundamentals of this infection.

>> And I'll just add one thing. I do think there will be a new opportunity to really come to appreciate evidence-based medicine through all of this, because there are, you know, claims being made daily about what, you know, the newest therapy is and then, you know, you have consequences of people who go out and think that they should be just taking that medicine, even if they aren't sick. So it is an opportunity to talk about evidence-based medicine, why it's important that we do the trials, that we do controlled trials, that we reported on these trials and be open and go through all the regulatory bodies for those trials. So that will be a lesson certainly that you can use this opportunity to teach the public and your family.

>> Thanks for that. Yeah. I think my next question really is sort of about that. The changing landscape of physicians and in communication. And you mentioned earlier before the session started, Dr. Permar, we've seen Dr. Aronoff on C. In N a bunch as well. And I'm particular how businesses -- CNN-how you've helped stepped up into this role and how I've prepared to sort of speak in this way in a public avenue about this disease. Do you feel like you were prepared simply through your training or were there other skills that you've picked up along the way that enabled you to communicate so well and be confident in what you're saying on the news, which isn't something I think people sort of sign up for when they're training as a physician.

>> Yeah. I think the mechanics of presenting on the radio or on the television is something I'm continuing to learn by just doing. It's weird to have an ear piece in and hear somebody and look into a camera and not see the person interviewing me, but just hear a little voice in my ear. The mechanics of that are weird and it takes some getting used to. I have to say, though, that the training I've had as a physician-scientist from mentors who say, okay, you have to have your one minute elevator pitch about what it is that you're doing and you have to be able to explain your abstract concisely to people, all of that training, standing in front of posters at meeting after meeting after meeting and having to practice my pitch, whether it's in a concise paragraph as I'm writing it for a grant proposal or it's in literally an elevator at a meeting, that practice to me has been invaluable, because I'm essentially doing the same thing where I'm learning in realtime about a problem with which I'm not very familiar and I'm recognizing the important questions and I'm learning about how my institution and my city and my state are dealing with it and then I'm being asked to distill that into small aliquots and state them in a way that somebody who is not a content expert would understand. And that's all stuff that we do when we write grant proposals or we speak to an audience that's diverse. And so my bias is that physician scientists are really among the best prepared to be public health communicators and sciences communicators, and increasingly we're seeing, particularly in students, that there's a lot more emphasis on understanding how to be a science communicator. And in fact, that's really an exciting discipline that people are going into out of their graduate training is sciences writing and science communicating.

So every time that I'm getting a question into a small ear piece, I'm somewhat imagining that I'm explaining my work to some well established scientist at a meeting and I'm back in my junior trainee mentee days and I'm nervous and I'm trying to just get the message right to the point and say it in a way that's understandable to a broad audience.

>> Yeah. And I'll just add that physician scientists have the advantage of learning how to distill a huge amount of information on each patient and each E PR case that you've re-- emr case into the one liner. The one liner and then a story that someone can follow with a good timeline. So that's another example of where physician scientists have an advantage, in addition to writing hypotheses, also, developing the patient presentation. So I do think, like Dave said, that physician scientists are very well poised to speak to the broader community, and I can say that every morning I wake up before anybody, and these days I've been turning on CNN and I see my friends. My friends are all on CNN. And so it is exciting and I'm impressed by all of them. So yeah, I think when opportunity comes to you to communicate science, take it, because each time you do it, you get better and it's so important, because we are at a time in our history where the anti-vaxers had a larger stage than the scientists did, and I think we will have the opportunity to switch that after this pandemic, we're looking back on it. So now more than ever, it's he going to be important for scientists and physician scientists to communicate and to take that podium and that ear he is * -- ear piece and turn it into an important message.

>> Amen.

>> Thank you for the talk on communicating science. I think it's something that's not often talked about. I, myself, have been challenging myself to be able to explain virology, like the fund amender Go ahead of it, to -- fundamentals of it to nonscientists: It's challenging but kind of fun.

I want to remind those by listening by phone that there are no slides and this is being recorded for later use. And if you have questions, you can either use Twitter, APSA, or place them in the chat box, and we are monitoring them.

The next question is from morph a trainee perspective. So for those undergraduates, graduates, and medical students that are interested in doing infectious disease research --

>> What are you talking about? Who are you talking to? Huh?

>> Hello? Okay. So those that are --

>> [Indiscernible]

>> Always be prepared for the unexpected. That's for sure.

>> Exactly. May you stay safe during this pandemic. Okay.

So how do you recommend people who are interested in pursuing a career in ID, in pursuing research opportunities during these crazy times, where a lot of labs are shut down?

>> Sallie, how are you dealing with that in

>> Yeah. There is a challenge. So I do think that one of the other hats that we're wearing as mentors is figuring out how to mentor and come up with research opportunities that are virtual. And that becomes a brand new challenge. I think that if you are in it an established mentorship opportunity, this is the time when you can really bring ideas to your mentor to say, you know, I've always wanted to learn to use R or learn these biostats, opportunities.

>> [Indiscernible]

>> And to really bring ideas or maybe there's a literature review that you've always looked for the opportunity to do or maybe there's data that you have been sitting on that really can spend the time thinking about it and working on it now. If you're not in a mentoring relationship, I do think that those are -- we're sort of in a holding pattern with are there going to be summer activities that are in-person activities or is it only going to be [Indiscernible] so really, I think I put the challenge back to the mentees to speak randomly about what you can do from your own computer --

>> [Indiscernible]

>> I'm really sorry about that, everyone. We are would working on trying to figure this out and trying to make sure that everyone gets muted when they're in here. We'll just try to continue as best we can. Apologies for that. This is an open session and public viewing, so looks like we're having some of that coming in as well. So we'll try to do our best to ensure that the rest of the session goes smoothly. And I know all of us here at APSA are sort of furiously trying to figure this out. So really apologize for that and for the profanity that we're hearing.

So one of the questions that was also asked was from a trainee perspective about how during this time as an undergraduate, graduate medical students, what is some advice to get involved with research and how do we, as folks who are really interested and ambitious to move forward, sort of deal with labs being shut down and balancing that idea of, like, I guess in terms of a physician-scientist role as well, balancing opportunism versus trying to address the problem?

>> Yeah. I think Dr. Permar hit a lot of the key things in how do we navigate our way around doing science at a time when labs are shut down? I think the Longview is an important one here. This is going to pass and labs are going to reopen. This is a major destabilizing events, and I think sciences and biomedical research and funding for biomedical research may look different after this pandemic is through and as we prepare for subsequent pandemics, but one could argue there will never be a greater need for people to be doing infectious disease research. And this is a really important lesson in why it's so important to be prepared and why, you know, I think about my friends in virology who have been working in fundamental aspects of coronavirus pathogenesis -- pathogenesis and nobody knew temporary names and now everyone knows their names and their phones won't stop ringing. When you're doing biomedical are everyone that you believe in, it finds a way to become relevant

and important. I think for students right now, understand that out of this pandemic is going to be a lot of opportunities for doing biomedical research, and all of the things that are happening now with new collaborations showing that we can very rapidly do team science, these are going to transform the way that we study not only infectious diseases, but probably a whole lot of other human health problems. I think we may see a bit of a Renaissance and the importance of physician science and the importance of biomedical science. It's certainly, I would guess, points people's heads in our direction that never knew anything about what it means to be a physician scientist, so I think it's important to be optimistic and not be too short sighted to look immediately around you and say labs are shut down of there's no way I can move my career forward in this space. I think actually in the short period of time in the scheme of things, we're going to see a lot reopen and people are going

to be very hungry for graduate students and medical students who are interested in joining multi-disciplinary teams to do research. So hold onto hope. This is I think a time that great change is afoot.

>> I want to thank both of you for answering that on how trainees can push forward during this difficult time. Here's a very interesting question. So someone comments that now there has been a coronavirus pandemic in every decade of the 21st century. Do you think that there is going to be a push much like the flu to develop universal coronavirus vaccine to prevent future pandemics?

>> Well, I sure hope so. And I think it is inevitable that what we know about coronaviruses is that most of the antibody response is [Indiscernible] protein is pretty virus-specific. And though that may be the quickest way to develop a protective vaccine, it's not going to help us prevent the next coronavirus from fanning out in the human population. So yes, I do think that influenza like approach or even, you know, really drawing on the HIV vaccine field that has to do with so much virus diversity and so much effort from the virus to really keep out those antibodies that can reach those vulnerable sites, you know, is all of that work that is still going on in it the HIV vaccine field, but has really spilled over into whole new fields of vaccinology in understanding those very hidden vulnerable sites of a virus that could potentially provide that cross protection. I think it's going to be, you know, of the highest priorities at the end of this after we sort of develop a vaccine that can be protective for now. We need a vaccine that can be protected across the decades for coronaviruses.

>> I do not have a better answer than that.

>> One of our participants asked about sort of practical approaches in management, and I think I saw at Vanderbilt that there was, like, a setup of ICU beds or extra beds in a garage. I think that was at Vanderbilt. And their question was specifically in nursing homes or other sort of care facilities. What kind of practical approaches have you seen similar to that that have been implemented at Vanderbilt about distancing and management of these Covid patients?

>> Yeah. This has been a big challenge, and even in Tennessee, we've seen some nursing home outbreaks. And you know, the question is so important, because people who live in nursing homes are often frail and have multiple co-morbidities and are older, and so these are the highly vulnerable patients. And not infrequently, infection prevention isn't quite as geared up as it is this in a tertiary care hospital. So I think

one of the things that we've been trying to do, and I know other states have, too, is to try and help nursing homes and long term care facilities develop capacity to do testing when they can and to cohort patients and to try to do the things that we know works, limit visitors, you know, screen healthcare providers, make sure they are not having fevers, that they're asymptomatic, that they're using excellent hand hygiene, that they're wearing masks if they're dealing with patients who are known to be Covid positive. But it's a big challenge. You know, some communities have multiple long term care facilities that share staff, that go from one place to another and then go back to their homes. And they have visitors and, you know, the flip side of not having visitors and limiting interactions with healthcare providers is that this is also a population that's very challenged by dementia and depression and mental illness and loneliness and so I think it's really a bad problem and we're sort of learning as we go. I think this is one of those things that's teaching us about preparedness for pandemics that hit group housing and how do we prepare best for that? It's a really important question. Anticipate glad it was brought up.

>> I'm glad that was brought up. --

>> This is kind of a big picture question about the balance of science and medicine during a pandemic. So if you could comment on how you two approach this, but also how physician scientists at all stages of their training can approach this balance, especially during a time now when there is really a crisis for medical personnel and people trained in that skill set?

>> Sallie? Is

>> Yeah. I think this is where the general problem of fatigue and burnout in a physician population has really, you know, and it's not just physicians, all of our healthcare workers across the health system, it's really amplified that problem. You know, I was joking actually on Twitter the other day that of the time I could get back just reading the e-mails about what I'm supposed to do for PPE policies today, if I could only turn that into grant applications in the future, you know, then I'll be okay.

So we are really facing a major challenge, I think, with healthcare workers in general of this issue of fatigue. And while, you know, I've heard some sort of think about that while you are you'll get the push and that sort of adrenaline to address problem at hand, in the long term, what is a career in healthcare going to look like to, you know, those young people who are considering what their career might be or retention? And so it does take creativity, I think, to understand how best to serve that workforce. I like the idea of being able to diversify careers at multiple points along a spectrum as a healthcare provider. So you know, we sort of think of, you know, as a junior person, you must develop your career, establish your career. If it you're going to pursue research, do the training early on so that you can be established by junior faculty. But that's not a reality for everybody. Then if you become a full time provider, is there a way to get back on that on-ramp of having a portion of your career be committed to education or be committed to research or, you know, even advocacy? And so I do think career diversity indication and being able to make multiple on roads for diversifying opportunities is going to be an important thing to the health system, both before this pandemic and after. But obviously something that's going to actually require research to understand how we can best prevent the burnout and to really address what's going to happen in the aftermath of this pandemic.

>> Yeah. I think we're obviously preparing everywhere for a great surge of patients. And it's really all hands on deck. I mean, that sounds like a cliché, but it's true. Institutionally around the United States and around the world that physicians, one of our primary reason-dethra is to reduce human suffering. Humans are suffering as this crazy rapid pandemic. It is incumbent upon us as physician scientists to be willing to drop whatever we are doing in terms of the usual research that we do and pivot towards this crisis and ask, what can we do?

We have physician scientists who are doing a lot more clinical care than they usually do, is and that is providing opportunities for those physician scientists to also understand some new problems that they can help us solve, bringing the mind of a physician-scientist to these problems that we're facing, problems in supply chain, problems in infection prevention, problems in management, problems in getting people plugged into trials, problems in I doagnostics. -- diagnostics. So I think it's a really important time to have the talents of physician scientists which sleeves rolled up caring for patients right now and being involved in care teams. We've been able to deploy some of our physician scientists to do things like create weekly summaries of the latest literature that we all need to know about. Be on this Committee to help us sift through the data that are not peer-reviewed about how we're supposed to be treating these patients. And again, it's an opportunities for people who have a particular skill set, whether that's systems biology or bioinformatics or molecular biology and drop whatever they're doing in cancer biology or bacterial pathogenesis and say how can I help? And I think right now the physician is really ahead of the scientist in the physician-scientist compound term. We need physicians right now, but we benefit from the fact that a group of our physicians are also scientists, because that's ultimately going to help us prep I are for the in hex time this occurs and help us get out from under this one. So yeah, it's a really unstable, weirds time for physician scientists, but I don't think we could see our way through this pandemic without physician scientists.

>> Thanks for that. And that really sort of leads into, you know, our final thoughts here. And we apologize for those people who didn't get their questions answered here, that we didn't have time for. We'll try to see if we can follow up with you guys. And again, for those who were listening in, this was recorded and you can continue to engage with us on Twitter. And the last question really is about from that, what can you tell us for most of us here who are physician scientists trainees? What kind of skills and things that you ever experienced that really has led you to be able to lead in this and utilize your training in a way that enables you to do great things? I think that is something that has inspired me as seeing particularly the infectious disease community just step up and do incredible things and knowing that that might be me someday or that I can contribute in my own way during my training.

>> Yeah. I guess I would briefly say, if I could start, Sally, ink it's important to understand that the work that you're doing as a physician scientist, particularly one in training, is learning how to do science, how to design experiments, how to interpret data, how to think, and then for those of you who are on the clinical services of how to evaluate patients, how to synthesize and communicate and formulate that to some extent, you're learning basic translatable fundamental that can later be applied when all of a sudden you have to do it. And I see myself using skills when it comes to putting teams together, understanding the problems that we need to solve, figuring out not only how we think we might solve them, but what are the metrics by which we'll know if it's working or not working? These are all fundamental things that we get trained in over and over and over again as physician scientists. And we all get used, as we March up our career, to mentoring, to managing teams, to understanding how different people work together around a common problem. And so if I'm doing anything that's of benefit in this pandemic, which involves something I don't do, I've never, ever been a virologist and I've never been involved a pandemic and I've never done healthcare epidemiology or public health, but fundamental things I'm being asked to do are things I've been trained to do by years of being mentored and mentoring. And so, you know, I don't know. I'm probably not making sense, so I'm going to turn things over to Dr. Permar.

>> Well, I was going to say something very similar, that the power of, you know, being able to collaborate and really to understand bringing

resources together from two different places or from two different minds will really, you know, spark a project that could lead to an important answer. But I was going to say both that power of collaboration and as you develop as a mentor, putting someone in their best position to contribute to that collaboration, finding that niche for mentee that they'll be studying coronavirus long after I will be, and then boiling is down to the important questions. So I think those skills you'll use across all of your hats. You'll use across all of your different aspects of training. And they apply to a pandemic. So bringing together, you know, people from multiple fields into, you know, a more powerful research opportunity than it was with you alone, and boiling things down to those fundamental questions. So physician scientists are certainly well-trained and really are going to be at the core of coming out of this pandemic.

>> Thank you so much for your participation in this panel. I did want to say One Note to trainees that are listening. The pandemic has probably certainly been disruptive to your MD-PhD in some way, and José and I just wanted to mention that it's okay to feel lost and confused and to just kind of take time to figure out what you're going to do during this time. I want a also okay to feel empowered to fight Covid 19 with your medical and your research training. And there's a lot we certainly can do just as people to support one another, to support neighbors and families and vulnerable populations. No matter what you're doing, protect your medical and physical health during this time.

>> Thank you no coming, and I also just wanted to thank our double Docs communities and the folks here, all the members of APSA for joining us. The virtual meeting has had hundreds of attendees. It's been really successful and just thank all of my co organizers for being on the call with us. And so thank you again, Dr. Aronoff and Permar. It was great.

>> Thank you.

>> To you guys, yeah.

>> It's an honor. It's a real honor.

>> Thank you. Good work attracting such a big crowd.

>>

[Meeting Concludes]

*****DISCLAIMER*****